Case Study: ValuJet 592 and Failure to Adequately Train Employees

An Example of Corporate Greed, Loss of Life, and High Stakes Litigation

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This case study chronicles the events leading up and following the tragic ValuJet 592 airlines crash in 1996. This accident is consistent with Perrow's (1999) prophecy that accidents are attributed to systemic failures in supervision, regulatory oversight, and human carelessness. The airline's maintenance contractor and three employees were prosecuted by federal and state authorities. The lynchpin issue for the federal prosecution case was failure to adequately train maintenance employees.

The Accident.

Flight 592 departed Miami International Airport on May 11, 1997 at 2:04 EST heading south towards the Florida Everglades. The pilot planned to eventually turn north over the Gulf of Mexico. The destination is Atlanta, Georgia and the weather was balmy and sunny, and by all accounts the weather was optimal for flying. A photograph of the crash site of Flight 592 is provided above.

Here is a transcript of the pilots' voices eight minutes before the crash:

2:09:02 [sound of click]

2:10:07 "what was that"

2:10:08 "I don't know"

2:10:12 ** ("bout to lose a bus?")

2:10:15 "we got some electrical problem"

2:10:17 yeah

2:10:18 "that battery charger's kicking in. ooh, we gotta"

2:10:20 "we're losing everything"

2:10:22 "we need to go back to Miami"

2:10:23 [sounds like shouting from the passenger cabin]

2:10:25 "fire, fire, fire, fire" [from a female voice in the cabin]

2:10:27 "we're on fire, we're on fire"

2:10:28 [sound of tone similar to landing gear warning horn for three seconds]

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2:10:30 ** to Miami [calling Miami control tower requesting immediate return to airport]

2:10:36 [sounds of shouting from passenger cabin subsides]

2:10:42 [sound of horn]

2:10:44 "fire"

2:10:46 [contacting Miami control tower] uh, smoke in the cockpit… smoke in the cabin

2:10:52 [sound like cockpit door moving]

2:10:58 "OK, we need oxygen, we can't get oxygen back here"

2:11:10 [sounds of shouting from passenger cabin]

2:11:11 "completely on fire"

2:11:14 [sounds of shouting from passenger cabin subsides]

2:11:21 [sound like loud rushing air]

About eight minutes from takeoff, Flight 592 made a vertical right bank and nosedived into watery grave 17 miles south of the airport. Two pilots, three attendants and 105 passengers perished instantly. What could have precipitated such a tragedy?

Events Leading Up to the Accident

The culminating event of this tragic occurrence begins with ordinary people doing their job at the SabreTech maintenance facility located in Miami. ValuJet had a contract with SabreTech to refurbish and provide ongoing maintenance. One of the tasks required mechanics to remove "expired" oxygen generating canisters from the aircraft. These canisters used a small explosive device to trigger the generation of oxygen. When detonated, the shell of the canister will heat to as much as 450-500 ° Fahrenheit. A heat shield protects the canister from coming into contact with the aircraft. Face masks attached to the canister would drop from the ceiling in the event of sudden decompression in the aircraft.

According to a policy directive provided by ValuJet to SabreTech, the shipping of unexpended canisters requires the attachment of a shipping cap on the firing pin. Failure to attach the cap could result in a fire risk. According to National Transportation and Safety Board (NTSB, 1997), 72 SabreTech employees, many who were contract employees, logged over 1910 hours replacing canisters on three ValuJet aircraft. Langewieche (1,998) described the working culture at SabreTech then as a "world of boss men and sudden firings, with few restrictions or guarantees for the future [employment]" (p. 86). These mechanics, working on a tight timeline, placed canisters without the plastic safety caps in five cardboard boxes. Some of the heat shields had been removed along with the lanyard used to pull the firing pin. Many of the canisters still contained oxygen and could be "fired," even though they were "expired" due to age. Routine records noted that two mechanics signed off on the work for one or more supervisors, indicating that safety caps had been attached. Green tags were affixed to the boxes indicating that the

contents were "repairable," which was not the case due to an automatic expiration date on the oxygen canisters.

The cardboard boxes remained for several weeks on a SabreTech rack designated for ValuJet parts. The boxes were then moved to the shipping and receiving department and left on the floor in an area assigned to ValuJet property. An inspection by a potential vendor (Continental Airlines) resulted in a cleaning up of the work area. A shipping clerk decided to ship the boxes of canisters to ValuJet in Atlanta, and did so without authorization, believing the green tags meant "unserviceable" or repairable." Given no information to the contrary, the clerk presumed that the canisters were empty. A shipping load was made up that included the boxes of canisters and three aircraft tires. The shipping ticket read "Oxy Canisters" followed by "Empty" in quotation marks. These canisters are considered "hazardous materials" and shipment by air is prohibited unless prior authorization is obtained from OSHA.

A few days later, the boxes and tires were delivered to the ValuJet ramp agent for acceptance and boarding on ValuJet 592. The ramp agent and the pilot both failed to catch the tragic mistake of loading the boxes of canisters along with the inflated tires. The boxes were stacked around one of the larger tires that were lying on the cargo floor, with the other tire leaning against the bulkhead.

The Investigation

The investigation into the cause of this accident included the National Transportation Safety Board (NTSB), the Federal Aviation Administration (FAA), the Federal Bureau of Investigation (FBI), the Dade County State Attorney's office, the Metro-Dade Police Department, the office of the United States Attorney, and the Environmental Protection Agency (EPA). Criminal indictments were filed at state and federal levels, as well as civil suits by family members of those who perished in the crash.

The investigation by the NTSB (1997) concluded that the probable cause of the accident was a fire in the forward cargo hold by the "actuation of one or more oxygen generators being improperly carried as cargo" (p. x). This conclusion is supported, in part, by several FAA tests in which oxygen canisters and tires placed together in a simulated cargo space caught fire when detonated. Temperatures were measured as high as 2000 °F, about 13 minutes after the canister was detonated, with peak temperatures at 3,000 after 16 minutes (NTSB, 1997, p. 54)

Fault finding was extensive and broad in scope (NTSB, 1997):

- The failure of SabreTech to properly prepare, package, and identify unexpended chemical oxygen generators before presenting them to ValuJet for carriage.
- The failure of ValuJet to properly oversee its contract maintenance program to insure compliance with maintenance training, and hazardous materials requirements and practices.
- The failure of the Federal Aviation Administration (FAA) to require smoke detection and fire suppression systems in cargo compartments, to monitor ValuJet's oversight of SabreTech maintenance operation, to develop programs that would address potential known hazards with oxygen canisters, and the provision of hazardous materials training.

Training at ValuJet and SabreTech

According to the NTSB (1997) final report, ValuJet employed six full-time instructors in maintenance at the time of the accident. New employees in maintenance are required to complete a 4-hour orientation for deicing and personal safety and a 32-hour technical training program for each type of aircraft they will encounter. Additional training may occur and probationary employees are assigned to lead mechanics for on-the-job training. Recurrent training is required for all ValuJet employees who are authorized to make inspections. Training for contract employees was conducted by a ValuJet employee. Documentation is maintained in the employees personnel file.

The manager of maintenance training was trained by a ValuJet employee on ValuJet policies and procedures, who then trained SabreTech employees. The NTSB (1997) accident report briefly outlines the general maintenance training that SabreTech personnel received. The report emphasizes the fact that ValuJet "did not provide a hazardous materials training program to its employees regarding the shipping of hazardous materials, or was such a program provided by ValuJet" (NTSB, 1997, p. 65). The hazmat training at SabreTech was limited to disposal of hazardous wastes, but not the shipping of aircraft parts such as oxygen canisters. The shipping clerk had received minimal hazardous material training, but nothing regarding the shipment of aircraft parts. Lead mechanics and higher at SabreTech were "required to verify that they had read the SabreTech FAA-approved repair station inspection procedures manual. A statement that the employee had done so was entered into their personnel file (NTSD, 1997, p. 66).

Except for the shipping clerk, nothing in the NTSB (1997) accident report concluded that any of the employees in the chain of events, including the ramp agent and pilots, received the required training.

Criminal and Civil Proceedings

On July 13, 1999, the U.S. Attorney in Miami announced a 24-count federal indictment charging four defendants with various crimes. The indictment charged SabreTech and three employees, Daniel Gonzalez, Eugene Florence, and Mauro Valenzuela with conspiracy to make false statements to the FAA, an offense punishable by up to five years in prison and a $250,000 fine. The indictment alleged that the defendants and others known and unknown to the grand jury, entered into a conspiracy, the goal of which was to place the short-term business and monetary interests of SabreTech ahead of public safety concerns in the conduct of the aircraft repair station.

The federal indictment further stated that Gonzalez, who was SabreTech's vice president and director of maintenance, supervised maintenance and repair work, including its documentation, to rush and compress the work, even if it meant skipping prescribed work steps and falsely asserting that work has been completed. Maintenance workers bowed to managerial and supervisory pressure from Gonzalez and others to falsify and prematurely certify the performance and completion of work. Supervisors "pencil whipped" their signatures to forms signed by maintenance workers attesting that tasks associated with the tragedy had been completed according to documented specification on work order 0069.

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The federal indictment further specified that SabreTech removed oxygen generators from two ValuJet Airlines aircraft and handled them with gross disregard for their hazardous nature, and that Florence and Valenzuela signed off on work cards falsely indicating that the installation of shipping caps, which could have prevented the oxygen generators from igniting, had been accomplished, when, in fact, the shipping caps had not been installed. SabreTech employees delivered some of the unexpended oxygen generators contained in five boxes for loading on ValuJet 592.

On the same date of the federal indictment, the state attorney in Miami announced the filing of 221 criminal counts against SabreTech. The company was charged with one count of illegal transportation of hazardous waste, a third-degree felony; 110 counts of third degree felony murder, a second-degree felony and 110 counts of manslaughter, a second degree felony. It is the first time in the history of aviation that an airline in the United States was prosecuted for a crime. The criminal charges are based on the actions of SabreTech and its employees in the handling and transportation of hazardous waste in the form of oxygen generators that it loaded onto ValuJet flight 592. In its handling of the oxygen generators, the maintenance contractor and its employees violated Florida criminal law governing the lawful transportation and disposal of hazardous waste. The felony-murder charges were filed because the deaths of all 110-people aboard ValuJet flight 592 came as the direct result of that felony criminal act. The manslaughter charges were the result of criminal and negligent actions of SabreTech and its employees in loading the full oxygen generators onto ValuJet flight 592 which directly resulted in the crash and deaths on flight 592.

After the of the federal district court trail, SabreTech was found guilty on nine of the 24 indictments, including "willfully failing to train its employees in accordance with hazardous materials regulations" (*U.S. v. SabreTech,* 2001). All three of the indicted employees were acquitted. The district court sentenced SabreTech to pay a fine of $2,000,000 and restitution of $9,060,400. SabreTech appealed on several grounds, including the finding of failure to train its employees, to the U.S. court of appeals.

Upon appeal, the appeals court concluded "there was sufficient evidence presented at trial to support SabreTech's conviction" [for failure to train]. The evidence demonstrated that SabreTech had a manual instructing personnel about the handling and packaging of hazardous material and knew that it should inform its employees of these regulations. Moreover, several SabreTech employees testified that they received no hazard materials training while employed at SabreTech" (US v. SabreTech, 2001). Other matters on appeal were remanded to the trial court for review. Final resolution of this federal case required SabreTech to a probationary period of three years and a $500,000 fine on the sole remaining count (Cordle, 2001). As for the 221-count criminal indictment against SabreTech, a Florida circuit judge reduced the charges to one charge, transporting hazardous materials, and required SabreTech to pay a $500,000 fine (Cordle, 2001).

In addition to the criminal proceedings stated above, ValuJet and SabreTech continued to endure the resolution of civil suits from families of those that perished in the accident. According to one source, families of the victims have received settlements averaging $1 million, for an aggregate sum of $262 million (Cordle, 2000). ValuJet merged with Air Tran Airlines and Southwest Airlines bought AirTran in 2011. SabreTech sold its business assets to Commodore Aviation Inc, a Miami based aircraft maintenance business in 1997.

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Have comments, thoughts or feedback? Contact Dr. Sample me at john@sampleandassociates.org.

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