ENGR 1181 | Class 3: Ethics Case & Oral Presentation

Ongoing Project: Weeks 2-8

Overview
This assignment is a chance for you to research an ethical topic that interests your team. Your team will choose a case from a given list of engineering ethics cases, conduct research on the case, analyze the situations presented in the case, and then present your analysis to the class in an oral presentation.

Learning Objectives
Upon successfully completing this project, you will be able to:

• Define the term ethics and identify sources of a person’s ethics
• State why professions like engineering have their own codes of ethics and explain how the codes might be used
• Implement a structured approach to addressing an ethical dilemma that may occur for a student or professional engineer
• Understand the important steps of preparing an oral presentation
• Understand the key elements in clearly delivering messages in oral presentations
• More effectively present findings in an engineering related setting

Project Timeline
This project has multiple smaller deliverables (graded items) leading up to your team’s oral presentation. Along the way you will get feedback from your instructional team regarding these deliverables, so it will be important for your team to incorporate that feedback into your final project work. This is the general timeline for the project. Consult the course website for specific due dates that pertain to your course schedule.

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Teams review sample ethics cases and choose top 3 cases of interest</th>
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<tbody>
<tr>
<td>Week 3</td>
<td>GTA assigns case to teams</td>
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<td>Week 4</td>
<td>Teams submit case analysis to GTA and schedule meeting with GTA</td>
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<td>Week 5</td>
<td>GTA meets with teams to provide feedback on analysis</td>
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<td>Week 6</td>
<td>Teams submit draft of presentation (and revised analysis if necessary)</td>
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<td>Week 7</td>
<td>GTA provides feedback on draft presentation</td>
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<td>Week 8</td>
<td>Teams give oral presentations in Class 10A or 10B</td>
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Project Deliverables

1. Selection of Possible Ethics Cases
2. Analysis of Ethics Case (25 points)
3. Draft of PowerPoint and plan for oral presentation (25 points)
4. Oral Presentation (100 pts.)

Assignment Detail:

The following is a detailed layout of the process leading up to the oral presentation on ethics:

1. Selection of Possible Ethics Cases

Teams are required to choose 3 ethics cases from the 28 that are provided at the end of this document. The chosen cases should be those that are of most interest to your group; consider the related engineering field(s). The cases provided are a mix of hypothetical and real-world situations. Email the # and Title of those 3 choices, in the order of preference, to your GTA. The GTA will then assign a specific case based on the order in which they are received, and then your choices.

2. Ethics Case Analysis (25 pts.)

After you have completed the bulk of your research regarding the case, your group is required to complete an analysis of your ethics case. The information in the completed analysis (see following page) should provide the base of the content for your presentation. Make sure to include as much detail as possible, including assumptions you may have made. You will be evaluated based on your ability to:

   a. Address each of the issues and points of ethical conflict presented in the case or problem. Include any assumptions made about this case. (3 points)
   b. Identify what engineering field(s) this ethics case is related to. (3 points)
   c. Identify the protagonist. Describe the general duties or obligations of the protagonist, which are grounded in moral considerations. (3 points)
   d. Consider each interested party's legitimate expectations of the protagonist. (3 points)
   e. Identify all possible actions and recognize the positive and negative consequences of each action. (6 points)
   f. Provide a selected action and rationale. (4 points)
   g. Provide at least a total of two references, not including Wikipedia. (2 points)

You will receive feedback on your analysis approximately one week prior to the draft oral presentation due date. Feel free to start laying out the draft presentation prior to receiving feedback on the analysis.
Analysis of Ethics Case #: Insert Title Here

1. What are the point(s) of ethical conflict? Explain any assumptions made in this analysis.

2. List any and all related engineering field(s) identified in this case.

3. Who is the protagonist in this case? What are his/her general duties and obligations within his/her specific profession?

4. In bulleted form, list all interested parties or stakeholders and the obligation of the protagonist to said stakeholder:
   - Stakeholder A – The protagonist is responsible to provide X and Y (example)

5. Using the table below, briefly describe any possible actions that may be taken, and any associated positive and negative consequences. *Add as many rows as necessary to properly evaluate all possibilities.*

<table>
<thead>
<tr>
<th>Potential Action</th>
<th>Positive Consequence</th>
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6. Explain the desired action and provide rationale. Use reference to NSPE Code of Ethics when applicable.

7. Provide at least two acceptable references (one of which is provided).
3. **Draft PowerPoint Presentation (25 pts.)**

Your team will submit a draft of your PowerPoint slides during week 6, in advance of the presentation day. This draft should be a close approximation to your desired finished presentation, so it will need to contain complete information on your analysis of your ethics case and the conclusions your team has reached.

Your presentation should reflect your analysis of the case. Because you have already completed the analysis, creating the presentation should just require documenting your existing work and focus on layout of material. Be sure to include background information on the case so your audience (the class) can understand your analysis.

When building your presentation, make sure your slides clearly convey your information and that the audience will be able to easily read all information on the screen. You are encouraged to include visuals in your presentation, but not clipart. There is no required number of slides for this presentation, however your team will have only 7-8 minutes for the presentation plus an additional 2 minutes for questions. Refer to the evaluation form on the following page for details of the expectations for your presentation.

**Refer to the Oral Communication Section in the Technical Communication Guide for tips on how to plan for your presentation.** This draft will be evaluated on content, completeness, and clarity of information. The grading breakdown is as follows:

- Presentation Layout: 10 points
- Complete Analysis: 10 points
- Clarity and Formatting: 5 points

**Important Note:** Your team will receive feedback from your instructional team regarding this draft; it is critical that you incorporate this feedback into your final presentation.

4. **Oral Presentation (100 pts.)**

Your presentation must be 7-8 minutes long and you will be allotted an additional 2 minutes for questions. When giving your presentation, you should dress professional for a business casual environment. You are welcome to use notecards when presenting, but keep in mind that you should not read directly from the cards (or the screen!). Each team member should participate equally in giving the presentation. You are highly encouraged to practice ahead of time to make sure information flows well and that your group stays within the 7-8 minute time limit. See the evaluation form on the following page.

Presentations will occur over two class periods, and you are only required to attend on the day that your team is scheduled to present. This means that you will be presenting to a smaller audience AND you get a day off! ☺
**ENGINEERING 1181: Oral Presentation Evaluation Form (Ethics)**

**Individual Team Member Names:**

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**INDIVIDUAL POINTS (40 max):**

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<th>2 Description of ethical issue(s)</th>
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<th>3 Description of protagonist and interested parties</th>
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<td>- How people/groups/entities are related to each other</td>
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<td>- Implications</td>
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**TOTAL TEAM POINTS (60 max):**

**TOTAL INDIVIDUAL SCORE (100 max):**

**Comments:**

**Additional Comments on Back of Sheet**
Ethic Cases:

This section of the document contains the ethics cases your group can choose to research. Please choose three cases that interest your group then your professor will assign your case from those choices. While reading these cases think about what majors each focus on. Your team must find and reference at least one more source, in addition to the one provided, for your presentation; you may not use Wikipedia.

1. Gifts from Contractors/Suppliers [Hypothetical]:

Scott Bennett is the engineer assigned to deal with vendors who supply needed parts to the Upscale Company. Larry Newman, sales representative from one of Upscale’s regular vendors, plays in the same golf league as Scott. During a game, Scott mentions he is in the process of planning a vacation to Florida. Larry has an uncle who owns a condo in Florida and offers Scott a discounted price on it. New Company Policy at Scott’s engineering firm: “accepting incentives from vendors is strictly prohibited”. What should Scott say and do?

Extracted from Gifts from a Supplier at: http://www.onlineethics.org/Resources/Cases/condo.aspx

2. Data Selection, Legitimate or Illegitimate [Hypothetical]:

Elton, an engineer, is conducting graduate research at a major university. In order to complete his graduate studies and produce an advanced degree, Elton must develop a research report. The vast majority of data obtained strongly support not only his report’s conclusion, but also the conclusions of others. However, a small proportion of the data differs from the data consistent with Elton’s conclusion. Even though his report is sound containing all of the data Elton does not include the inconsistent figures in the final report.

Extracted from Data Selection, Legitimate or Illegitimate (adapted from NSPE Case No. 85-5) accessed at: http://www.onlineethics.org/Resources/Cases/ec85-5.aspx
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3. The Big Q [Hypothetical]:

Greg and Natalie, both graduating seniors, have been taking business classes together since freshman year. Natalie has been invited by Greg and his friends to join their team on their senior capstone project. Greg soon learns that Natalie is not pulling her weight in the team. After their final presentation, the professor asks all the students to evaluate their team-mates and this evaluation will be the basis for their individual grades. Greg gives the rest of his team-mates good evaluations, but when it comes to Natalie, he is in a dilemma over giving her an honest evaluation, such that she receives the grade that she deserves or giving her a dishonest evaluation, since they are about to graduate soon and their team did well, regardless of her performance.


4. Dissent about Quality [Hypothetical]:

Several senior engineers recommend catalyst A for use by Larom, Inc. Bernie, a new employee, believes catalyst B may actually be best based on testing he has been doing. Bernie needs more data to be sure, but he doesn’t have enough time to conduct the trials. What recommendation should Bernie offer, if any?

5. Hooked On Electronic Services [Hypothetical]:

The Banking Industry was one of the earliest to adopt to the use of computers and other Information Technologies to support their operations. The pioneers within the Banking Industry gained a competitive advantage by providing customers with unique services. Once these new services became widespread practice, from a customer's perspective, there was no advantage of doing business with a particular bank.

This situation presented managers with the challenge of how to attract and retain their customer-base. Step One - General Focus: Students may suggest a wide range of non-specific strategies. Step Two - Information Technologies Focus: Students may suggest various IT based strategies. Step Three - Specific Focus - Students evaluate specific IT based strategies, e.g. Automated Teller Machines and Electronic Banking.

_Extracted from Hooked On Electronic Services accessed at:_
_http://www.onlineethics.org/Resources/Cases/hooked.aspx_

6. All in the Interpretation [Hypothetical]:

Kate is a graduate student in Professor Bigwig's lab. She started a project examining the effects of certain video games in children during her first year of graduate school. She is excited to see a clear trend in her data that indicates a positive effect of educational video games, but the effect washes out after about a year or two, and she is unsure how to interpret it. Dr. Bigwig did not like the results and conclusion section of her first report draft so she eliminated most of the inclusive data and highlighted the strong trends. Dr. Bigwig liked this new draft and it was published and was successful at gaining funding. What are the ethical issues surrounding the published report?

_Extracted from All in the Interpretation accessed at:_
_http://www.onlineethics.org/Resources/Cases/Interpretation.aspx_
7. Cheating (MIT): Responsibilities for Reporting and Taking Disciplinary Action [Hypothetical]:

I am a senior at a well-known educational institution. This term, I am the grader for a course called Probabilistic Systems. My sorority sisters J and K are taking this course. One day at the sorority house library I see J and K obviously copying answers from past problem sets - in fact, they don’t deny the fact when I confront them. J says that copying is not a big deal since grades from problem sets are only counted in the case of borderline grades. Although I feel what they are doing is wrong, I also realize that many other students are probably using bibles and problem sets are not a large part of their grade. What should I do?

Extracted from Cheating@MIT: Responsibilities for Reporting and Taking Disciplinary Action accessed at: http://www.onlineethics.org/Resources/Cases/cheating.aspx

8. Beyond Expertise: One Person’s Science, Another Person’s Policy [Hypothetical]:

Dr. Debra Reams works in the field of environmental chemistry and focuses on the oxidation and reduction reactions of the heavy metal jekylhydium in water and soil. Jekyllhydium is used in many industrial processes and is known to exist in nature primarily in two oxidation states. The oxidized form is extremely toxic; the reduced form is harmless. The Environmental Protection Agency (EPA) is concerned about the toxicity and potential for human exposure to jekylhydium. The Agency is alarmed by news of the possibility of transformation from the less toxic to the more toxic form and asks Reams to help rewrite the regulatory limits for jekylhydium in soils and water based on her findings. Reams declined to rewrite regulations even though she was person to clearly demonstrate the danger.

Extracted from Beyond Expertise: One Person’s Science, Another Person’s Policy accessed at: http://www.onlineethics.org/Resources/Cases/expertise.aspx
9. Suspected Hazardous Waste [Hypothetical]:

Alex is an engineering student employed for the summer by Environmental Engineering, a consulting firm. RJ, the engineer who supervises Alex, directs Alex to sample the contents of drums located on the property of a client. Alex believes the drums contain hazardous material, but RJ wanted Alex to tell the company that they contain questionable material. What can and should Alex, a student and a summer hire, do in this situation?

Extracted from Suspected Hazardous Waste (adapted from NSPE Case No. 92-6) accessed at: http://www.onlineethics.org/Resources/Cases/ec92-6.aspx

10. New Technology – Who Is the Designer [Hypothetical]:

Edgar Engineer is a licensed civil engineer and principal investigator on a university project researching environmental contamination problems. His work involves the sampling of groundwater and soil to determine the nature and extent of contamination at a local commercial site. Edgar saw the need to improve the sampling technology and he contacted a vendor, Fabio Fabricator. They worked together and met often to make improvements. The improvements were successful and a year later Edgar discovered that Fabio applied for a new patent for the equipment. Edgar was upset because most of the ideas were his and changes to existing equipment. I told him that I wanted to be listed on the patent, and he said that he'd 'keep me informed of the status.' I don't think that's good enough, and I would like some advice on how to proceed.
11. Ethics and Pressure [Hypothetical]:

A pharmaceutical company approves funds for a project to test a new drug that could improve the reproductive performance of bovines in a tropical environment; a professor will be supervising a graduate student. Multiple herds are used to achieve accurate data and comparisons. When all the data is gathered at the end of the experimental period, the results in the commercial unit show no differences. The data on the commercial herd is absolutely necessary to achieve the objectives of the study. The student wants to finish his thesis and graduate because he has already been offered a job. The pharmaceutical company, on the other hand, puts pressure on the professor to finish the report so that he can submit it and publish the results.

*Extracted from Ethics and Pressure accessed at:*  
http://www.onlineethics.org/Resources/Cases/Pressure.aspx

12. Testing by a Co-Op Student [Hypothetical]:

Stress tests were needed for a redesigned component and many departments are busy. Jack Jacobs is a Co-Op for the XYZ Company. Jack is assigned the task of completing the tests and indicates that the component successfully passes the stress tests after completing the assignment on time. Upon completion of the test report, Jack returned to school but a catastrophic failure of the component happened raising questions about the accuracy of the data. What ethical issues, if any, does this scenario raise?

*Extracted from Teaching Engineering Ethics: Testing by a CO-OP Student accessed at:*  
http://www.onlineethics.org/Resources/Cases/co-op.aspx
13. From Fundamental Physics to the Private Sector [Hypothetical]:

Huge University and Ivy University emerged as the leaders in the new field of applying particle accelerators, matching each other patent for patent. Since the group at Ivy spearheaded the collaboration that wrote the original article in Popular Cross Disciplinary Research, they claimed the first patent, which secured the rights to the idea of using the technique for medical imaging. Groups at Ivy U. and Huge U. each began building an apparatus that would produce the specially treated gas to be used for the new MRI technique. Ivy finished first and patented its new machine. Huge finished a few months later, but its machine had the added capability of being able to produce and deliver the gas with the same machine. Huge also received a patent. Both universities are in positions to violate each other's patents.

Extracted from From Fundamental Physics to the Private Sector accessed at:
http://www.onlineethics.org/Resources/Cases/fundamental.aspx

14. Ford Pinto Car Accidents [Real-World]:

Ford Pintos produced during the 1960s-1970s had a defect where the automobile would explode from minor accidents (fender-benders). There were an estimated 500 burn deaths and countless injuries. These explosions were due to a defective fuel system design. Ford justified not resolving the defect from the use of cost-benefit analysis.

Extracted from THE FORD PINTO CASE: THE VALUATION OF LIFE AS IT APPLIES TO THE NEGLIGENCE-EFFICIENCY ARGUMENT accessed at:
http://users.wfu.edu/palmitar/Law&Valuation/Papers/1999/Leggett-pinto.html#Text
Convair was a subcontractor for McDonnell Douglas who designed the cargo door for the DC – 10 Jumbo Jet. During flight the cargo door burst open and the jet crashed in Paris, 1974. There were 346 casualties. Convair’s senior engineer directing the project, Dan Applegate warned Convair of the cargo door design flaws, but the top Management at Convair neither disputed the technical facts or the predictions made by Applegate. The liabilities and the cost of redesign were too high. Two years went by before the Dc- 10 Jumbo Jet incident.


Structural Engineer Bill LeMessurier designed welded joints for the CITICORP building in Citicorp Centre, N.Y (fifth highest skyscraper) 1977. However the contractor, Bethlehem Steel, changed them to bolted joints. Tests proved that the diagonal wind loading (with a return period of 16 years) can lead to the failure of the critical bolted joints and therefore the building. Recalculation was not done to check what the construction change would do. The building was strengthened by welding two-inch thick steel plates over each of the 200 bolted joints.

17. Three Mile Island Nuclear Power Plant Disaster [Real-World]:

The meltdown happened on Three Mile Island, PA on March 28, 1979. General Public Utilities and Metropolitan Edison were the companies responsible for the partial nuclear meltdown. Radioactive gases released to environment and the plant site was contaminated (14 year clean-up effort). The nuclear meltdown received a Level 5 on the International Nuclear Event Scale with Level 7 being the worst. A Combination of design and human error lead loss of coolant, which lead to a partial meltdown.


18. Hyatt-Regency Walkway Collapse [Real-World]:

The Hyatt Regency Hotel had two connected walkways collapsed and plunged into the lobby where a dance competition was taking place. The hotel is located in Kansas City, Missouri and the collapse occurred on July 17, 1981. There were 114 casualties and 216 injured, which made it at the time the deadliest structural collapse in U.S. history (only surpassed by the World Trade Center). The collapse occurred due to a flawed design change that doubled the load on the connection between the fourth floor walkway support beams and the tie rods carrying the weight of both walkways.

19. The Challenger Explosion [Real-World]:

Allan McDonald of Morton – Thiokol designed the solid–rocket booster for the Challenger. However, there was an issue with the field joints on previous cold weather joints, but the managers (not engineers) voted the seals could not be proven to be unsafe. Seal experts Arnold Thompson and Roger Boisjoly of Morton – Thiokol, explained to NASA representatives how upon launch the booster rocket walls bulge and the combustion gases can blow past one or even both of the Orings that make up the field joints. The rings char and erode, as had been observed on many previous flights. At NASA Headquarters on 28th Jan 1986 the crew cabin separated and fell into the ocean, killing all aboard.

Extracted from Engineering Ethics 4th Edition accessed at:
http://www.course.sdu.edu.cn/G2S/eWebEditor/uploadfile/20131017113401956.pdf

20. Ford Explorer/Firestone Tires [Real-World]:

The Ford Motor Company and Firestone experienced tire failures on 1999/2000 on Ford Explorers. This failure led to 250 deaths and 3000 serious injuries. Firestone recalled 6.5 million tires and Ford also did its own recall of Firestone tires. The defective tires triggered vehicle rollovers caused by separation of tread from body of tire. This occurred due to quality control issues at Firestone plant in Decatur, Illinois like using expired adhesives and appearance of bubbles in the body of the tire. Firestone management did not recall or stop production because they wanted to keep tire production high.

Extracted from Engineering Ethics 4th Edition accessed at:
http://www.course.sdu.edu.cn/G2S/eWebEditor/uploadfile/20131017113401956.pdf
21. Air France Concorde Crash – Flight 4590 [Real-World]:

An Air France plane crash took place in Paris, France on July 25, 2000. The crash killed 100 passengers, 9 crew and 4 bystanders. This was the only fatal Concorde accident leading to it being grounded 3 years later. There was a tire failure by metal strip dropped off by another plane on runway leading to the rubber debris damaging engines right above landing gear. The metal strip fell off due to workers disregarding correct repair protocols and there were structural issues with landing gear being placed right underneath engines.


22. Hurricane Katrina [Real-World]:

Hurricane Katrina was a tropical storm that devastated New Orleans, Louisiana on August 29-30, 2005. Approximately 700 deaths were reported and 75% of the city flooded with depths as high as 25 feet. New Orleans survived the storm with limited damage, but most of the damage was caused by flooding. The sustainably flooding was caused by a failure of levees due to soft soil foundations. Floodwalls were overwhelmed due to not accounting for very high hydraulic loading.

23. The Case of the Killer Robot [Real-World]:

Randey Samuels was a programmer at the Silicon Techtronic's Inc. who worked on programming robots. Bart Matthews was crushed to death when the robot he was operating malfunctioned and started to wave its hands violently. The Robot arm struck Matthews, throwing him against a wall and crushing his skull. They were both employees of Cybernetics Inc. in Silicon Heights when the accident occurred on February 16, 2006.

Extracted from Case of the Killer Robot accessed at:
http://www.onlineethics.org/Resources/19049/killerrobot.aspx

24. I-35W Mississippi River Bridge [Real-World]:

The Minnesota Department of Transportation was overall responsible for the I-35W bridge collapse. The bridge is located in Minneapolis, Minnesota and the collapse occurred on August 1, 2007 (opened in November 1967). There were 13 casualties and 145 injured (involving 100 vehicles) when the structure and deck collapsed into the river (during rush hour traffic). The bridge collapsed due to a design flaw so additional weight on the bridge caused the flaw to be exposed.

Extracted from Collapse of I-35 Highway Bridge Minneapolis, Minnesota August 1, 2007 accessed at:
25. BP (Deepwater Horizon) Oil Spill [Real-World]:

The deepwater Horizon drilling rig (well operator Transocean and contractor Halliburton) exploded and 4.9 million barrels of oil were spilled. This occurred at a BP-operated Macondo Prospect (Gulf of Mexico near Mississippi River Delta, U.S.) on April 20, 2010 - July 15, 2010. There were 11 casualties & numerous potential human health problems. Extensive damage to marine and wildlife habitats reduced fishing and tourism. This was the largest accidental marine oil spill in the history of the petroleum industry. There was a failure to contain hydrocarbon pressures in the well and primary cement failure as well as a failure of industry management (BP, Halliburton and Transocean) and government.


26. Fukushima Daiichi Nuclear Disaster [Real-World]:

The Tokyo Electric Power Company (TEPCO) had equipment failures, nuclear meltdowns and releases of radioactive materials following an earthquake and tsunami. This transpired in Ōkuma, Fukushima, Japan on March 11, 2011. There were 37 physically injured and 2 with radiation burns; therefore it was the largest nuclear disaster since the Chernobyl disaster of 1986 and the second disaster to measure 7 on the International Nuclear Event Scale. The failures occurred due to inadequate designs to handle some tsunamis and improper safety precautions by TEPCO.

27. Indiana State Fair Stage Collapse [Real-World]:

Indiana State Fair main stage collapsed by a wind gust from thunderstorm hit the stage’s roof. This occurred in Indianapolis, IN on August 13, 2011. There were 7 casualties and 58 injured from the collapse. The Sugarland outdoor concert was cancelled due to the collapse. The stage collapsed due to the inadequate capacity of the lateral load resisting system.

Extracted from Indiana State Fair Commission: Investigation Reports accessed at:

http://www.in.gov/sfc/2343.htm

28. GM Ignition Switch [Real-World]:

General Motors had to recall 2.6 million Chevy Cobalt vehicles. The ignition switch contained a design flaw that was demonstrated when owners placed weighted items on their key rings. The key would rotate into accessory mode and shut down all mechanical and electrical functions in the car including the air bags and power steering and brakes. This issue has caused at least 13 deaths. The problem was bought to the attention of GM in 2005, but engineers decided against a fix because it would take too long and cost too much money.

Extracted from The Long Road To GM’s Ignition Switch Recall accessed at:

http://www.npr.org/2014/03/31/297312252/the-long-road-to-gms-ignition-switch-recall