Writing Assignment: Ethical Case Study - Post-Mortem Report · For the writing assignment, we would like you to examine, in detail, an engineering ethics case study. A topic is presented below. GM Ignition Module – For want of a sufficient spring in a GM ignition module, the key assembly would turn “off” when bumped or when the car hit a bump. When turned off, the driver loses not only power steering and power brakes, but the airbag. GM, its engineers, and its lawyers knew about this problem – which has resulted in about 125 deaths – for at least ten years without fixing the problem. The paper should be 3000 words (minimum) in length plus the bibliography, although you are welcome to write more if you wish. Your best beginning sources will probably be the pages of the New York Times, the Los Angeles Times, and news magazines such as The Economist and Time. In some cases, significant papers have appeared in technical journals or books on the older cases. Please see Browne if you’re having problems finding material. A postmortem is a common task in engineering. It formalizes the process of learning from past experience. The post-mortem analyzes a project once it has ended and identifies what went well and what went poorly to improve the next project. This writing assignment asks you to write up a post-mortem of a well-known case of engineering failure, including not only the technical details of the failure but the ethical lapses that contributed to the failure. The Writing Task - Your post-mortem write up should explain how ethical lapses contributed to the engineering failure. Describe the actions, as an engineer, that should be taken (should have been taken) to come to grips with the failure, utilizing one of the ethical frameworks you have learned about as a guide in influencing or determining your course of action. Describe the advantages and disadvantages of the actions you propose and provide justification using one of the ethical frameworks as a guideline in the analysis process. Audience – Identify an audience for your post-mortem write up – this can be either a government regulatory agency such as the NTSB or the FDA, the company’s board of directors, etc. – and write your post-mortem analysis to that audience, including information and analysis that would be of most interest and of most use to them. The audience you are addressing must be clearly specified in your paper. Researching and Analyzing the Case - Choose one of the cases of engineering failure most related to your future career or professional interests. First, read about the case and understand the complex issues surrounding the case, including the parties in the case (corporate, government, etc.) and the various components including engineering, management, regulatory, socio-technical and ethical. Second, decide what the major issues surrounding the engineering failure are. Also, consider which of the ethical frameworks you have learned best explains the ethical lapses in this engineering failure case. Your postmortem should follow this structure: 1)Abstract: A short summary of the engineering failure, its consequences, why it happened, and what should be done to prevent future problems. Your abstract should also clearly identify your audience. This can be either a government oversight committee, a company’s board of directors, etc. Be sure that you write your postmortem to that specific audience, including information and analysis that would be of most interest and use to them. DO NOT begin to work on the Abstract until you have finished the first submission of the paper (due Week 3). 2)Background: The body of your postmortem should begin with a narrative about what happened (the engineering failure) and what its consequences were. 3)The Engineering Failure: This section should explain what technical, engineering, management, regulatory, and/or other socio-technical factors led to the engineering failure. 4)Ethical Analysis: The section should analyze the ethical lapses (i.e. stakeholders’ actions, decisions or interests, principles adopted or flouted, risks ignored and reasons for doing so, etc.) that contributed to the engineering failure. Try to brainstorm similar questions that apply to your own topic, and then answer them using at least one of the ethical frameworks you learned about in class to discuss the engineering failure. You might use this model to inspire your own ethical analysis (using duty ethics and/or utilitarianism and/or virtue ethics). 5)Recommendations: Drawing on at least one of the ethical frameworks, this section should first propose general ideas and then proceed to very specific recommendations about how to prevent similar failures from occurring in the future. What should have been done? What needs to be done in the future? Don’t make simple arguments (i.e. there needs to be more or better regulations); instead, specify what regulations should be imposed (and by whom), what the parameters of such regulations should be, and how they might be enforced (and by whom). Describe the advantages and disadvantages of the actions you propose and provide justification, again using at least one of the ethical frameworks. 6)Conclusion: Your conclusion should address what we have learned (or should have learned) from the engineering failure you discuss. What progress, if any, has been made to prevent similar failures in the future? What remains to be done? Common problems with the Ethical Case Study: ·Application of an Ethical Framework: You must apply a specific ethical framework to your chosen problem. However, before you apply it to your problem, you must give a general explanation of the framework. A good paper will answer the question: Why does this framework apply to the party at fault? ·Ethical Lapses: A listing of the ethical lapses involved in your case study must come after you state your ethical framework. Many students try to get ahead of themselves and start pointing out the ethical lapses early in the paper. You should identify how each ethical lapse violated your chosen ethical framework. ·Solutions – What not to do: Identifying solutions is one of the hardest parts of the essay. What you should not do is simply state what the party “should” or “should not” have done: Example: The Therac-25 technicians shouldn’t have ignored error messages. Example: Intel should have recalled the defective processor. Example: The Teton Dam engineers shouldn’t have built the dam in the first place. These “solutions” are painfully obvious, but more importantly, they are not helpful. They are simply opinions. ·Solutions – What to do: Propose a concrete, specific solution that will aid adherence to your ethical framework. Example: Intel should force its employees to attend a seminar highlighting the importance of upholding virtues in the company (Virtue Ethics). Example: The Hyatt-Regency Kansas City Hotel engineers [or the Teton Dam engineers] should require independent engineers to perform safety inspections at specific stages of design and construction (Duty/Rights Ethics). Example: The Therac-25 technicians should immediately report error messages and machine malfunctions to AECL authorities, discontinuing treatment until receiving confirmation that the problem has been analyzed and corrected (Duty Ethics). These examples represent concrete propositions. Remember, since you proved that violating [ethical framework] ultimately led to failure, then your solution should be aimed at facilitating adherence to [ethical framework]. Logic: Problem P will occur when X is violated Stop violating X → Problem P will not occur. Research Sources You should use substantial sources such as (but not limited to): The Economist The Los Angeles Times Nature The New York Times Scientific American Smithsonian Magazine Time Magazine The Wall Street Journal Any scientific or technical journal (such as the ASCE Proceedings, IEEE publications, etc). You should not use Google or Wikipedia as anything other than a place to find more substantial resources. You will probably find the most important relevant sites in the first twenty or thirty hits on Google, and the list of references in Wikipedia may be more important than the article itself. Nor should you use any small or local newspapers/periodicals unless they are very relevant (e.g. New Orleans’ Times-Picayune newspaper would be useful if you were doing a topic related to Hurricane Katrina). And you should not use random websites or blogs—the authors you cite should write with some institutional or governmental authority. In addition, papers that are obviously student papers from another university should be avoided – quite often the information or analysis is simply wrong. This admonition applies specifically to ethics “papers” from Texas A&M University and Brown University. Citations and List of References Correct documentation style is an essential component of excellent student work. All citations within the text of your paper (in-text citations) and the list of all sources cited at the end of your paper should be documented using the format documented in a separate document posted on BruinLearn. Like many other citation styles, the Name-Year system requires you to use parenthetical citations (author’s name/s and year of publication) at the end of sentences and paragraphs that quote, summarize, paraphrase, or otherwise use information from any source. You should also, where possible, use what is called a “signal phrase” to cite essential information about the source(s) in the lead-up to using research material. For example: According to a recent Harvard study of civilian deaths and injuries caused by drone-use in warfare, [blah blah blah…] (Henderson et al., 2017). or: A U.S. Department of Transportation report details the injuries caused by driverless cars: [blah blah blah...] (US DOT, 2018). At the end of your paper, include a complete list of References (it should be titled “References”) which should list only those sources you’ve actually cited in your paper. Reference Material If you have problems writing, you might want to consider a writing handbook, such as one of the following: ·An Engineer’s Guide to Technical Communication – Sherly A. Sorby and William M. Bulleit. Prentice Hall, 2005. ·Engineers' Guide to Technical Writing – Kenneth G. Budinski, ASM International 2001.The Essence of Technical Communication for Engineers: Writing, Presentation, and Meeting Skills – Herbert L. Hirsch. IEEE, 2000. ·A Guide to Writing as an Engineer – David F. Beer & David. McMurrey, Wiley 2009 (3rd Ed.) ·Making Sense in Engineering and the Technical Science: A Student’s Guide to Research and Writing – Margot Northey & Judi Jewinski. Oxford University Press, 2009 (3rd Ed.). ·Pocket Book of Technical Writing for Engineers and Scientists – Finkelstein, McGraw-Hill, 2007 (3rd Ed). Also, more general writing texts and reference works might be useful, including: ·Your English 3 Textbook ·The Elements of Style William Strunk, Jr., and E. B. White. Longman, 1999 (4th Ed). [Everyone should own Strunk and White…..] If you need a dictionary, a good online dictionary is available at http://dictionary.cambridge.org Finally, if you have quick questions on style, grammar, or punctuation you might fine the University of Minnesota Center for Writing’s Quicktips web page helpful: http://writing.umn.edu/sws/quicktips/quicktips.htm (Ignore the “Documentation” section since we use different forms of citation and bibliographic form than they do, but the rest of their pages are can be very helpful).