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SUBJECT: Ethical Violations of the Volkswagen Emissions Scandal

1 INTRODUCTION

This note details the 2015 Volkswagen emissions scandal and maps out the violations to the ethical codes from the IEEE Code of Ethics.

2 BACKGROUND

In mid-September, 2015, the United States Environmental Protection Agency (EPA) issued a notice of violation of the Clean Air Act to the German Volkswagen Group. Volkswagen was found to be intentionally programming their turbocharge direct injection (TDI) diesel engines to falsify their real-world emissions controls. The notice arose due to emissions tests finding the engines of selected Volkswagen vehicles of implementing a defeat device to only comply with the emissions limits under a dynamometer, but by a factor of up to 35 under real-world conditions [1]. The violations ultimately called for internal investigations, which led to several resignations and suspensions of Volkswagen board members. The automobile company also issued recalls to the affected vehicles and offered compensations to the owners.

2.1 Consequences

A study published in Environmental Research Letters estimated that approximately 59 premature deaths would have been caused by the excess pollution produced between 2008 and 2015 by vehicles equipped with the defeat device in the United States. [2] The excess nitrogen oxides also amplifies the effect of fine particulate soot that causes heart problems. The compounds may also contribute to respiratory problems. [3] Nitrogen oxides are also regulated as a pollutant for their contribution to acid rain, smog and the tropospheric ozone. [2]

3 CODE OF ETHICS VIOLATIONS

The emissions scandal violated several codes of ethics per the IEEE Code of Ethics. The IEEE lists 10 standards for engineering professionals to abide by; three of which have been quoted below for reference and their relevance to the unethical practices by Volkswagen:

- *To accept responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;*
- *To be honest and realistic in stating claims or estimates based on available data;*
- *To avoid injuring others, their property, reputation, or employment by false or malicious action;* [4]

The first IEEE standard listed was violated through the negative public health and environmental consequences listed in 2.1. After the Volkswagen group members were aware of the negative effects from excess diesel exhaust emissions, they deliberately suppressed its disclosure. The malicious attempts by Volkswagen to implement their defeat device to falsify the actual outputs also violated the latter two standards.

4 REFERENCES

- [1] Center, C. A. F. E. E. "In-Use Emissions Testing of Light-Duty Diesel Vehicles in the United States." (2014).
- [2] Barrett, Steven RH, et al. "Impact of the Volkswagen emissions control defeat device on US public health." *Environmental Research Letters* 10.11 (2015): 114005.
- [3] Brook, Robert D., et al. "Air pollution and cardiovascular disease." *Circulation* 109.21 (2004): 2655-2671.
- [4] "IEEE Code of Ethics." *IEEE Code of Ethics*. IEEE, Feb. 2006. Web. 5 Mar. 2017