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General Motors: The ignition switch from hell

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Background

Since incorporation in 1908, General Motors Corporation (GM) had developed iconic cars on US highways including the Cadillac, Corvette, El Camino, Malibu, and Camaro. Over the years, GM along with the automobile industry had overcome major financial, engineering, and ethical challenges. There were widely documented studies on the Ford Pinto fuel tank (Danley, 2005), Toyota accelerator recall (Meisenbach & Feldner, 2012), GM's ignition-switch problem, and Volkswagen's emission scandal (Elson, Ferrere & Goossen, 2015). The GM ignition switch case was unique because it unraveled over a period of almost ten years. On September 16, 2015, the Wall Street Journal reported that General Motors (GM) and US federal prosecutors had reached a criminal settlement in a case involving GM's handling of an ignition-switch defect that had led to the recall of millions of vehicles and was linked to more than 100 deaths. According to the settlement, GM would forfeit $900 million to the federal government and admit to charges of wire fraud and concealing information from the National Highway Traffic Safety Administration (NHTSA) as well as the public regarding safety defects in ignition switches that had been designed and manufactured with too-low torque. Did a decision by one engineer to introduce a faulty ignition switch culminate in dozens of deaths and injuries? While GM had accepted legal responsibility for the ignition-switch problem and made a commitment to take remedial action, there would be continued fallout within GM and among contractors, the automotive industry, the National Highway Traffic Safety Administration (NHTSA), the stock market, and other entities that had a stake in the industry.

Developing the Ignition Switch

The ignition-switch problem appears to have been set in motion in 2002 when GM engineer Ray DeGiorgio approved the manufacture of a new ignition switch by GM contractor, Delphi Mechatronics. The switch had been developed for the Delta Kappa platform vehicles. Before the ignition switch went into production, other engineers at GM involved in the development process appeared to have knowledge that the switch did not meet required specifications. DeGiorgio approved installation of the ignition switch in the Saturn Ion, Chevrolet Cobalt, Chevrolet HHR, and Pontiac G5. The ignition switch was also installed in certain models of the Saturn Sky and Pontiac Solstice (Valukas, 2014). The Valukas Report, prepared by Anton R.

Valukas and Jenner & Block LLP, was commissioned by GM's new CEO Mary Barra and its board to investigate and identify the root cause that led to installing the faulty ignition switch.

The Ignition Switch from Hell

By 2004, GM engineers had reviewed reports of the ignition-switch failure in which the engine could be shut off while driving. However, they determined that it was not a safety issue; the problem was attributed to various competing hypotheses, all non-safety related. At this point, it was a low priority customer inconvenience. The shut off would cause the airbags not to deploy as well as the loss of power brakes and power steering. The engineers had not realized the implications of the airbags not working when the engine was switched off (Valukas, 2014). DeGiorgio had labeled it as the 'switch from hell' (Valukas, 2014, p. 48). This approach to prioritization would affect how other decisions were made and resources allocated. Following increased customer complaints, the NHTSA started investigations on engine stalls and recalls.

On May 7, 2004, the NHTSA visited GM's Milford Proving Grounds where GM gave a presentation regarding the stalling of their vehicles. The objective was to demonstrate that drivers could still control the vehicle after a failure. Airbag deployment was not discussed in this meeting. In a June 3 meeting regarding engine stalls, the NHTSA advised GM that in a case where the number of failures was inordinately high, the factors should be considered but did not necessarily immunize a manufacturer from conducting a safety recall (Valukas, 2014, p. 73).

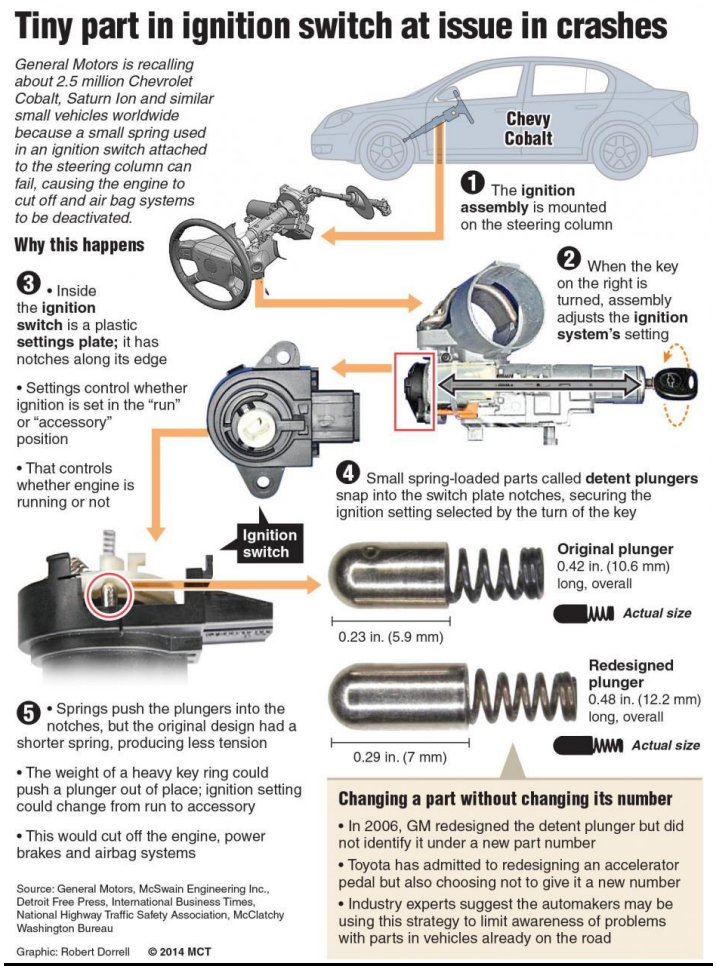
By 2005, GM investigators easily replicated the problem with the ignition switch. However, they determined that the magnitude of the problem did not warrant a recall for safety or customer service reasons (Valukas, 2014, p. 97). At that time, GM's Product Investigation Group (PI), whose mandate involved identifying and remedying safety issues, got involved with the problem. The PI opened and closed a one-month investigation after determining there was no safety issue. Various other committees proposed fixes, but found each of the options too costly to implement. In the meantime, dealers were advised to tell customers complaining of stalling to "remove heavy items from their key rings" and they would be given an insert for the key to reduce the chance that the ignition switch would rotate inadvertently. Customers had also complained of accidentally turning off the ignition with their knees (Isaacs, 2014).

Investigations later revealed the existence of internal emails warning of a safety problem and that a big recall would be required (Klayman & Beech, 2014). Cobalt had become GM's second best-selling car (Valukas, 2014, p. 21), but was facing negative reports related to stalling (Jensen, 2005). The death of a 16-year old Maryland driver, Amber Marie Rose, was the first reported case directly attributed to the defective ignition switch (Basu, 2014). However, GM's Vehicle and Process Integration Review (VAPIR) rejected a proposal to change the switch (Valukas, 2014, p. 92). By the end of 2005, there were numerous lawsuits involving fatalities from Cobalt and Ion vehicles that were related to airbags not deploying (Valukas, 2014, p. 103).

Legal Issues

Early in 2006, both internal and external counsel advised that engineers did not have a solid technical explanation (Valukas 2014, p. 104). GM settled the first litigation after determining that during a fatal accident the airbag did not deploy when the ignition was in accessory mode. GM's legal team had received the first case of airbag non-deployment in 2004. More deaths and litigation followed until GM filed for bankruptcy in 2009. On review, it was found that DeGiorgio, the engineer who approved the production of the faulty ignition switch, had misled internal investigators by later changing the faulty switch in the Cobalt without notifying anyone, and without documenting the part change. A comparison of the two switches in Figure 1 showed that there were minor differences between the two switches, but great consequences.

Figure 1: Differences in the two Ignition Switches



(Viper Law Group, 2016)

DeGiorgio later pleaded under oath that he could not remember anything about the change (Valukas, 2014, p. 101); this part change resolved the problem in new models. There is no evidence that anyone else at GM was aware of this change.

Far from the center of the crisis, Wisconsin State Trooper Keith Young, had independently solved the puzzle during an accident investigation when he discovered that the airbags did not deploy when the ignition switch turned to the 'accessory' position. In his report, Young noted that the ignition switch had been in accessory position when a car had hit trees, preventing the airbags from deploying. After searching the NHTSA website, Young had found five complaints of 2005 Chevrolet Cobalt ignition going off while the vehicle was being driven. Three of the complaints mentioned the knee or leg touching the ignition or key chain causing the engine to turn off (U.S. House, 2014).

Young's report was submitted to GM and saved along with other electronic legal files. During investigations, a GM employee acknowledged receiving the report and submitting it to the NHTSA as normal quarterly reporting (Valukas, 2014). In subsequent congressional hearings, it was discovered that NHTSA had also failed to identify this report (U.S. House, 2014). Another independent accident investigation by Indiana University Research Center, which had been contracted by NHTSA to conduct independent investigations on the ignition switch, concluded that the ignition switch was "jammed" in the "accessory" mode (U.S. House, 2014). This NHTSA-commissioned report differed with the State Trooper's opinion that the key position was the cause of the airbag non-deployment, instead stating it was 'not known' if the switch position accounted for the airbags not deploying (NHTSA, 2015, p. 10). Based on the findings, NHTSA decided not to escalate the issue to a formal investigation (NHTSA, 2015, p. 11). The Indiana University report was prepared and submitted to NHTSA in 2007 and 2008 respectively. However, executives at GM were not aware of the existence of this report until 2012, when it was presented by a plaintiff's expert.

Financial Crisis

As early as 2000, GM was experiencing intense competitive pressure and declining performance and had initiated a cost-cutting strategy. GM's key performance indicators and ratio analysis from 2000 to 2009 (Table 1) showed that GM's performance continued to deteriorate over the decade until it filed for Chapter 11.

By 2005, GM had negative margins, negative returns, and was approaching financial distress. Some GM employees observed that cost cutting permeated the fabric of the GM culture and cost-cutting and time-cutting principles known as the 'Big 4' were emphasized over quality (Valukas, 2014, p. 250). By 2006, GM's financial performance had worsened. GM had also hedged its bets on Cobalt's performance (Valukas, 2014, p. 21). On December 19, 2008, the Federal Government announced that GM would receive $13.4 billion from the Troubled Asset Relief Program (TARP). On February 17, 2009, GM and Chrysler requested nearly $22 billion in additional loans from the U.S. government. This was followed by the resignation of Rick Wagoner, GM's Chief Executive. GM received another $2 billion in government aid. A final

reorganization plan outside of bankruptcy involved reducing bond debt and cutting approximately 21,000 more jobs, with GM emerging as a nationalized company under the U.S. government. On May 22, GM borrowed an additional $4 billion from the U.S. Treasury, pushing the total government funding to $19.4 billion. On June 1, GM filed for bankruptcy with the U.S. government pledging another $30 billion of taxpayer dollars to restructure the company. On July 10, the new GM emerged from Chapter 11 bankruptcy protection, with majority ownership by the U.S. Treasury. The new GM, a separate legal entity, had no legal responsibility over injuries resulting from manufacturing defects prior to July 2009 (Spagnoli, 2014).

Table 1: Old GM's Financial Performance

Ratios										
Fiscal Period Ending	**12 m Dec-31-2000**	**12 m Dec-31-2001**	**12 m Dec-31-2002**	**12 m Dec-31-2003**	**12 m Dec-31-2004**	**12 m Dec-31-2005**	**12 m Dec-31-2006**	**12 m Dec-31-2007**	**12 m Dec-31-2008**	**LTM 12 m Mar-31-2009**
Profitability										
Return on Assets %	1.9%	0.6%	0.5%	0.7%	0.7%	(1.2%)	0.9%	(1.2%)	(7.0%)	(10.0%)
Return on Capital %	3.3%	1.1%	0.9%	1.2%	1.1%	(1.8%)	1.6%	(7.4%)	NM	NM
Return on Equity %	17.1%	4.8%	13.2%	17.7%	10.1%	(48.7%)	(37.4%)	NM	NM	NM
Return on Common Equity %	17.1%	6.4%	14.8%	19.4%	10.3%	(50.6%)	(53.8%)	NM	NM	NM
Margin Analysis										
Gross Margin %	14%	9%	8%	9%	16%	5%	9%	7%	4%	(1%)
SG&A Margin %	9%	7%	7%	6%	13%	7%	7%	8%	10%	10%
EBITDA Margin %	12%	9%	10%	11%	11%	3%	8%	3%	(3%)	(7%)
EBITA Margin %	5%	3%	4%	4%	4%	(4%)	3%	(2%)	(9%)	(14%)
EBIT Margin %	5%	2%	2%	3%	3%	(5%)	2%	(2%)	(9%)	(14%)
Net Income Margin %	2%	0%	1%	2%	1%	(5%)	(1%)	(22%)	(21%)	(26%)
Asset Turnover										
Total Asset Turnover	1x	1x	1x	0x	0x	0x	1x	1x	1x	1x
Fixed Asset Turnover	5x	4x	5x	5x	5x	5x	5x	4x	4x	3x
Accounts Receivable Turnover	29x	25x	30x	31x	27x	25x	24x	20x	17x	15x
Inventory Turnover	13x	12x	14x	14x	13x	12x	11x	11x	10x	9x
Short Term Liquidity										
Current Ratio	1.0x	1.4x	1.7x	1.8x	1.8x	2.5x	1.0x	0.9x	0.6x	0.5x
Quick Ratio	0.8x	1.1x	1.3x	1.5x	1.5x	1.9x	0.5x	0.5x	0.3x	0.2x
Avg. Days Sales Out.		14.3	12.3	11.8	13.5	14.5	15.1	18.4	21.5	25.1
Avg. Days Payable Out.	47.2	51.7	47.9	49.8	55.1	59.6	62.1	62.2	67.4	71.2
Avg. Cash Conversion Cycle	(6.0)	(8.0)	(9.5)	(11.6)	14.1)	(14.5)	(14.6)	(11.8)	(9.9)	(5.5)
Long Term Solvency										
Total Debt/Equity	469%	813%	2,822%	1,063%	1,082%		NM	NM	NM	NM
Total Debt/Capital	82%	89%	97%	91%	92%	95%	110%	500%	NM	NM
Total Liabilities/Total Assets	90%	94%	98%	94%	94%	97%	102%	124%	194%	210%
EBIT / Interest Exp.	11x	6x	6x	3x	2x	NM	2x	NM	NM	NM
EBITDA / Interest Exp.	27x	28x	39x	11x	9x	2x	6x	2x	NM	NM
Altman Z Score	0.9x	0.9x	1.0x	0.9x	0.8x	0.8x	1.2x	0.8x	-0.3x	-1.1x

Growth Over Prior Year										
Total Revenue	5%	(8%)	5%	4%	5%	(1%)	6%	(12%)	(17%)	(28%)
Gross Profit	4%	(37%)	(7%)	13%	87%	(71%)	103%	(28%)	(59%)	NM
EBITDA	(1%)	(28%)	16%	9%	7%	(74%)	182%	(62%)	NM	NM
EBITA	(16%)	(50%)	61%	(5%)	10%	NM	NM	NM	NM	NM
EBIT	(14%)	(63%)	(10%)	68%	16%	NM	NM	NM	NM	NM
Net Income	(26%)	(87%)	162%	145%	(30%)	NM	NM	NM	NM	NM
Tangible Book Value	110%	(86%)	(2%)	678%	10%	(52%)	NM	NM	NM	NM
Common Equity	46%	(35%)	(65%)	271%	8%	(46%)	NM	NM	NM	NM

(S & P Capital IQ, 2016)

Early in 2010, GM issued a power-steering recall for Cobalts that was not related to the ignition-switch problem (Valukas, 2014, p. 139). The recall was significant because GM had stated earlier that a moving stall at highway speeds was not a safety issue. GM started to emerge from financial distress with the rest of the US economy. On April 20, GM made a final loan repayment, with the U.S. government continuing to hold a 61% stake in common and preferred stock. Later in October, GM received a warning from outside counsel regarding the risk of punitive damages related to the Cobalt airbags (Valukas, 2014, p. 140).

By 2011, there was sufficient concern for the ignition-switch problem that the matter was referred to GM's high level Product Investigations Unit (PIU). This group had access to relevant information regarding the non-deployment of airbags but did not request, and was not given, information on fatalities and injuries (Valukas, 2014).

Issuing the Recall

By 2012, definitive results of an accident evaluation pointed to the ignition problem and the failure of airbag deployment. In the meantime, GM was warned by lawyers about possible punitive damages in West Virginia. On July 25, a newly hired in-house counsel, Nabeel Peracha, asked why GM had not issued a recall. The counsel was informed that the relevant engineering department did not know how to fix the problem and the incidents were few (Valukas, 2014, p. 185). Despite the Indiana University report explaining the problem, the PIU had more questions. Though the severity of the issue was understated, the PIU started looking for a resolution. On September 4, when a new investigative team, Red X, requested access to a crashed Cobalt, they were informed that the vehicles were quarantined because of the pending lawsuits (Valukas, 2014, p. 188). When asked to propose new switch requirements and a timeline, DeGiorgio provided a protocol and 18-24 month timeline. DeGiorgio did not disclose to the taskforce that the problem had been fixed (Valukas, 2014, p. 189).

There was an increased sense of urgency in 2013 and a product liability expert was hired. The expert took six months to conclude that the ignition switch was inadvertently turning to the accessory mode, disabling the airbags (Valukas, 2014, p. 193). During the same period, DeGiorgio, in a deposition, could not recall that the ignition switch had been changed. GM's

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financial performance had improved, allowing the company to repurchase the last of their government-owned stock. In December, GM's Recall Committee, the Executive Field Action Decision Committee comprised of three vice presidents, decided to wait another six weeks to obtain more information before recalling affected vehicles.

Victims

Following recommendations from internal and external counsel, GM proceeded to settle claims with victims and their families (Valukas, 2014, p. 113). Many victims were young drivers; low-priced cars like the Cobalt and Saturn Ion had been marketed to this first-time buyer category. Among the victims, 15 were under 25 years of age, and 18 were women (Krishner, 2014). In the meantime, law enforcement did not know about the ignition-switch problem; police files and state highway patrol records had attributed the accidents to alcohol, failure to wear seat belts, and other causes that often led to criminal charges for the drivers. These had other ramifications to the victims and their families including intoxication, manslaughter, and homicide charges, as well as bankruptcies (Ruiz, Ivory & Stout, 2014). There was also alleged intimidation of victims' families seeking resolution. One family's attorney claimed of intimidated by GM with threats for sanctions and hefty legal fees (Modica, 2015).

On June 5, 2014, General Motors announced it would implement a compensation program for those who had lost loved ones or suffered serious physical injuries as the result of an ignition-switch failure (GM, 2014). This was followed by a compensation protocol by the fund's administrator, Kenneth Feinberg (Lasser, 2014). Claims for economic injury or other allegations of damage were not included in the protocol. By the end of 2014, $594.4 million had been approved for 399 death and injury claims. GM noted that, though not required by law to approve cases that took place before old GM's bankruptcy in June 2009, it had opted to make these payments (Shepardson, 2015). Early in 2016, sixteen lawsuits were initiated against GM at the Manhattan federal court. This was the first set of claims filed demanding that GM pay for deaths and injuries of victims (Fisk, 2016). A sample of the Bellwether cases that formed the basis for subsequent cases illustrated the variety of accidents involved (Figure 2).

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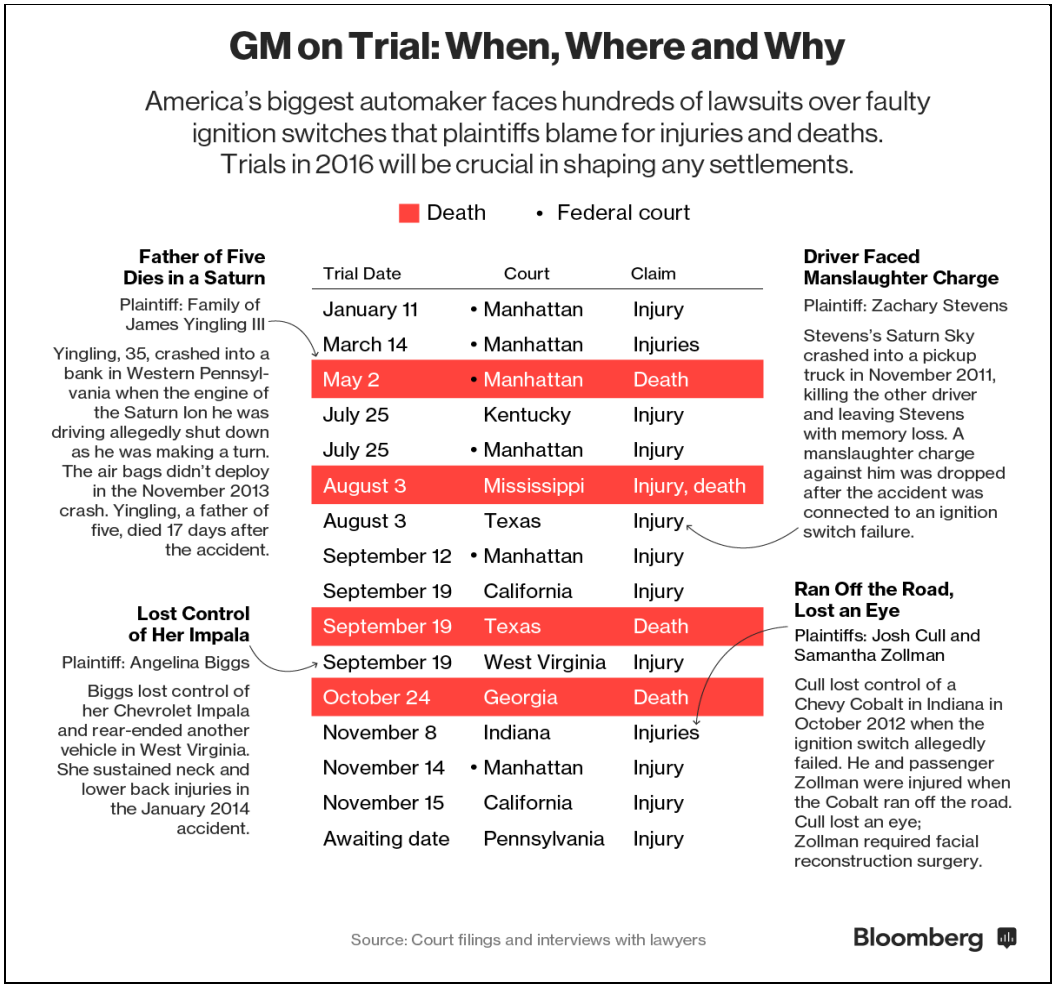
Figure 2: Bellwether Cases



(Fisk, 2016)

Musical Chairs in the C-Suite

During the ignition-switch crisis GM had a turnover of five CEOs. Richard Wagoner, who became CEO on March 30, 2000, was ousted on March 30, 2009. Following pressure from the government as a precondition for financial bailout, GM was asked to change its leadership (Welch, 2009). Wagoner's tenure was eventful, coming at a time when the auto industry was facing intense compensation and legacy problems. This culminated in a deep financial crisis. Fritz Henderson, Wagoner's successor, served only six months until December 1, 2009; he was ousted when the board decided they needed to push restructuring reforms at a faster pace (Bailey & Kim, 2009). When the new CEO Edward Whitcare took over, it was on a short-term basis and the search for a new CEO started immediately (Valdes-Dapena & Isidore, 2009). Dan Akerson was appointed CEO on September 1, 2010, and immediately took GM through recovery and back to profitability until he stepped down as chairman and CEO on January 15, 2014 (GM,

2014). There is limited information on the involvement or non-involvement of these executives with the ignition-switch problem.

The Board

Most internal findings regarding the ignition-switch problem were discovered following Valukas' report; this investigation had been requested by GM's CEO Ms. Barra and the Board of Directors. In the report, concerns were raised regarding the Board's role in safety issues. The report found that over the years, the Board was not informed of any issues related to the ignition switch and only found out in February 2015 (Valukas, 2014, p. 233). In June 2015, a Delaware court dismissed a shareholder lawsuit against the Board for failure to perform their oversight role. The Board's ignorance of the problem during the years, even in light of newspaper reports, was disquieting. Jennings and Trautman (2015) offer some context from a former member of GM's Board, Ross Perot:

> *If you see a snake, just kill it – don't appoint a committee on snakes. At GM, if you see a snake, the first thing you do is go hire a consultant on snakes. Then you get a committee on snakes, and then you discuss it for a couple of years. The most likely course of action is -- nothing. You figure, the snake hasn't bitten anybody yet, so you just let him crawl around on the factory floor. We need to build an environment where the first guy who sees the snake kills it (Moore, 1988).*

NHTSA

The role of the NHTSA had come into focus. The NHTSA, an agency within the Department of Transportation, was established under the Highway Safety Act of 1970. NHTSA's primary responsibility was to reduce deaths, injuries and economic losses resulting from motor vehicle crashes. NHTSA was also responsible for investigating safety defects in motor vehicles as well as setting and enforcing fuel economy standards (NHTSA, 2016).

The NHTSA contacted GM as early as 2004 regarding stalling vehicles and faulty airbags (Valukas, 2014, p. 72). Both the NHTSA and GM agreed, at this point, that engine stalling was not, per se, a safety issue. In 2005, following a fatal crash of Amber Rose in Maryland involving a Cobalt, the NHTSA opened its first crash investigation (NHTSA, 2015, p. 9). However, a contractor assigned to the investigation, Calspan Corporation, could not identify the problem of airbag non-deployment but noted that the vehicle was in the accessory power mode (U.S. House, 2014, p. 12). Since GM did not make a defect determination, the NHTSA was not notified (NHTSA, 2015, p. 11). By 2007, the NHTSA had identified 43 crashes resulting in 27 injuries and 4 fatalities that were related to the airbag. In the same year, NHTSA officials attended a GM-facilitated training workshop on frontal-airbag-sensing technology. However, in subsequent congressional testimonies, NHTSA officials could not recall whether they attended these sessions (US, 2015, p. 12).

In October 2007, the Kansas City Star published a series of articles criticizing the NHTSA's handling of the airbag problem (Casey & Montgomery, 2007; U.S. House, 2014, p. 24). However, the NHTSA decided that more evidence was needed prior to opening a formal investigation. Despite additional complaints in 2008, the NHTSA determined that there was no specific evidence available to change its decision. In 2009, there were 15 reported cases of airbag non-deployments (U.S. House, 2014, p. 29). However, the NHTSA only requested for additional information regarding a specific fatal case in Pennsylvania (U.S. House, 2014, p. 29). In subsequent years until 2014, the issue of airbag non-deployment fell off the NHTSA's radar (U.S. House, 2014, p. 34).

In February 2014, the NHTSA ordered GM to provide documents related to the ignition switch. In May 2014, the NHTSA announced a settlement with GM, stating GM had agreed to pay a record $35 million civil penalty and to take part in unprecedented oversight requirements as a result of findings from NHTSA's timeliness investigation regarding the Chevrolet Cobalt and the automaker's failure to report a safety defect in the vehicle to the federal government in a timely manner (NHTSA, 2014).

The NHTSA's conduct during investigations came under specific criticism from the Congressional House Committee on Energy and Commerce. The committee observed that the NHTSA had provided as much documentation, if not more, for work related to the Kansas City Star responses, as it had provided for the Cobalt investigation. The NHTSA was criticized for failure to keep pace with the technology it regulated, maintaining information silos, having a tunnel vision, and adopting a "NHTSA shrug." The agency did not hold itself to the same standard of accountability as those it regulated. This led to a tendency to deflect blame and point the finger at others rather than accept responsibility and learn from its own failures. It is was no different than the GM salute (U.S. House, 2014, p. 43). Subsequently, the NHTSA did an internal review and proposed recommendations for improvements in its defects investigations (NHTSA, 2015).

Internal and External Legal Counsel

Questions were asked regarding the role of external and internal legal counsel at GM. As early as 2006, both internal and external counsel had signed off on the settlement of a case involving airbag non-deployment. The main justification was a lack of a solid technical explanation (Valukas, 2014, p. 113). The lawyers continued to advise GM to settle subsequent cases. There was criticism of the lawyers' procrastination, hands-off approach, and inability to understand full ramifications of the ignition-switch problem on public safety (Steinzor, 2015). In a related settlement, GM's lawyers authorized a $5 million settlement (the maximum they could authorize without referring it to the chief counsel) involving an airbag-related fatality (Valukas, 2014, p. 207; Vlasic, 2015). The general counsel, Michael Milliken, did not know about the ignition-switch problem until 2014 (Steinzor, 2015, p. 461). Viscussi (2015) provided context to GM's legal environment. In a confidential memo, GM had admonished staff to avoid controversial "judgment words." The memo explained that documents used for reports and presentations were to contain only engineering results, facts, and judgments. The documents would not contain

speculations, opinions, vague nondescriptive words, or words with emotional connotations. Examples of forbidden words provided in the memo were seemingly accurate characterizations of potentially recallable cars. Such words included asphyxiating, bad, critical, dangerous, defect, defective, failure, maiming, potentially disfiguring, problem, safety, safety-related, serious, and unstable.

Fallout

In the end, 15 employees deemed to be at fault in the Valukas report were fired while 5 others were disciplined (Valukas, 2014, p. 251). A fund was established to compensate crash victims. GM's CEO, Mary Barra, acknowledged that the company had taken extraordinary steps with the recalls, implemented safety and engineering changes, and she was confident that GM was on the right path to a defect-free company (Valukas, 2014). Barra stated her intent to keep the painful experience permanently and ensure it never happened again (Valukas, 2014).

Management by Committees

The ignition-switch debacle took almost a decade to unfold. As early as 2001, it was clear to the contractors and GM's own engineers that the ignition switch did not meet the required specifications. GM's engineering focal point is alleged to have signed his emails with "Ray (tired of the switch from hell) DeGiorgio" (Valukas 2014, p. 48). Over the next decade, multiple individuals and teams within GM appear to have possessed sufficient data points to make a decision. Institutional failure within GM (Valukas, 2014) and at the NHTSA (Steinzor, 2015) has been widely documented. Other corporate committees and taskforces seem to have had relevant access to the problem but were unwilling to take action or see the issue for what it was. GM's own CEO described the "GM nod" as when everyone nodded in agreement to a proposed action, but then left the room and did little (Nelson, 2015; Valukas, 2014, p. 154). The listing below is a chronological development of committees' deliberations and their inaction.

Chronological List of Committee Actions

Chronology of Committee Actions
2003: Field Performance Report on intermittent stalls opened and then closed without action on the basis that another report existed.
2004: High Performance Vehicle Operations Group identifies moving stalls in the Cobalt.
2004: Current Production Improvement Team designates the problem as non-safety related.
2005: Product Investigations Group opens and then closes investigation.
2005: Vehicle Production Investigation Review, a cross-sectional team of system engineers, recommends a higher mount of the ignition switch after realizing the ignition-switch problem would be too expensive to fix.
2005: GM Product Investigations continues to assess engine stall issues.
2005: GM Brand Quality Group learns of moving stalls, but fails to identify problem.
2007: Wisconsin State Trooper, Keith Young and Indiana University researchers independently identify the non-deployment of airbags when ignition switch moves from "run" to "accessory."
2007: Field Performance Assessment team looks at the ignition-switch problem.
2013: Executive Field Action Decision Committee refuses to authorize recalls on the basis of insufficient information. EFADC discovers old Problem Resolution and Tracking System (PRTS) reports dating to 2004 and starts issuing recalls for a variety of vehicles.
2014: Service parts recall issued.

While the committees started to acknowledge the problem over time, they failed to agree on a meaningful decision due to a culture of preference for cost over quality. There appeared to be silos in the functional and hierarchical relationships. Steven Rattner, the TARP bailout czar during the financial crisis, found stunning cultural deficiencies. At GM's Renaissance Center headquarters, the top brass were sequestered on the uppermost floor, behind locked and guarded glass doors. Executives housed on that floor had elevator cards that allowed them to descend to their private garage without stopping at any of the intervening floors; no mixing with the drones (Adamo, & Cendrowski, 2009).

Mary T. Barra

At the center of the debacle was the role of DeGiorgio, the engineer who approved the production of the faulty ignition switch. After realizing the mistake, DeGiorgio replaced the faulty without informing anyone. This may have caused even more avoidable deaths and injuries. Throughout the years of indecisiveness in the upper echelons was the lingering question of who knew what and when. On January 31, 2014, GM ordered recalls for Cobalts and Pontiac G5s. At the center of the recall crisis was GM's new CEO, Mary T. Barra, appointed CEO on January 15. Barra, whose father had worked in GM for 39 years (Tankersley, 2011), was a GM veteran in her own right. Having graduated with a Bachelor of Science degree in Electrical Engineering from Kettering University and a MBA from Stanford (GM, 2016), Barra had developed her career at GM. Before becoming CEO on January 15, 2014 (the 5th CEO in six years), she had prior roles as the Executive VP Global Product Development, Purchasing & Supply Chain since 2013 and Senior VP Global Product Development since 2011 (Valukas,

2014). According to court documents, Barra was aware of the recall process because of an issue with the Volt in 2011. However, her earlier GM roles did not involve decisions pertaining to product recalls (Valukas, 2014).

Regarding the Cobalt ignition issue Barra stated, "It was a very serious situation, and there were questions and issues, so we worked hard to focus on the customer and be transparent, and do the right thing." She acknowledged that GM had uncovered a "pattern of incompetence and neglect" in its failure to recall millions of vehicles with faulty ignition switches (Kennedy, 2015). In the same interview she noted that the internal investigation led by former U.S. attorney Anton Valukas, "revealed no conspiracy to cover up the facts" or any evidence that employees might have made a tradeoff between safety and cost issues (Valukas, 2014). Despite these assurances, there was work to be done. It was now Barra's responsibility to take corrective action, restore stakeholder confidence and define a new path for the new GM.

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