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PRODUCT LIABILITY

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Abstract

A study of the rules and safety regulations regarding product liability was implemented on four cases involving human injury in machine accidents. It was the job of this team to analyze and report its findings in compliance with the laws of machine safety standards. Upon doing so, this team determined fault and fault percentages for plaintiff compensation.

Products Liability

This team was asked to read, analyze, and give conclusions on four separate cases. Each case involves an accident and serious injury. It was our task to apply our knowledge of law based on the reading, “An Engineer in the Courtroom,” the videos based on similar liability cases, and OSHA Safety Standards.

The reading and videos prepared this team for the challenging tasks ahead. The book, “An Engineer in the Courtroom,” studied all aspects of courtroom procedures. The book walks one through depositions, opening statements, direct examination, cross examination, and closing arguments. These aspects were directed towards aiding an Engineer in understanding the procedures and tactics used by lawyers. This team gained a valuable comprehension of the material, such that the team was able to attack various problems with respect to law and safety standards. (See appendix 1 and 2 for book and video summaries)

The videos were very similar to the book, however the videos would actually take one into an actual scene so that one could see all aspects of the case. The videos took clips of real lawyers and real cases and demonstrated a lawyer’s use of character to sway juries and extract information that he or she wants from a witness. The videos showed that how a lawyer presents himself, such as tone of voice, stature, assertiveness, and compassion, all plays a roll in how the lawyer wants the jury to feel about the case. These videos also aided in understanding certain court documents, such as depositions. The information from these videos greatly assisted this team in being prepared to analyze the 4 cases.

Each case involved an accident where someone was either seriously injured or

lost his or her life. These cases were very difficult to analyze. This team had to look at all aspects of the case ranging from the decals on the equipment to the condition of the equipment. In most cases the accident was caused due to lack of training or no training at all. Each case is summarized and includes this team's opinions and analysis of the incident.

Introduction

In today's world time is money. There is a high demand for products in a short amount of time. This requires workers to work with machines of increasing speed and danger. With production often being the main goal, human safety is easily overlooked. To prevent people for serious injury or death, safety standards and laws were set in place. Without these laws and safety standards, production could be higher, but human risk would increase drastically. These cases are examples of how production and speed has caused serious human injury.

Case 1

Goal:

This case involves an accident with a man using a machine to cut paper. It is the goal of this team to research and analyze the case to determine if Timothy Sandsbury, Millipore Alles Corporation, or the Ranpak Company is at fault by applying today's laws and regulations on this accident.

Timothy Sandsbury Case

Accident summary

Timothy Sandsbury has been an employee at the Millipore Alles Corporation for several years. Over the course of time his job description did not change. He has been employed as a general worker in the shipping and receiving division of the Millipore Alles Corporation. His job consisted of picking and packing items in the department to be shipped to other distribution centers. Every item was packed in a box with paper packing from the Autopad Cushioning System.

The Autopad Cushioning System was leased by the Millipore Alles Corporation from the Ranpak Company. The machine would transform rolled recycled paper into packaging cushion by folding it into a certain shape and cutting it at a desired length. To cut the paper the machine utilizes a single cutting blade that acts like a scissor. The machine has different settings that allowed it to perform different functions in how it cuts the paper (See machine description, Page 8).

At his station, Timothy Sandsbury, would use this machine daily. He worked from 3:00pm to 11:00pm. Timothy would often report into work 1 to 2 hours before his shift to collect overtime wages. On the day of the accident Timothy reported into work

approximately 2 hours before the start of the shift. Timothy was asked by his lead, to clear a jam in another machine because he had done so the night before. Timothy had never received any training on the equipment and was unaware of the proper procedure for clearing jams. As he had done the night before, Timothy pressed the emergency stop switch and proceeded to clear the jam. Timothy did not know that the machine he was clearing was in EDS mode. When Timothy reached into the dispensing section to pull on the paper, the blade closed, amputating his forefinger, middle finger, and ring finger on his left hand just below the first knuckle.

Machine Description

The machine involved in the case is called Audopad and it is made by the Ranpak Corporation. The Autopad is designed to cut paper at a specified length, which is then used as cushioning material for packages. The machine has a large roll of paper at one end and a small chute where the cut paper comes out of the machine. The Autopad machine is equipped with a very sharp blade that is controlled by the operator. The Autopad machine is equipped with four separate function modes. They are manual, auto feed, EDS and auto feed – auto cut.

In manual mode the operator must make sure the auto feed dial is at zero as well as the auto feed timer dial. This mode uses a foot pedal that the operator must press until he or she is satisfied with the amount of paper that has been delivered. Once a sufficient amount of paper has been delivered the operator must press the two cut buttons at the same time. It is important to note that the operator must press both cut buttons at the same time to make a cut. This safety feature is designed to keep hands and fingers away from the dangerous blade at the cycle time. Once the machine has made the cut it will

automatically spit the paper out once the operator uses the foot pedal again.

The next function mode is called auto feed. To operate in this mode, the first step is to set the selector switch to the auto feed position. Second you must adjust the auto feed timer for the desired length of paper. The machine will automatically feed paper immediately after a cut. To initialize a cut the operator must once again press both cut buttons on the control panel.

A third function is the EDS or electronic deliver system mode. The first step is setting the length of the paper with the auto feed timer. After the paper is fed out it is automatically cut-off. The machine will then wait for the operator to remove the recently cut piece of paper from the machine before it will feed out another piece. This is the only mode where the paper does not come out of the machine by itself. It was in this mode that Mr. Sandsbury's fingers were severed.

The final Autopad mode is the auto feed/auto cut. The operator must first turn the selector switch to the AF-AC mode. Then they must set the paper length in the auto feed mode. Next the operator must again set the selector switch to the AF-AC and press the yellow reset button on the operating panel. In this mode the machine will automatically feed and cut off the paper continuously. The paper will automatically come out of the machine and fall on the floor in front of the Autopad.

Guarding Standards Summary

In Accordance with the OSHA.gov website, "Moving machine parts have the potential for causing severe workplace injuries, such as crushed fingers or hands, amputations, burns, blindness, just to name a few. Safeguards are essential for protecting

workers from these needless and preventable injuries. Any machine part, function, or process, which may cause injury, must be safeguarded. When the operation of a machine or accidental contact with it can injure the operator or others in the vicinity, the hazards must be either eliminated or controlled.” This is a major problem throughout the United States. Every year approximately 18,000 amputations, lacerations, abrasions, crushing injuries, and over 800 deaths occur. OSHA is taking active measures to try and drastically decrease the amount of severe injuries that happen annually.

Some of the safety standards that are listed on the OSHA.gov website set in place to prevent these injuries from happening are:

“General requirements for machine guards. Guards shall be affixed to the machine where possible and secured elsewhere if for any reason attachment to the machine is not possible. The guard shall be such that it does not offer an accident hazard in itself.”

“The point of operation of machines, whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefore, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.”

“Special hand tools for placing and removing material shall be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required by this section, but can only be used to supplement protection provided.”

“Exposure of blades. When the periphery of the blades of a fan is less than seven (7) feet above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than one-half (1/2) inch.”

“Types of guarding. One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are-barrier guards, two-

hand tripping devices, electronic safety devices, etc.”

Also listed on the OSHA.gov website is a detailed description of the functions of mechanical guarding. “A safety device may perform one of several functions. It may stop the machine if a hand or any part of the body is inadvertently placed in the danger area; restrain or withdraw the operator's hands from the danger area during operation; require the operator to use both hands on machine controls, to keep both hands and body out of danger; or provide a barrier which is synchronized with the operating cycle of the machine in order to prevent entry to the danger area during the hazardous part of the cycle.”

Guarding plays a very important role in protecting workers and creating a safe place for them to work. There are many mechanical standards and specifications that aim to protect. This paper touches upon some of them, but these are simply a quick glance of something that is much more complicated and a start that will be studied much closer as this project progresses.

Conclusion:

As a group we determined that the accident was not Timothy Sandsbury’s fault. Even though there were warning signs on the machine, Sandsbury had received no training to perform maintenance on the machine. This is a requirement in the safety standards for all workers to be trained on equipment that is a danger to life and limb. Therefore we conclude that the blame is to be shared by both Millipore and Ranpak.

The machine did not stop when the emergency switch had been pushed. Had the machine stopped when expected, Sandsbury’s Fingers would still be attached. The hole of the dispensing chute was too large. It was too easy to fit a hand into the chute to reach

the blade that could have altered to prevent a hand from entering by making the chute flatter. Another issue of the accident was the failure of the photoelectric beam. This device is meant to stop the operation of the machine if it has been tripped. This was a crucial element in the safety guarding of this machine and it failed.

By not training Sandsbury, and the faulty areas of the machine, both Millipore and Ranpak share responsibility in the claim. There for both should share the compensation of Sandsbury's losses.

Case 2

Goal:

This accident involves a collision between a truck driven by Thomas R Mirabella and a motorcycle driven by Eric Timothy Roemer. It is the task of this team to analyze the accident and determine if the assumptions used by the officer who reconstructed the accident were valid.

Mirabella and Roemer Case

The Mirabella case involved several critical assumptions that may not have been accurate; they played a crucial role in the reconstruction of the accident. After looking over the case we decided that some of the initial assumptions may have been caused by misinformation and or inaccurate gathering of data. If this team was advising a lawyer on how to interpret the information or how to defend their client there are several avenues that this team would follow.

There were many vague aspects that were taken as concrete facts and therefore used to project all aspects of this accident. Some of these assumptions were made using data approximated by the driver of Car #2 who is in a biased position regarding the case. Mirabella (Driver of Car #2), made an approximation that his vehicle came to rest only 15 feet after impact. With no visible skid marks this possibility is illogical. Also, at a time of shaken emotions a person is not always able to correctly reconstruct facts. This would discredit the 15-foot approximation made by the driver of Car #2. It is very difficult for vehicle to go from 25mph to 0mph in only fifteen feet. This would suggest that the impact speed of Car #2 would be considerably less, affecting the result of Car

#1's approach speed. This team feels that an accident cannot be based on assumptions that are wrong.

To give an example of how assumptions can affect the results of a mathematical reconstruction, this team has tried a different method of reconstruction using three different assumptions and information provided by Thomas Mirabella. This team worked through the following steps:

(Refer to Appendix 3 for further explanation and calculations)

The approximation of distance: Mirabella gave a written statement that said at the time when he saw Car #1, it was between 500 and 1000 feet away. For the calculations we used the closest approximation of 500 feet.

The approximation of time: In three different calculations we used three different values for the time. During safe driving procedures one would have to leave between 3 and 5 seconds to complete a turn. Based on this, the calculations were completed using 3, 4, and 5 seconds.

The calculated speed: In case one, the time interval was 3 seconds. The speed was calculated to be 83mph. In case two, the time interval was 4 seconds. The speed was calculated to be 55mph. In case three, the time interval was 5 seconds. The speed was calculated to be 38 miles per hour. (Refer to Appendix 3 for calculations) By varying the turning time by only seconds the speed of Car #1 varies greatly. This accident reconstruction was used to shed light on the fact that minor assumptions have major ramifications.

The actual reconstruction from the officer on site, was based on assumptions of stopping distance, braking coefficients, angle of final resting place, and distance of final

resting place. This accident happened at 3:20 PM and the people that reconstructed the accident did not appear until 3:53 PM. There was a thirty-three minute time period where Car #1 and Car #2 could have been shifted to skew the results one way or another.

It is the opinion of this team that the assumptions for the drag force coefficients for Car #1 and Car #2 were questionable. They should not have been used in a court of law. There were too many variables that could affect the accident reconstruction. It would be unjust for a man to go to jail based on questionable assumptions.

Case 3

Goal:

This accident involved a forklift boom operated by Dominick LaPenta who had leased the forklift boom from J.M. Equipment & Transportation, Inc. It is the goal of this team to determine if it is the fault of the operator or the leasing company.

Dominick LaPenta vs. J.M. Equipment & Transportation, Inc.

Dominick LaPenta rented a forklift boom from J.M. Equipment & Transportation, Inc. LaPenta used the machine to hoist a roof truss during construction of his house. The forklift tipped over and Lapenta suffered serious injury.

Machine Description:

The machine that Lapenta had been working with was a forklift with a hydraulic boom that extended to reach a second story level. The machine was in good working condition and all warning signs were clear and visible. Along with the warning signs the machine featured a “checklist” for operations. This checklist gave a description of the steps to run the machine. It was featured on the left front post of the drivers cabin and visible from the drivers seat. The driver’s seat of the machine had a seatbelt along with warning signs indicating that the seat belt must be worn during operation. The machine also had to be stabilized before the boom was lifted. This consisted of a hydraulic system with a dash mounted leveling gauge. The gauge displayed the angle that the machine had to operate at to maintain safety.

Accident Summary:

The Accident occurred when LaPenta attempted to lift a truss to the roof. He was driving the machine with the boom extended with a truss on the fork. The grade of the hill that the machine had been operated on was too steep, and with the raised center of gravity the machine tipped over. LaPenta attempted to jump from the machine as it was falling. This caused him to be struck by the falling boom and trapped underneath it.

Conclusion:

After reviewing some of the aspects of the case, the police report, accident photos, and the machine user's guide, it is our opinion that the accident was caused by the user's error.

The pictures of the accident indicated several aspects of the case. They display the location of the machine after the accident along with the location of warning signs and decals. The driver of the machine had failed to follow several rules that are depicted in the guide and in decals on the machine itself. The decals displayed warnings in several areas of the cockpit. These warnings indicated that the machine was unstable on a non-level surface and would tip. They also warned that driving with the boom in an upright position would also cause the machine to become unstable and tip. Mr. LaPenta drove the machine with the boom in its upright position and failed to level the machine on the uneven terrain. Failure to do this caused the machine to tip over.

A third warning, in a form of a "check list" and sticker below the steering wheel, stated that the first step was to secure the seatbelt. Mr. LaPenta did not secure himself into the driver's seat. At the time of the accident, it is stated the Mr. LaPenta attempted to jump from the vehicle to avoid injury. This act caused him to be struck by the boom as

he dismounted. Had he worn the seat belt injury would have been less severe.

Mr. LaPenta did everything wrong that he could have when operating the machine. At this point it is the opinion of this team the Mr. LaPenta should not have been able to acquire this machine with out a valid license. It is stated in the user's guide that the driver must have a license and be trained on that exact machine. Therefore our initial conclusion is that J.M. Equipment & Transportation, Inc. is responsible for the damages for renting the machine to an unqualified person.

Case 4

Goal:

This incident claimed the life of Jeremiah Johnson in a farming accident on Grafton County Farm while using the Ag-Bag G580. The goal was to assess the incident and assign fault to the respective parties.

Johnson vs Grafton County Corrections.

The fatal accident involving Jeremiah Johnson occurred on June 2, 1999. At the time of his death he was 19 years old and had been an inmate working at the Grafton County Farm for a little over a month. Johnson was well liked among inmates and correctional officers alike. He was known on the farm as a hard worker, eager to do his job and please the boss. Johnson's job on the farm was chopping. This consisted of cutting grass and loading it into a truck to be transported to the bagger.

The specific machine that was involved in this accident was AG-BAG G-580. This machine compacts cut grass into a long silage bag to be used for animal feed. The cut grass comes from a self-unloading truck that feeds the grass to a hydraulic conveyor belt. The belt leads to the throat of the machine where it is pushed into the bag by the PTO rotor. The rotor has several large teeth that help to force the grass through the bag. This machine is preferred because it eliminates the need for silos. It prevents safety hazards such as falling and dangerous silo gases. The unique outdoor feature allows the farmer to place the feedbag at any desired location and gases are safely released into the atmosphere. (See Appendix four for machine pictures)

Accident Summary:

Mr. Don Kimball was the farm manager. It was his job to oversee daily farm operations. Mr. Kimball assigned specific tasks to certain individuals based on his judgment. At various times during the day Mr. Kimball would make rounds to check up on the tasks that he had assigned. Mr. Kimball also partook in daily farm duties.

On the day of the accident it had rained very hard for approximately 30 minutes. According to weather reports for June 2 it had rained from 2:00-2:15PM and 7:00-8:00PM. This caused the grass to become very wet and made machines slippery and hazardous. Jeremiah Johnson had been assigned to work with Neil Tinker, another inmate, to bag the last load of harvested grass for the day. Johnson had some experience with working on a farm; however he had never experienced working with the AG-BAG G-580 prior to the accident. Tinker had received minimal training for operating this particular machine. However, Tinker had operated the AG-BAG G-580 several times before.

At approximately 9:00PM the throat of the machine became congested with the damp grass. Following the directions that were given to Tinker by Mr. Kimball, Tinker and Johnson proceeded to climb on to the machine (See Appendix 4) and pack dry grass on top of the wet grass in the throat of the AG-BAG G-580 with a cedar fence post. The dry grass was not fixing the clog so Tinker got off of the machine to shut off the tractor. Tinker was walking away from the bagger to the tractor. He was approximately five feet from the bagger when he heard Johnson yell for help. Tinker turned around and Johnson was out of sight. Tinker proceeded to turn the tractor off and looked all around for Johnson with no avail. Fearing the worst, Tinker ran back to the farm and contacted the

authorities. Johnson suffered several blunt trauma wounds from the rotor and died.

Conclusions:

The incident involving the death of Jeremiah Johnson was tragic and avoidable. This accident could have been avoided by measures taken by both AG-BAG Corporation and Grafton County Corrections. There were several aspects in the case that contributed to the accident. These aspects included weather, lack of training, and no safety feature over the hopper.

In the Police Criminal Investigation report it was stated that Johnson should not have been on the AG-BAG G-580 in the first place, but had been sent out to do the job, along with Neil Tinker, by the second shift dairy master. Neither Johnson nor Tinker had been officially made aware of the dangers or proper procedures on how to run the machine. Tinker was the only one of the two that had been familiar with the machine, but had never been presented with instructions (i.e. owners manual), safety videos, or other safety precautions. The method that Tinker was presented with was incorrect and dangerous. It is very important that any one using a potentially dangerous machine is made aware of present ways to avoid such dangers and eliminate risk.

Mr. Kimball had shown Tinker, prior to the incident, how to clear the plugged region when the grass is too wet to be pushed through the hopper. Therefore Kimball knew that it would be very difficult for Tinker and Johnson to be able to bag the silage given the wet conditions. Tinker and Johnson, should not have been required to continue bagging with the current condition of the weather.

The AG-BAG G-580 bagger did not feature a guard of any type over the

machine's throat. According to OSHA safety standards it is required to have protection over any dangerous moving part. This standard is used to prevent accidents like Johnson's in hopes to make the machine failsafe. This guard could have been placed above the belt driven hopper with enough space to fit a hay bail into and prevent the possibility of someone falling from the top of the machine into the throat. This guard is easy to manufacture and economically feasible in the production of the machine. With this guard, it is still possible for a clog to occur. However it will prevent a work from falling into the throat while trying to unclog it in the incorrect way.

Given the conditions of the accident, it is the opinion of this team that the accident was caused by both employer and designer error. Johnson's death could have been prevented with proper training and proper safeguarding techniques. Therefore this team feels that Grafton County Corrections and AG-BAG Corporation are both responsible for the compensation of the loss. The Grafton County Corrections will take the brunt of the fault do to lack of training and putting people in dangerous conditions. Therefore, Grafton County Corrections is assigned 80% of the compensation. The AG-BAG Corporation was assigned the remaining 20% of compensation because there was no guard covering the throat. It was not equally assigned because the AG-BAG Corporation did take many measures to ensure safety and stated proper procedure for how to unclog the machine. The team did not find Jeremiah Johnson at fault because he had not received proper training. He was young and easily influenced based on his jail sentence and his desire to please his boss.

Appendix 1: Video Summaries

Video Notes 1-9

Video 1 – Opening Statements

The opening statement is one aspect of the trial that can often be overlooked when trying to prepare a case. The video listed four basic problems with opening statements as being trite, apologetic, tentative and unimaginative. The video mentioned a study that said 80% of people had the same views after the opening statement that they had at the end of the entire trial. If nothing else, the study shows the importance of putting a considerable amount of time into the preparation of the opening statement.

One of the examples was a lawyer from Providence, Rhode Island. His opening statement was very personable and he seemed to base then entire theme on basic human emotions. The lawyer had a very effective style. He was very soft spoken, intimate and talked very close to the jury. That’s often an effective way to make the jury feel comfortable and begin to gain their trust. He went on to establish the protagonist and introduce all of the important characters. He broke everything down into very basic terms and went out of his way to promote clarity in his statements. The lawyer also used dramatic devices, quotes and imagery to tell the story. He used an extremely effective method, but you must be very careful when using dramatic devices. If overdone it can become ineffective and actually take away from your opening statement.

A good lawyer should also go out of their way to explain terms that they feel may confuse the jury in any time during the trial. In one of the examples, the lawyer took time to explain in laymen’s terms what an “attractive nuisance” is. By taking the time to try and prevent snags that would hold up the jury from making a proper decisions you can be

assured of a more educated verdict.

Video 2-Direct Examination

Direct examination is the point of the trial process where the lawyer is able to use a witness, to support his or her argument. The witness is prepared in advance to take the stand so they will feel comfortable with the lawyer's style and line of questioning. Because this is the lawyer's chance to convey his arguments to the jury, he or she must be able to grasp and hold onto the jury's attention. This can be done in a number of different ways. One method is to use visual aids when demonstrating how the accident occurred or displaying certain important figures. Another is to control the pace of the questioning. By slowing down or speaking in a loud tone to emphasize a critical point the jury will become more attracted and pay more attention to what the lawyer is conveying.

When using an expert witness it is very important to establish credentials. For example, "Where did you obtain your masters degree?" and, "How experienced are you in this field?" or, "How often do you testify in similar cases?" This displays that the witness is credited and capable of giving an accurate opinion in the case. Then allow the expert to convey his knowledge to the courtroom. It is important that the jury is able to understand all that he has to say, so it is crucial that the lawyer have the expert clarify any scientific findings so that an average person can understand.

When questioning the plaintiff it is important to display to the courtroom the pain that the particular person has suffered. Although it will be uncomfortable for the plaintiff, the jury must see what has happened, they must see the damages. This can cause the jury to become sympathetic and listen to the events of the accident through the

victim's point of view.

Video 3 – Opening Statements

The main aspect that was repeated many times was the importance of using the opening statement as a tool that must grab the jury's attention. A good lawyer will tell the jury exactly what he or she expects of them. The lawyer should use very simple and easy to understand terms. The art of establishing credibility is a major issue that must be tackled in the opening statement. The lawyer must gain the trust of the jury in order to win a case.

The video says that a good storyteller will tell the plot clearly and build each important character in detail. In a statement in the video, the lawyer used very descriptive phrases that allowed the minds of the people in the jury to run wild. In one of the examples, the lawyer dealt with the damages that the client had suffered because of a machine accident. The lawyer talked about medical bills, lost wages (past and future) and pain and suffering.

The lawyer also used this first impression as a way to address aspects of the defense so the jury would know both sides of the story. In some cases a good lawyer can null part of the defense by letting the jury know both sides of the story. In this sense, it is important for a lawyer to try and use parts of the case he or she feels will be used against him and flip it around for an advantage.

Video 4-Cross Examination

Cross-examination is the process in which the lawyer is able to question the opposing side's witness. During cross-examination the lawyer uses a different approach in his line of questioning. Again it is important for the lawyer to use his personality and

intelligence to create a line of questioning that coincides with what he or she wants the jury to hear. This is done by avoiding any open-ended questions. When an open-ended question is asked the lawyer allows the jury to hear the opposing side. By having the witness answer “yes” and “no” questions, the lawyer can lead the witness in a direction in which he or she can restate a point and create an emphasis regarding that point.

Cross-examination is used to discredit the witness. The lawyer can use the witness to display holes in the testimony (i.e. facts, dates, contradicting testimony), or if in an expert witness situation, show that the witness is working for the opposing lawyer and is being paid for his time.

Video 5 – Cross Examination

There are several ways that lawyers try have a successful cross-examination. The main tool that a lawyer can use on the witness is the ability to control. Lawyers are taught and will often go out of their way to show their dominance over witnesses. Several methods for conveying dominance include eye contact, body posture, pace of questioning and leading questions. One aspect of cross-examination that is often overlooked is the use of visual aids. People tend to be very visual people and a well thought out diagram can help explain a bundle of pertinent information to a jury.

As a witness, understanding the power struggle in a cross-examination can be very valuable. There are several methods that can shift the power and dominance back to a neutral court. First of all, when being cross-examined do not go into the questioning with a negative or defensive attitude. The tone of your voice and even your body language can come across as offensive. In this circumstance the jury can often get a bad

feeling and perceive you in a negative way. Another way to gain an advantage is by being well prepared, discipline and remaining consistent with the deposition.

In one of the examples in the video the lawyer attacked the witness several times because of discrepancies with the deposition and the cross-examination. By straying from the original comments the witness gave the lawyer an array of ammunition that was immediately and effectively fired right back at him.

Video-6 Deposition

The deposition is a testimony of a witness under oath. It is done in the company of the witness's lawyer, the opposing lawyer, any lawyers of any other parties, and a court recorder. During this time the opposing lawyer is able to ask any questions he feels necessary in the case.

The questioning will start with simple questions to allow the witness to become comfortable with the situation. The witness is asked to state their name, where they live, where they work and so on. The lawyer will then begin to ask questions regarding where the witness was during the incident, what role the witness played in the incident, and other such questions. It is very important for the witness to slow down and be completely sure that they understand the question before they give an answer. If the question is not understood it should not be answered. The witness has the right to ask for a restatement of the question. Another effective tool is the pause. By pausing before answering the witness gives his or her lawyer a chance to object to the form or line of questioning. It is very important that the witness understands that if they do not know the answer to a particular question to simply state, "I don't know." The memory is not always 100%

accurate with dates, times, and figures. By saying, “I don’t know,” the witness will not cause any holes or gaps in the testimony for the lawyer to pick apart.

Never volunteer information. When information is volunteered it provides new leads for the opposing lawyer to pursue, potentially weakening your case. The opposing lawyer will try to ask questions that will get you talking. Answer all questions as short and simple as possible, simply “yes” and “no.”

Video 7 – Art of Advocacy Skills in Action Series Summation

In this video there were three examples of very powerful closing arguments that were told extremely well. Lawyers are told to often use the art of imagery and alienation when drafting a summation. In the story of Jill Brown, the lawyer uses a personal story of being trapped in sand to create an intense image of what it is like being paralyzed. A good storyteller can completely encapsulate a jury and lead them in the desired direction.

The role of the jury is also something that is emphasized over and over again in the final statements. The lawyer does not want to leave any doubt in the seriousness of the role that the jury will have in deciding a case. A good lawyer will even include aspects of what the judge is going to tell the jury right before making a decision. A judge has a duty to inform the jury that it is not their job to give sympathy. In one of the effective examples on the video the lawyer made sure that he was not asking for sympathy. He made is completely clear that his client was asking for justice and due compensation.

The most important aspect of the summation is the fact that it is the last thing the lawyer will say to the jury before they go in for deliberation. The lawyer must prepare a

well-calculated statement to leave favorable thoughts in the people who will be making the ultimate decision.

Video 8-Summation

Summation is the point in the trial where the lawyer brings the whole case to a close. This can be difficult for the lawyer. The lawyer must “convey interesting things interestingly.” This means that the lawyer must present important elements of the case to the jury so they can understand them and become involved with it. In this manner, the case must be presented clearly and incorporated with facts to support the conclusion. If the trial has taken weeks or months it is necessary to reemphasize some facts that were given at the start of the case that the jury may have forgotten.

Just as visual aids may have been needed in the opening statement, they may also be needed in summation. During the trial many figures can be discussed, added, and subtracted. For these situations it is good to have a visual guide, like a chart, to show where each figure is coming from and why it is. This will take a lot of doubt out of the minds of the jury on certain dollar amounts.

All this information must be delivered in an entertaining fashion to keep the jury’s attention so that the lawyer can give insight as to why the jury should believe his or her arguments. With the correct insight into the case the jury can be persuaded to think how the lawyer wants them to.

Video 9 – 60 minutes II, “A Classic Cover Up”

This video takes a very close look at the classic Ford Mustangs built between the years of 1964 to 1970. Many people had been saying that there is a problem associated

with the design of Ford's drop in gas tank. The gas tank is a rectangular container that is actually the floor of the trunk. In many rear-end accidents the gas tank actually comes from the trunk and is forced into the backseat of the automobile. In many cases the tank actually gets punctured and shoots gas all over the backseat of the automobile and often the people in the car.

The Ford Company has been sued over 70 times for crashes that involve a faulty design with the gas tank. Most of the cases have been settled out of court and therefore receive little to no national attention. The video gave a statistic that said Ford Mustangs are three times more likely to cause fatalities in a serious rear end accident than all other cars in the same time period. Ford refused a request to appear on the 60 Minutes special but did offer a statement that said that the accidents were caused by dangerous speeds and not a defected design.

Video Crash Test 301 offered the most convincing argument against the Ford Company in design malpractice. The crash video showed a Ford Mustang in a rear-end collision. The video clearly showed the gas tank being forced into the backseat and gas spraying all over the passenger and driver. Ford's answered by saying they covered all government standards at the time. The ironic part of the story is that there were no government standards that involved rear-end collisions.

The video ends with the former president of the Ford Motor Company saying that after 35 years it is probably time to trade up and dump the old Mustang for a new one. That offers a convincing argument that even the former president might agree with the accusations of a faulty rear gas tank design.

Appendix 2: Book Review

Book Review

An Engineer in the Courtroom

The book walks you through the entire judicial process of accidents with an engineering standpoint. There were a few main topics that were broken down in to smaller disciplines, including; Litigation, honesty and questioning, the trial, and the accident.

It is essential for the engineer to consider possible problems early on in the design process to prevent any accident from occurring. By taking these extra measures, it will be possible to save time and money in the future, therefore avoiding litigation. The litigation process is very time consuming and can take several years to be worked out. The litigation requires many steps to be performed. It is the lawyer's job to arrange and compose a case, request and collect depositions from witnesses, set claims and attempt to settle or continue the case. For an engineer, it is important to know the lawyer's procedures and understand the boundaries surrounding litigation to work as a cohesive team member.

For an engineer it is very import to answer all questions honestly and directly. During a deposition or court questioning the law requires that you testify truthfully because you give these statements under oath. By directly answering the question the engineer helps the lawyer by not giving any unnecessary information that can be used against you in the courtroom. It is the engineer's responsibility to convey his or her knowledge to the court in a manner that is easy to understand. The engineer can have all

the knowledge in the world but if they cannot demonstrate it in a coherent fashion it is almost worthless.

The accident is a very crucial piece for the engineer. The book defines the accident as an occurrence that's is unexpected and causes loss or injury, which can be expressed in some form of economic terms. The analysis of the accident requires the most involvement from the engineer. The engineer is the only person that has the capability to analyze all the elements of the accident, from codes of safety standards to testimonies of witnesses, to reach an expert opinion of fault. Just as the engineer must be honest in all questioning, he or she must be honest in the review of the accident because it is his duty to follow the code of engineering ethics. It is not the engineer's job to put a spin on the facts. By being truthful in your findings you allow the lawyer that you are working with to place the findings in their desired context.

The trial is the end process in which a decision will be made about the outcome of a case by either a judge or jury. The trial is a result of the plaintiff and the defense not being able to come to an agreement on settlement terms. In the trial it is the lawyers job to present the case to the judge and jury. The engineer must always remain calm under questioning and present all information honestly and thoroughly. By not being intimidated by the setting or the other lawyer you allow the case that your lawyer is constructing to develop properly.

This book thoroughly explains the entire court process through an engineer's perspective. It incorporates important information that is required for the engineer to be a valuable asset to a lawyer and a case.

Pages missing or incorrectly
numbered in original

IQP/MQP SCANNING PROJECT



George C. Gordon Library
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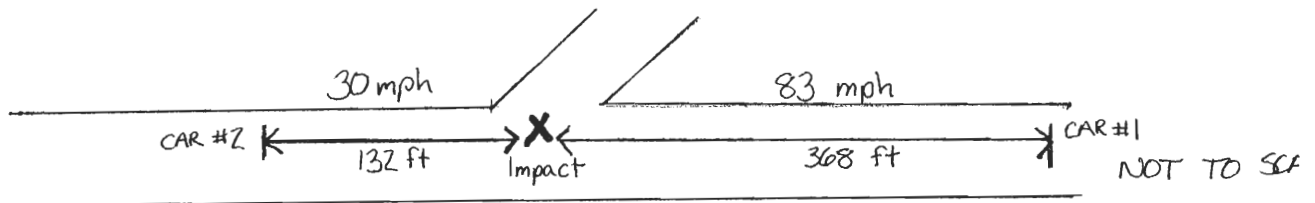
Appendix 3

Case 1: 3 second turning time

$$30\text{mph} \times 1.467 = 44 \text{ ft/sec} \times 3 \text{ sec} = 132 \text{ ft}$$

$$500 \text{ feet} - 132 \text{ feet} = 368 \text{ feet}$$

$$368 \text{ feet} / 1.467 = 251 \text{ mph/sec} / 3 \text{ sec} = \mathbf{83 \text{ mph}}$$

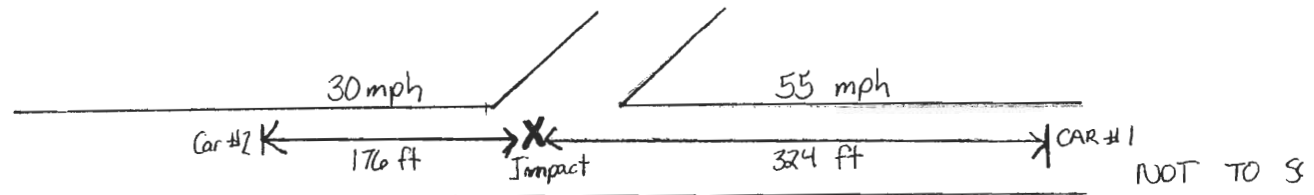


Case 2: 4 second turning time

$$30\text{mph} \times 1.467 = 44 \text{ ft/sec} \times 4 \text{ sec} = 176 \text{ ft}$$

$$500 \text{ feet} - 176 \text{ feet} = 324 \text{ feet}$$

$$324 \text{ feet} / 1.467 = 221 \text{ mph/sec} / 4 \text{ sec} = \mathbf{55 \text{ mph}}$$

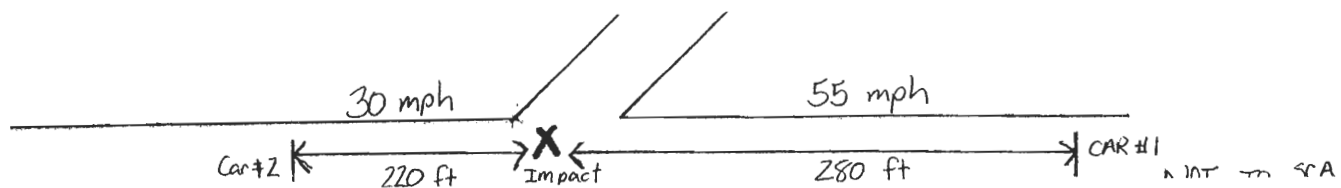


Case 3: 5 second turning time

$$30\text{mph} \times 1.467 = 44 \text{ ft/sec} \times 5 \text{ sec} = 220 \text{ ft}$$

$$500 \text{ feet} - 220 \text{ feet} = 280 \text{ feet}$$

$$280 \text{ feet} / 1.467 = 191 \text{ mph/sec} / 5 \text{ sec} = \mathbf{38 \text{ mph}}$$



Appendix 4

The Ag-Bag G-580



