Thanks to the Texas Board of Professional Engineers

From 1990 to 2002, the Murdough Center for Engineering Professionalism had the privilege of conducting the Professional Development Program for the Texas Board of Professional Engineers (TBPE). This TexethicS newsletter was one of several elements of our efforts to promote professionalism and ethics in Texas. With generous support from the TBPE, significant strides were made possible in promoting professionalism and ethics among those privileged to practice engineering in Texas as well as among engineering faculty and students enrolled in colleges of engineering. Special thanks is extended to Dave Dorchester, former Board member and Board Chair, for being first to encourage TBPE to establish a formal program promoting ethics, and to other members of the Board who continued to see the need for programs conveying the importance of ethics and professionalism to students and practicing engineers.

TexethicS Newsletter Revived – Thanks to Texas Engineering Foundation and Bill Baker

For the past three years, TexethicS newsletter has not had a sponsor. Two opportunities have recently occurred that have made it possible to revive the newsletter and distribute it to all engineering faculty in Texas as well as others who have expressed an interest in receiving TexethicS. The Texas Engineering Foundation re-established support for ethics programs in Texas with a generous contribution to the Murdough Center. And Bill Baker, former Murdough Center employee and editor and creator of the masthead and title of TexethicS expressed his desire that TexethicS newsletter be revived for the benefit of engineers, faculty and students. Bill provided a generous contribution, which, when combined with the Texas Engineering Foundation’s contribution, has enabled the continuation of this newsletter. Our sincere expression of appreciation is extended to the Texas Engineering Foundation and to Bill W. Baker.

About this Issue

This issue of TexethicS contains information devoted to engineering ethics education for colleges of engineering, engineering firms, and individual engineers. The articles herein describe several resources that are available for presenting ethics to engineering students as well as resources for Continuing Professional Competency (CPC) for licensed engineers via videos and written material.
Continuing Professional Competency in Ethics for Licensed Engineers

Continuing Professional Competency (CPC) in engineering ethics is now required for renewal of Texas Engineering Licenses. CPC opportunities are available in several formats from the Murdough Center and NIEE. Programs currently available include:

- **Organized Study**: Professional Development Hours (PDH-2, PDH-3, and PDH-5 – indicating hours of credit) based on your analysis of ethics videos
- **Self study**: a 368-page ethics book (See article on page 6 for more information about content of this ethics book).


A Movie Concerning Engineering Ethics and Business Ethics

Building on the success of the NSPE/NIEE ethics video, *Gilbane Gold*, NIEE has developed a new movie, *Incident at Morales*. Produced and directed by Emmy award-winning and Oscar-nominated Great Projects Film Company in New York City, *Incident at Morales* is a 36-minute dramatic case study which emphasizes the responsibilities of engineers and the resulting benefit to the public. Cast in an international context, the video was created by a team of engineers and philosophers from five universities and three companies and dramatizes a fictional but realistic case study in engineering ethics. Funding to create this educational video was provided by a major grant from the US National Science Foundation (NSF SES-0138309) and donations from engineering societies, firms and individuals.

(The US Edition is subtitled in Spanish and the International Edition is subtitled in 13 languages)

Produced by

Murdough Center For Engineering Professionalism
Texas Tech University, College of Engineering

EXECUTIVE PRODUCERS

Jimmie H. Smith, Ph.D., P.E., Project Director and PI
Steven P. Nichols, Ph.D. J.D., P.E., Co-PI
Michael C. Loi, Ph.D., Co-PI
Vivian Weil, Ph.D., Philosopher
Philip E. Ulmer, P.E.
Fredrick Sappe, Ph.D., Philosopher
Carl M. Skooglund
E. Walter LeFevre, Jr., Ph.D., P.E.

Civil Engineering & Director, NIEE
Mechanical Engineering & Associate VP/Research
Electrical & Computer Engineering
Center for the Study of Ethics in the Professions
Consulting Safety Professional
Chair of Philosophy
Retired Vice President & Ethics Director
Retired Civil Engineer, Past President, NSPE

Texas Tech University
University of Texas at Austin
University of Illinois at Urbana-Champaign
Eagle River, Alaska
Texas Tech University
Texas Instrument, Inc., Dallas
University of Arkansas

SPECIAL ASSISTANTS

Dave Dorchester, P.E.
Patricia Harper

Immediate Past President, NIEE
NIEE Program Coordinator & Production Assistant

Lead Role in Development of Private Funding
Texas Tech University

TECHNICAL ADVISORS

Jose Guerra, P.E.
Jose Novoa, P.E.
Christopher Smith

Structural Engineer
Environmental Engineer
Chemical Engineer

Austin
Dallas
Dallas

PRODUCER, WRITER & DIRECTOR

Kenneth Mandel, Producer
Paul Martin, Writer and Director

Great Projects Film Company, Inc.
Great Projects Film Company, Inc.

New York, NY
New York, NY

Free Study Guide, Power Point Presentation, and Script

FREE resources for *Incident at Morales* are available at www.niee.org: A 24-page study guide contains suggestions for use, the story line, list of characters, synopsis of the video, purpose of the video, over 100 questions about ethical issues that the story raises, and a suggested assignment for students and engineers. Twenty-six slides make up a power point presentation which may be downloaded free, modified to fit the presentation format and used as an introduction to *Incident at Morales*.

Note: If you would like a digital copy of the contents of this or any previous Texetic5 newsletters, download files from www.murdough.ttu.edu. Newsletters, Texetic5.
Background Information on the Development of Incident at Morales

The original idea for this project was to produce an educational video – a Sequel to Gilbane Gold, NIEE’s first engineering ethics video. However, the research team concluded that the profession, students, engineers, and the public would be better served with a new concept and story line. Thus the “sequel” idea was abandoned and a new idea was born resulting in “Incident at Morales.”

The challenge for the research team (also known as Executive Producers) was to create a new video that would dramatize a fictional but realistic case study in engineering ethics to help meet the contemporary need for effective instruction in engineering ethics. Because of the globalization of the economy, the new video was cast in an international context.

The team began with the goal of focusing attention on four central and vital aspects of ethics for engineering students and engineering practitioners:

- **Sensitivity** .......to raise awareness of ethical aspects of professional work
- **Knowledge** ........to learn about professional standards such as codes of ethics
- **Judgment** ..........to develop skills in moral reasoning
- **Commitment** .......to strengthen personal dedication to exemplary conduct

This goal was pursued with several objectives. One of the objectives was to create a new video to emphasize the good works model for ethical engineering practice. The film had the primary objective to improve the ability of students and practicing engineers to:

- Evaluate alternatives according to basic ethical values and through simple tests
- Identify and distinguish ethical issues, technical issues, and economic issues
- Identify affected parties (stakeholders) and their rights and responsibilities
- Identify social and political constraints on possible solutions
- Determine whether additional information is needed to make a good decision
- Formulate alternative courses of action and
- Test the alternatives and imagine possible consequences of those alternatives

A secondary objective was to help the viewers become more aware that:

- Ethical considerations are an integral part of making engineering decisions
- A code of ethics will provide guidance in the decision-making process
- The obligations of a code of ethics do not stop at the United States border and
- The obligations of engineers go beyond fulfilling a contract with a client or customer

*Incident at Morales* is 36 minutes long, produced in four (4) versions and two formats (VHS and DVD):

- **A Basic Story US Edition** of Incident at Morales © 2003 in VHS and DVD formats
- **A Segmented US Edition** in VHS and DVD formats that can be viewed in parts
- **An Interactive US Edition** DVD containing 45 minutes of discussions related to the ethical issues in the video and
- **An International Edition** of Incident at Morales © 2005: a DVD subtitled in 13 languages

**Free Copies**

Free copies of the US Edition have been sent to 344 engineering deans and to 30 engineering societies in the United States. Copies of the International Edition have been sent to numerous foreign engineering colleges. The goal is to provide all engineering colleges in the world with a free copy within a year. Free copies are sent to applied ethics societies in the United States requesting a copy.

This wide distribution will expand the availability of the movie for use in conveying the importance of engineering ethics in undergraduate curricula, graduate curricula, continuing education programs, and in business and industry throughout the world.

“No man can always be right.
So the struggle is to do one’s best to keep the brain and conscience clear;
ever to be swayed by unworthy motives or inconsequential reasons,
but to strive to unearth the basic factors involved …and then do one’s duty.”

*Dwight D. Eisenhower*
Study Guide for Incident at Morales

The Study Guide (available free at www.niee.org) contains questions on a number of important topics, namely:

- Ethical and Legal Issues
- Wally’s One Rule
- Effective Communications
- Purchasing Cheaper Controls
- Marketing Decisions
- Budget Issues
- Safety Issues
- Software Problems
- Personal Relationships
- International Cultural Issues
- Making Decisions
- What if Automatic Controls Don’t Work
- Margin of Error
- Reasonable Care
- Trust and Candor
- What If You Were In Charge

The Study Guide contains 108 ethical questions raised in the film. Samples of these questions are:

1. Why does Chuck want to hire a licensed professional engineer (P.E.)?
2. What issues are involved in hiring an engineer who just left the employ of a competitor?
3. Does Fred have any obligations of confidentiality to Chemitoil even if he has not signed a non-disclosure agreement?
4. On Fred’s first day, Wally says, “We’re fast at Phaust.” How might engineering decisions be affected by a corporate culture that emphasizes speed?
5. Wally tells Fred he has one rule: that Fred should tell Wally news first, whether good or bad. What is the potential impact of Wally’s One Rule? How should Fred respond?
6. While touring the SuisseChem plant, should Jake, Fred, and Peter be wearing protective gear?
8. Is it proper for Fred to share his concerns with his wife, especially when work similar to Fred’s is regulated by her employer?
9. Do our professional responsibilities for the environment and for safety change when we cross national borders?
10. When Wally confronts Fred, Fred says that he was looking through some ethics manuals. He would have found a corporate or professional code of ethics. What would the codes of ethics say about his situation?
11. Although the chemical process was supposed to be automated, Fred and Manuel decide that human operators should release the product manually. Is this reasonable?
13. What roles should trust play in our professional and personal interactions?
14. What role should candor play in a professional or personal relationship?
15. Would candor imply effective communications?
16. Could you envision one definition of ethics as being “those activities and practices that tend to enhance trust”?
17. Although there are a lot of things that one will gain during the course of a professional career, there may be some things that can be taken away from you. Your job could be taken away (we see that happening all too often with downturns in the economy).
   a. Can you think of something that can never be taken away - unless you allow it to be?
   b. What about your “reputation for integrity”?
18. If someone says “I trust you,” how does this make you feel about the relationship?
19. What would you do if you were the leader and had all the controls at your command to set up your organization any way you wanted in order to make sure that everyone in that organization would conduct themselves to the highest professional and ethical standards? Would some of the following actions come to mind?
   a. Clearly define your expectations of professional/ethical actions
   b. Communicate those expectations effectively and continuously
   c. Live the standards personally. What people see in actions is what they’re going to believe
   d. Create candor and open communication in the environment so that anyone within the organization feels free to bring up and discuss their thoughts, opinions, and ideas, but most of all, they feel free to bring up their concerns, problems, and news, be it good or bad, without fear of suffering some sort of retribution or reprisal
Suggested Assignment After Viewing *Incident at Morales*

It is suggested that this page be copied and distributed to students before viewing *Incident at Morales*.

**Synopsis of the Story**

Phaust Chemical manufactures Old Stripper, a paint remover that currently dominates the market. On learning that Phaust’s competitor Chemitoil plans to introduce a new paint remover that may capture the market, executives at Phaust decide to develop a competing product. To save money in manufacturing the product, Phaust decides to construct a new chemical plant in Mexico. To design the new plant, Phaust hires a chemical engineer, Fred Martinez, who had been a recent consultant to Chemitoil and had designed a similar plant for that company.

As the project starts, Chemistré, Phaust’s parent company in France, slashes budgets 20% across the board. Chuck, the vice president for engineering at Phaust, insists that Fred reduce construction costs. Fred confronts several engineering decisions in which ethical considerations play a major role:

- Whether to use expensive controls manufactured by Lutz and Lutz, a company with inside connections at Phaust
- Whether to line the evaporation ponds to prevent the seepage of hazardous substances in the effluents into the groundwater, although local regulations may not require this level of environmental protection
- Whether to purchase pipes and connectors made with stainless steel or high strength alloy
- After the automatic controls fail, whether to allow someone (who volunteers) to control the process manually

When samples of Chemitoil’s new paint remover EasyStrip become available, it is clear that to be competitive with EasyStrip, Phaust must change the formulation of its new paint remover, requiring higher temperatures and pressures than originally anticipated. These increases in temperatures and pressures cause significant technical and ethical problems, the most serious of which is the fact that the automatic controls no longer work as intended. Thus, the plant manager, Manuel, volunteers to control the process manually. After the plant goes into full operation, an unfortunate accident occurs, resulting in serious consequences.

**Cast of Characters**

Fred: ............ Chemical Engineer hired by Phaust  
Wally: ............ Fred’s supervisor at Phaust  
Chuck: .......... Vice President of Engineering at Phaust  
Dominique: . Corporate liaison to Phaust from parent company Chemistré  
Maria: .......... Fred’s wife, a compliance litigator for the U.S. EPA  
Hal: ............. Market Analyst at Phaust  
Jen: ............. Research Chemist at Phaust  
Peter: .......... Project Manager of construction of the new plant in Morales  
Jake: ............ Plant Manager for the SuisseChem plant in Big Spring, Texas  
Manuel: ...... Plant Manager for the new Phaust plant in Morales

**Assignment**

After viewing the video, ask viewers to discuss or write about the following:

1. List the **ethical issues** you observed in *Incident at Morales*.
2. From your **personal perspective**, prioritize these ethical issues from most critical to least critical
3. Discuss the video from three additional perspectives:
   a) **Fred’s Perspective:** Assume you are Fred:  
      i) What specific ethical issues do you (Fred) face?  
      ii) What are some things that you should consider?  
      iii) From whom (or where) could, should, or would you seek guidance?
   b) **Wally’s Perspective:** Assume you are Wally:  
      i) What specific ethical issues does Wally face?  
      ii) What do you think Wally’s motivation was for having “One Rule”?  
      iii) What do you think about Wally’s “One Rule”?  
      iv) What decisions would you change if you were Wally?
   c) **Responsibility Perspective:** If you were in charge and had the authority and the funding to make any changes you wanted to make in company policies:  
      i) What specific steps would you take to improve the company culture?  
      ii) Who would you involve in this process?  
      iii) How and when would you communicate the company policies to:  
         (a) Your employees?  
         (b) Your clients?  
         (c) The public?
Introduction:
A 368-page book concerning engineering ethics, Engineering Ethics – Concepts, Viewpoints, Cases and Codes © 2004, has been published by the National Institute for Engineering Ethics, Murdough Center for Engineering Professionalism.

Description of Contents:
Engineering Ethics – Concepts, Viewpoints, Cases and Codes is not designed to be used as a stand-alone text in a formal academic course in engineering ethics. However, it may be used effectively as a reference and for guidance in engineering ethics. It covers a wide variety of ethical issues related to engineering practice and is believed to be especially useful for independent study by individuals in universities and engineering firms.

The publication contains details of relatively few ethical theories, so in that regard, it is not intended to serve as an effective reference on theoretical ethics. Its primary strengths are its very large variety of:

- Viewpoints expressed by experienced engineers, many of whom are national leaders, on ethical issues covering concepts of the importance of ethical leadership, professionalism, responsibilities and obligations of individual engineers as well as responsibilities and obligations of the engineering profession; and
- Published case studies, most based on actual events, related to fundamental and professional ethics
- Two major cases involving films on engineering ethics, Incident at Morales and Gilbane Gold, both of which are described in detail and guidance presented for analyzing and discussing the videos.

Major Sections:
- Engineering Ethics, an Overview
- Principles, Concepts and Viewpoints regarding
  - Basic Ethics
  - Engineering Ethics
- Two Major Case Studies on Video and Interactive DVD (Information and Suggested Assignment)
  - Incident at Morales (©2003) – Detailed Information and Study Guide
  - Gilbane Gold (©1989) - Brief Description and Suggested Assignment
- Over 50 Cases in Basic Ethics, Professional Ethics and Engineering Ethics
  - General Interest Cases on Fundamental Ethics
  - Cases on Critical Thinking, Honesty, and Responsibility
  - Applied Ethics in Professional Practice Cases
  - NSPE Board of Ethical Review Cases
- Appendices
  - Other Engineering Ethics Cases Available On The Internet
  - References Related to Engineering Ethics
  - Codes of Ethics from Several Engineering Societies and Groups

Principal Contributors:
- Bill Baker
- Taft Broome, Jr.
- Dave Dorchester
- Patricia Harper
- Joe Paul Jones
- William Lawson
- Jay Newhard
- Steve Nichols
- Jimmy Smith
- Thomas Smith, III
- W.F. Weldon
- William Wulf

For additional details concerning this book, go to Products & Services at www.niee.org or www.Engineering-Ethics.ttu.edu

“Values are like fingerprints. Nobody's are the same, but you leave 'em all over everything you do.”
Elvis Presley
The National Institute for Engineering Ethics encourages faculty and engineers in business to use the Applied Ethics in Professional Practice program for ethics education. The “Case of the Month Club” (as it was previously known) has been used by ~100 universities and its web site has had more than 50,000 hits. The program consists of applied ethics cases taken from actual professional practice and presented in narrative format. Each case is linked to a series of suggested solutions, not all of which are necessarily ethical but which represent reactions commonly found in professional practice. Site visitors are given the opportunity to vote on their preferred course of action, as well as to offer commentary. Results are tabulated at the end of the voting period, and the statistical responses are reported, along with commentary. To participate in this FREE Program, go to www.niee.org, click on “Applied Ethics in Professional Practice” which links to the current case and voting form. A sample case, slightly revised, containing alternative solutions, appears below. We encourage you to visit the web site, vote on this case, and then check back later for the tabulated survey results.

A Sample Case – Paying Attention to Details – Case 1017

Facts in the Case:
Bert Bowser is a real "go-getter" engineer. He is known throughout the engineering community for his ability to get a job done on time and within budget. Bert's reputation recently convinced a much larger engineering firm (Far Horizons Engineering) to offer him a sizeable promotion to go to work for them. After considerable thought, Bert accepted the offer and changed jobs.

Bert began his new job with gusto and quickly became deeply involved with his assigned projects. He was amazed at the work volume in his new company. After working in the new job for about a month, Bert reviewed a set of 'in-house' prepared drawings. As he reviewed the detail sheets he noticed something very familiar. He realized that these details were an exact copy of a set that he and two other engineers labored over in his previous job at County Line Design.

Bert is aware that the technology used was the industry standard, but the manner of presentation was distinctive and clearly the work of his former company. Bert called Far Horizons head draftsperson and asked who drew the detail sheets. The drafter stated that he wasn't sure who first drew the details, but the originals probably came either from in-house work or from a sub-contractor who had been paid for the effort. As for this particular set of drawings, the detail sheets were simply inserted from the company's database of CADD drawing details and the name of the project added in the title blocks of each sheet, along with Far Horizons name and logo.

Bert remembered that his old firm, County Line Design, had once been a sub-contractor for his present employer. However, he is sure that his previous firm had not given permission for "carte blanche" use of pieces of those previous drawings for other unrelated projects.

What, if anything, should Bert do at this point?

Alternate Approaches:
1. Bert should feel proud that Far Horizons thought so much of his previous work that they have incorporated the design details into their own standard contract sheets.
2. Bert should just forget about the possible infringement on some other firm's work.
3. What's the problem? Good details are copied all the time from one firm to another.
4. Since the information shown on the detail sheets is all standard practice, getting upset because the format is the same as that developed while Bert was at County Line Design is meaningless and counterproductive.
5. There is no problem here. If Bert were to put together a new set of detail sheets for use as Far Horizons standards, he would end up with the same thing they are using.
6. This is nothing to be concerned about. Far Horizons paid County Line for the detail sheets as part of their subcontract with County Line on a former project.
7. Bert should point out to his present company that using the detail sheets as part of their own 'boiler plate' negates any legal liability County Line Design had if there are errors in the details. This now becomes the legal responsibility of his present company.
8. Bert should immediately make a telephone call to his former boss at County Line Design to tell her what he has discovered, and let them take whatever action they deem advisable.
9. He should go to County Line Design, tell them what he has uncovered, and ask for his former job back.
10. Bert should discuss the issue with his present boss, agree to keep silent about the use of these detail sheets and negotiate a raise now and a promotion in the future.
11. He should discuss this discovery with his new boss at Far Horizons, expressing his concerns about the origin and ownership of these detail sheets.
12. Bert should recommend to his boss at Far Horizons that he go back to County Line to negotiate a written agreement which permits Far Horizons to use the detail sheets as part of their standard design contract package.
13. If Bert's new boss is not a principal in the firm, he should give a 'bare bones' description of the perceived problem to his boss, then request that a principal in the firm be brought in to discuss the matter as well.
14. Bert should push to have the matter clarified and cleared up between the two companies so that County Line Design does not come across these detail sheets later on and think that Bert stole the sheets when he switched jobs!
15. He should keep his mouth shut (no one likes a tattle-tale, and consulting engineering is a small community).
16. Bert should send a copy of the detail sheets to the State Board of Registration for Professional Engineers and suggest they look into the matter as a possible breach of professional ethics.
17. Bert should seek the advice of a lawyer.
The Texas Engineering Foundation (TEF), a new co-sponsor of this newsletter, was established by the Texas Society of Professional Engineers as a nonprofit charitable foundation to support the goals and ideals of the professional engineers in the State of Texas. The general purpose of the Texas Engineering Foundation (TEF) as indicated by its Mission statement is:

"to enhance the practice of engineering through supporting high quality formal engineering education and continuing professional development, encouraging the development and maintenance of the high standards of conduct expected of members of a learned profession, and providing scholarship assistance to outstanding engineering students."

Every member in good standing of the Texas Society of Professional Engineers is automatically a member of the Texas Engineering Foundation.

**Officers:**
H. Kenneth Rigsbee, PE, Chair
William J. Harper, PE, Vice Chair
Jose I. Guerra, PE, Secretary/Treasurer
Trish Barrington Smith, Executive Director

---

**Murdough Center for Engineering Professionalism and NIEE Staff**

Jimmy H. Smith, Ph.D., P.E., Director, Murdough Center and National Institute for Engineering Ethics- Texas Tech University
William D. Lawson, Ph.D., P.E., Deputy Director, National Institute for Engineering Ethics- Texas Tech University
Patricia M. Harper, Unit Coordinator and Deputy Director, Murdough Center, Texas Tech University
Sylvia Bermea, Business Assistant, National Institute for Engineering Ethics, Texas Tech University

---

*TexethicS* is distributed at no charge to engineering faculty members within the State of Texas and to others within the engineering profession who request to be included on the mailing list. Opinions and/or articles in *TexethicS* do not necessarily represent the position of the Texas Engineering Foundation or Texas Tech University. *TexethicS* is not a copyrighted publication; hence it may be reproduced but credit is requested.