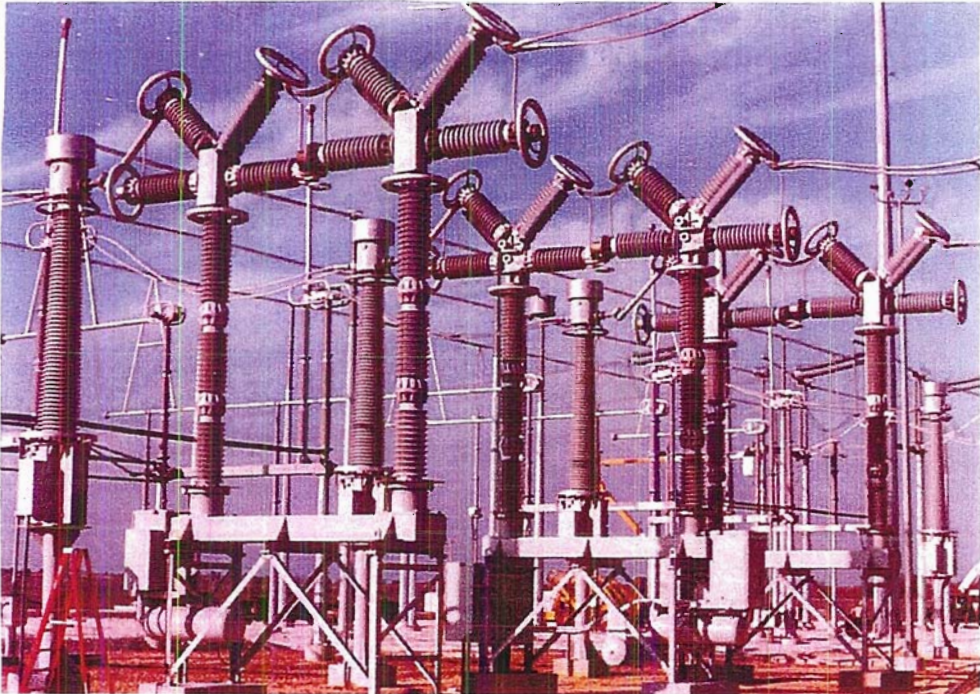
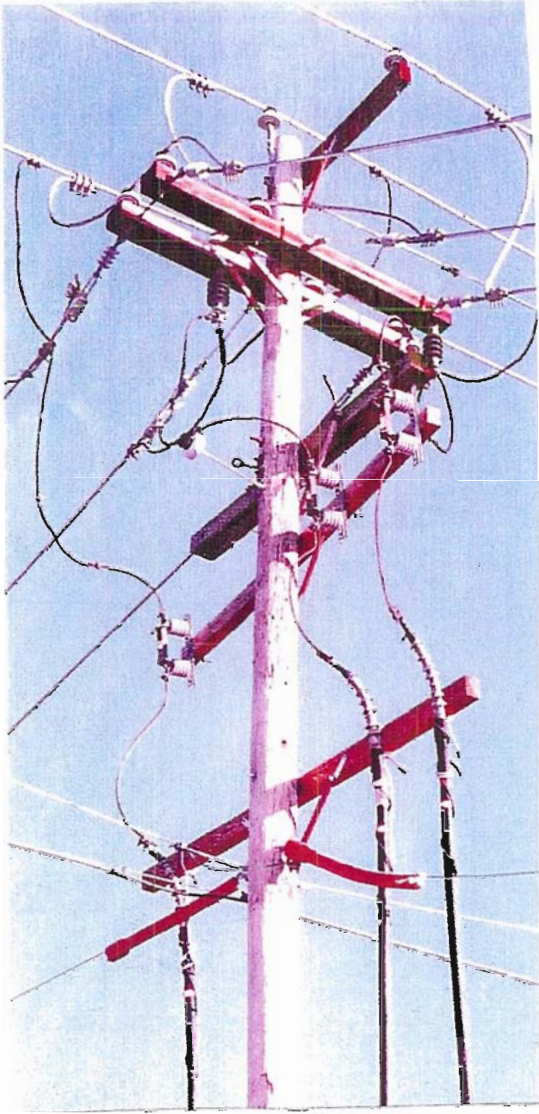
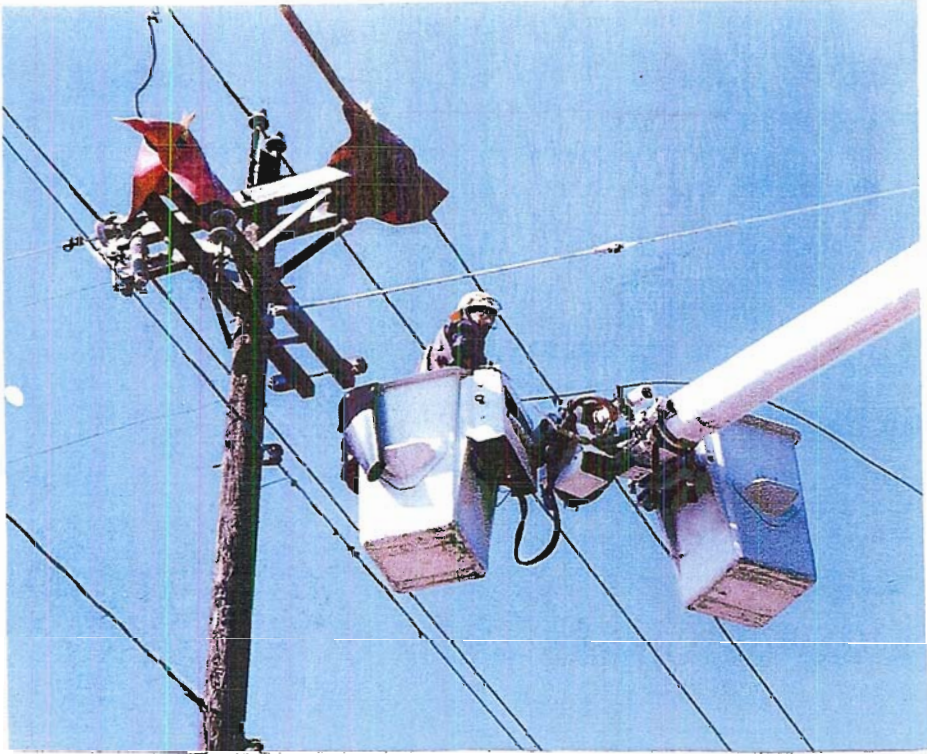


LEGAL DEPOSITIONS, COURT TESTIMONY AND YOU



**LEGAL DEPOSITIONS,
COURT TESTIMONY
and YOU**

PES IEEE TP&C ESMOL

2008 Winter Meeting 1/27-30/2008

Las Vegas, Nevada

Presented by Frank A. Denbrock, P.E.

at

**The Gold Coast Hotel and Casino
400 W. Flamingo Road
Las Vegas, NV 89103**



**DON'T BE A
SMART-ASS!**

LEGAL DEPOSITIONS, COURT TESTIMONY and YOU

INTRODUCTION

Glenn Davidson, Chairman of IEEE Towers, Poles and Conductors Sub-Committee requested sometime ago a presentation on “What To Do If You Are Deposed In A Legal Case.” It was suggested that Robert Peters may participate also in this presentation. I talked with Bob and it seemed more logical to have two separate presentations on Depositions, Court Testimonies, etc. so that is what we’ve done. What I like to present to you now is a document entitled, “Legal Depositions, Court Testimony and You.”

Since retiring from Gilbert Commonwealth/Commonwealth Associates/Commonwealth & Southern Corp. I’ve had 1309 forensic engineering assignments as shown on Page 6. Since recording both Depositions and Court Appearances from 1989, I have had 222 Depositions and 76 Court Appearances. This gives an average of 11.7 Depositions and 4.0 Court Appearances over the 19 years as shown on Page 7.

The National Safety Council has published statistics, Page 9, that in the U.S.A. we averaged 2 accidents per second or 63,072,000 million accidents per year. OSHA, The National Safety Council, The National Electrical Safety Code, ANSI and other organizations try to remind the country that we should take time-out for safety. Needless-to-say, with accidents in the millions on an annual basis there are lots of legal actions that include Depositions, Court Appearances, Conferences with Lawyers, etc.

What I’ve attempted to do in this handout is illustrate some of the handy guidelines I’ve used in the last 22 years of my private practice as a Forensic Engineer. You will see marks on some of the documents that were used to remind me, along with notes that sometime appear, that the tricks-of-the-trade being provided are important. What you can review follows this outline:

- Examples of Electrocution at Work
- Definitions
- Depositions
- Information on Daubert-Proofing Your Expert Report
- An article on the Engineer as an Expert Witness
- Information on the Forensic Engineer
- An article on the Forensic Engineer with many tips-of-the-trade
- Tips for Witnesses – large narrative version
- Tips for Witnesses – 21 quick remedies such as: “look them in the eye, smile and tell the truth”
- Department of Labor Safety Talks entitled, “The Human Factor, Your Responsibility and Safe Work Habits”

INTRODUCTION – (Continued)

- Great source of safety information from The U.S. Department of Labor Booklets entitled, “Electrical Hazards, Accident Investigations and Job Safety Analysis”
- A reminder that most of this distinguished group uses ANSI C-2 NESC; and, an illustration showing the Electrician’s Mediation Center is included
- Bibliography of handy references listing some 26 easy to read documents that will help you win any legal case you participate in as an Expert Witness in a Deposition or a Court Appearance
- A reminder that planning is important in anything we do; and, we should not forget the old P⁷ Power Law

GENERAL INFORMATION

I had a very successful Attorney years ago on an electrocution case tell me at the beginning of our long relationship, “I don’t want you to try to be a Smart-Ass.” There is a reminder, or two, of what that prominent Attorney told me years ago included. He further said in Depositions and Trials you are dealing with Attorneys and Lawyers -- some good and some otherwise. Remember law is their game, Engineering is your field. Furthermore, you don’t find Sumo Wrestlers competing in the 100 yard dash. Remember what game you are playing, what ballpark, and stick to yours.

Another Attorney reminded me several times to look the opposing Attorney, the Judge and the Jurors in the eye, smile and tell the truth.

Another old Attorney counseled that we should always remember the old Boy Scout Motto, **BE PREPARED**. So, he counseled at every one of our meetings with a question, “Are you Prepared and Do You Know Your Subject Well.”

So, on the basis of the recommendations of these special Attorneys, I have always attempted to know my subject well; along with other facts such as: when, where, what, who, how, why, etc.

In being prepared means having the following information available for each Deposition or Court Appearance to illustrate that you are familiar with the case and ready to testify:

- An Inventory of Case File Material Furnished to Frank A. Denbrock, P.E. that includes Complaint, Answers, Notice of Motion and Affidavits, Depositions, Miscellaneous Documents, Maps and Drawings, and Photographs
- FAD Facts that includes Dates of Contract, Date of Incident, Injured Party, Site Visit, FAD Report Dates, FAD Deposition Dates, FAD Court Dates (I am FAD)
- Hours and Dollars (\$’s) that include an updated listing of all Invoices to Date, my Time and \$’s, Staff Personnel Hours and \$’s, Related Costs, Direct Costs such as Travel, along with Invoice total and case total to date

Just be yourself ...
smile, lookem in the eye and
tell the truth

FORENSIC ENGINEERING ASSIGNMENTS

Total Number of Forensic Engineering Assignments
Since April 1, 1986

1,309

General Classifications of Forensic Assignments:

o Electrocutions, Electrical Contact Incidents Causing Injury or Death

Airplanes/Helicopters	14
Aluminum/Booms/Buckets/Cranes/Derricks/Ladder/Etc	281
CB/TV Antennas/Telephone and Communication Systems	67
Electrical Systems – Utility and Industrial	76
Grain Elevators/Augers	13
Trees/Tree Trimming	72
Sailboats/Boats	29

o Miscellaneous Types

Cars/Poles/Trains/Vehicles	145
Climbing/Falling	101
Fires – Commercial/Industrial/Residential/Utility	121
Guy Wires	19
Human Factor and Ergonomic Consulting	95
Linemen	18
Neutral-to-Earth Potentials/Currents/Lightning/Stray Voltage	207
PCB's	2
R-O-W	5
Work Practices – Utility/Industrial and Residential	44

F. A. Denbrock, P.E.

Legal Action

	<u>Depo</u>	<u>Court</u>
2007	5	2
2006	4	2
2005	6	0
2004	6	4
2003	8	2
2002	14	2
2001	6	1
2000	7	2
1999	7	1
1998	9	3
1997	9	3
1996	12	6
1995	15	5
1994	11	7
1993	18	4
1992	16	7
1991	23	3
1990	24	11
1989	<u>22</u>	<u>11</u>
Totals	222	76
	Average	Per Year
	11.7	4.0

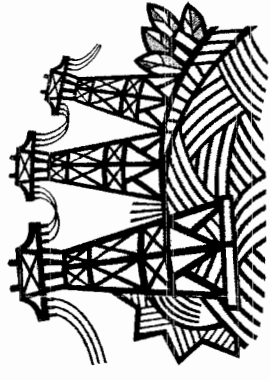
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**Be
PREPARED**

**KNOW
YOUR
SUBJECT
“CASE”
WELL**

WORLD POPULATION - WORLDWIDE

QUESTION?? How many people in the world don't have electricity yet?

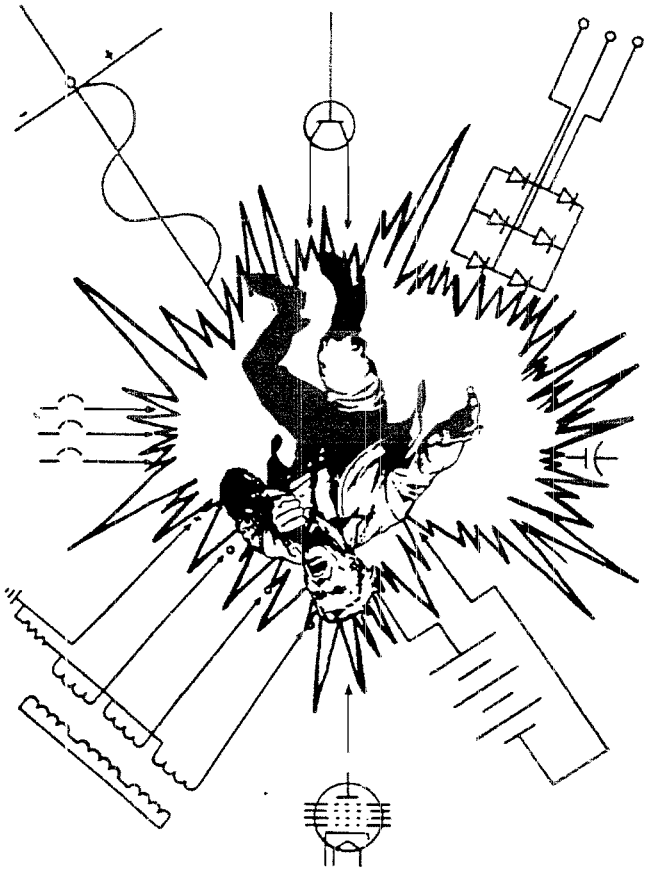


- 6,300,000,001 PEOPLE - WORLD 100%
- 5,733,000,000 RIGHTHANDERS - WORLD 91%
- 567,000,001 LEFTHANDERS - WORLD 9%
- 441,000,001 LEFTHANDED MEN - WORLD 7%
- 126,000,000 LEFTHANDED WOMEN - WORLD 2%
- 2,100,000,000 DON'T HAVE ELECTRICITY - WORLD 33%

There are more people in the world without electricity than there are left-handers.
Reference: U.N. World Population Reports

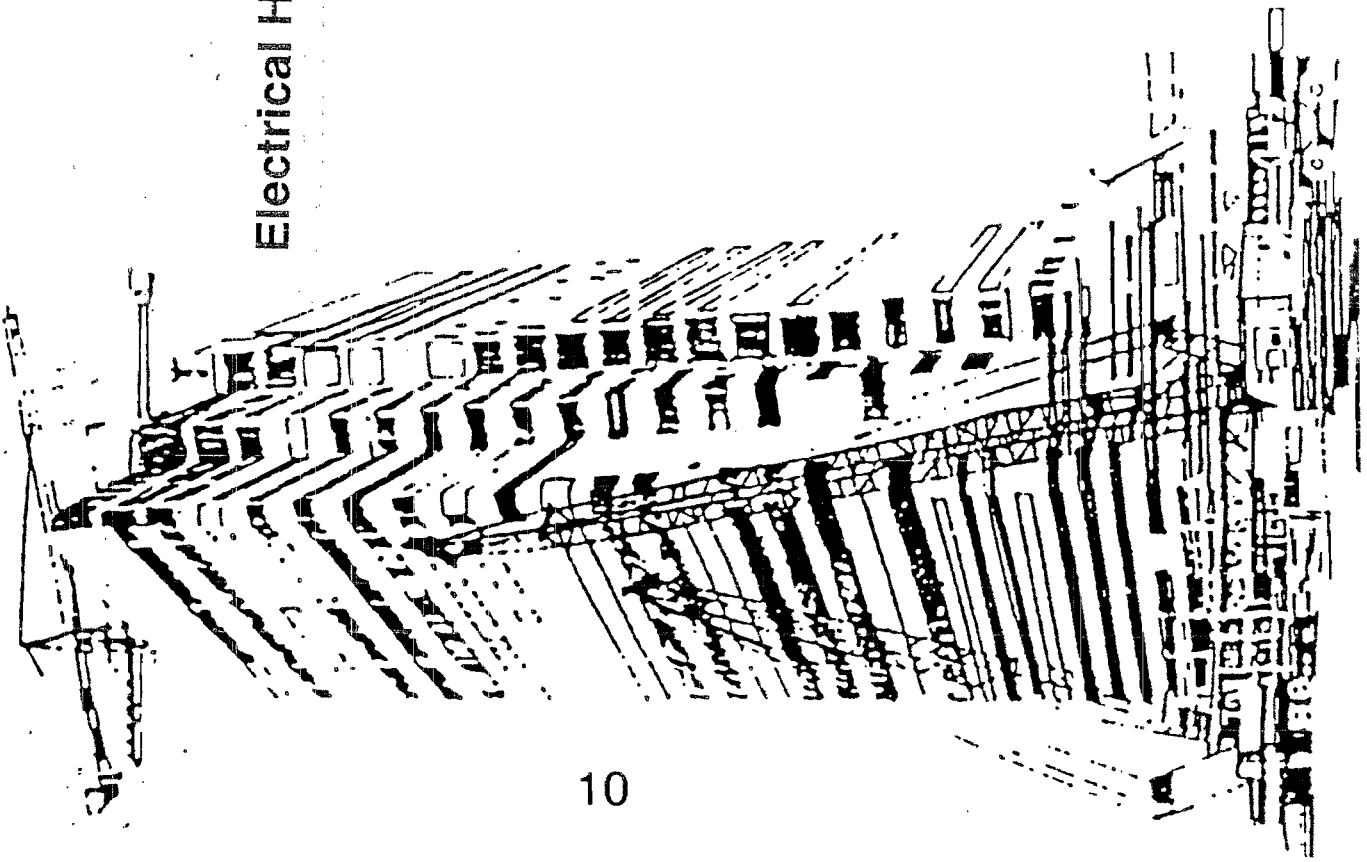
SOME NATIONAL SAFETY COUNCIL NUMBERS

- **365 DAYS X 24 HRS/DAY = 8760 HRS/YR**
- **10 DEATHS/HR (NSC) = 87,600 DEATHS/YR**
- **MIN/YR (8760 X 60) = 525,600 MIN/YR**
- **SECONDS/YR (525.6K x 60) = 31,536,000 SEC/YR**
- **2 ACCIDENTS/SEC (NSC) = 63,072,000 ACC/YR**
- **OSHA – TIME OUT FOR YOUR SAFETY**
- **PLAN YOUR WORK – WORK YOUR PLAN – SAFELY**
- **PLAN YOUR FUN AND ENJOY YOUR FUN - SAFELY**



Electrical Hazards

Electrocution at work

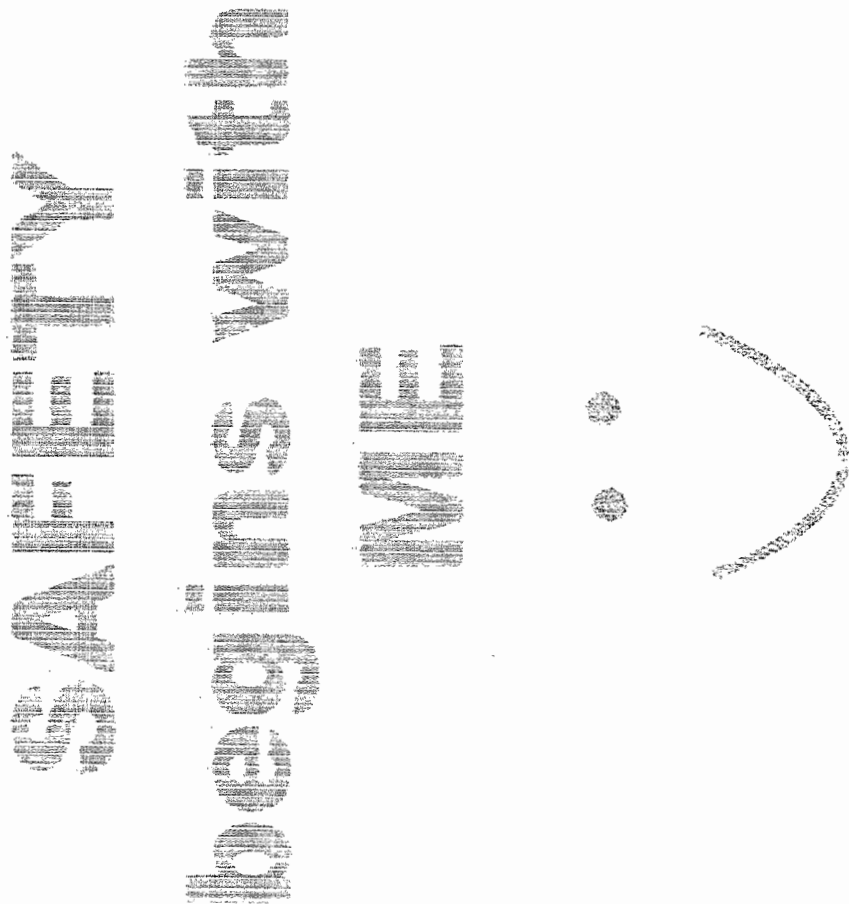


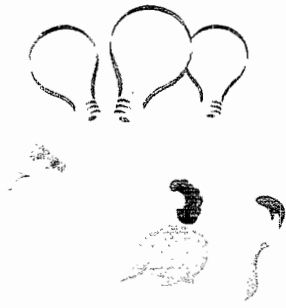
PLAN YOUR WORK & WORK YOUR PLAN

"SAFELY"



Remember...





P⁷ LAW

POOR

PRIOR

PLANNING

PRODUCES

PHENOMENALLY

POOR

PROGRAMS

RECOGNIZE DANGER

- * Accidents just don't happen!
- * Accidents result of:
 - a) Unsafe Acts — 78%
 - * Human failures
 - b) Unsafe Conditions — 20%
 - * Mechanical failures
 - c) God Acts — 2%
 - * Floods, storms, etc.

ELIMINATING UNSAFE CONDITIONS

• REMOVE HAZARD

• GUARD HAZARD

• WARN OF HAZARD

• PRE-COMMENT ON HAZARD

• REMOVE THE HAZARD FROM THE

Summary

Plan Your Work and Work Your Plan



“Safely”

NAFE / FPG

TO PROVE NEGLIGENCE:

1. Must Find DUTY.
2. Find a BREACH of Duty.
3. Find that Breach of Duty CAUSED Damages.
4. Must Find Actual DAMAGES.

DEFINITIONS

ATTORNEY – may refer to an attorney in fact or attorney at law. An **ATTORNEY IN FACT** is one who is an agent or representative of another given authority to act in that person's place and name. The document giving the attorney his authority is called a **power of attorney**. 155 Cal. Rptr. 843, 849.

The general reference to an attorney is usually intended to designate an **ATTORNEY AT LAW**. This is one of a class of persons admitted by the state's highest court or by a federal court to practice law in that jurisdiction. The attorney is regarded as an officer of the court and is always subject to the admitting court's jurisdiction as to his ethical and professional conduct. Violations of those standards of conduct may result in discipline of the attorney in the form of censure, suspension, or **disbarment**. See 296 S.E. 2d 909, 918. See also **counsel** [counselor]; **district attorney**

COURT – the branch of government which is responsible for the resolution of disputes arising under the laws of the government. A court system is usually divided into various parts which specialize in hearing different types of cases. Trial courts are responsible for receiving evidence and determining the application of the law to facts which it finds. Trial courts are usually divided into **CIVIL COURTS**, which hear disputes arising under the common law and civil statutes, **CRIMINAL COURTS** which hear prosecutions under the criminal laws, **MATRIMONIAL COURTS** which hear divorce proceedings, and **SURROGATE'S COURTS** which hear proceedings regarding the estates of deceased and incompetent persons. Appellate courts review the decisions of trial courts to determine whether the trial court made an error of law in deciding the case. Appellate courts are frequently divided into intermediate appellate courts to which a party may always appeal, and a supreme appellate court, which has discretion over which cases it chooses to hear, James & Hazard, Civil Procedure §1.11 (2d ed. 1977). See **de facto** [DEFACTO COURT]; **district court**; **federal courts**; **inferior court**; **international court of justice**; **juvenile courts**; **kangaroo court**; **moot court**; **open court**. See also **probate** [PROBATE COURT]; **small claims court**; **supreme court**; **tax court**; **term of court**; **territorial court**; **trial court**.

DEPOSITION – a method of pre-trial **discovery** which consists of “a statement of a **witness** under oath, taken in question and answer form as it would be in court, with opportunity given to the **adversary** to be present and cross-examine, with all this reported and transcribed stenographically.” James & Hazard, Civil Procedure §6.3 (2d ed. 1977). Such statements are the most common form of discovery, and may be taken of any witness (whether or not a **party** to the **action**). When taken in the form described it is called an **ORAL DEPOSITION**. Depositions may also be taken upon written **interrogatories** where the questions are propounded to the witness by the officer who is taking the deposition [called in that case **DEPOSITIONS ON WRITTEN INTERROGATORIES**]. Compare **affidavit**, **interrogatory**.

DEPOSITIONS

Depositions are often stressful. You will be questioned under oath about events that may have happened months ago by a lawyer, who may be trying to intimidate you or influence your answers ... and you have a recipe for an unpleasant day.

The Golden Rules for Responding to Questions

Your deposition testimony is likely to be most effective if you comply with the following three “Golden Rules” when responding to questions.

Golden Rule #1: Listen to the Entire Question Closely and Answer Only That Question ... most of us develop a habit of anticipating questions. ...

Not surprisingly, this means that we occasionally answer a different question than the one we were about to be asked. ...

try to leave this habit at the door. Unless you wait for the questioner to finish a question and limit your answer to that question, you may unwittingly:

- testify inaccurately because you answered the question you thought would be asked rather than the one that was actually asked, or
- volunteer damaging information (or evidence that leads to damaging information) that the questioner would otherwise never have uncovered.

Golden Rule #2: Answer Truthfully and Completely ... The oath that you take at your deposition is the same as the one you will take in the courtroom, and your obligation to tell the truth at your deposition is also the same as in court. You should testify truthfully for at least three reasons:

- Our country’s system of justice is based on honesty.
- If you are a party and your opponent is able to convince a judge or jury that you lied at your deposition, your credibility will be severely damaged, and you may lose the case as a result.
- Whether you are a party or a nonparty witness, testifying falsely at a deposition could subject you to a criminal charge of perjury. (Realistically this risk is low, but you should be aware of it.)



TIP ... Conflicting views on giving a “complete” answer. Some lawyers – at least in some situations – disagree with our advice that you should give “complete answers. They would advise you to give the shortest possible answer that is technically true. Lawyers who subscribe to this view believe that the risk that a deponent’s credibility will be damaged by providing misleading answers ...

Golden Rule #3: If You Don’t Understand a Question, Don’t Answer It

DEFINATIONS – (Continued)

JURISDICTION – the power to hear and determine a case, 147 P.2d 759, 761. This power may be established and described with reference to particular subjects or to parties who fall into a particular category. In addition to the power of adjudicate, a valid exercise of jurisdiction requires fair **notice** and an opportunity for the affected parties to be heard. Without jurisdiction, a court's judgment is void.

JUROR – person sworn as member of a jury; a person selected for jury duty, but not yet chosen for a particular case. 144 N.E. 338, 340.

JURY – a group of people summoned and sworn to decide on the facts in issue at a trial; a jury is composed of the peers or a cross-section of the community. See 328 U.S. 217; 407 U.S. 493.

JURY TRIAL – the **trial** of an issue of **fact** before a **jury**. The parties to a suit present their **evidence** to the jury. The **judge** then instructs the jury as to how the law applies to their **findings of fact**, and the jury then **deliberates** and renders its **verdict** in the matter. In **civil** cases, the jury consists of at least six jurors, and may consist of up to 12. James & Hazard, Civil Procedure 389-91 2d ed. 1977). The **Sixth Amendment** of the Constitution guarantees an accused the right to a jury trial in all **criminal** prosecutions. This right does not apply to trials for **petty** offenses, those for which the punishment may not exceed 6 months' imprisonment. 399 U.S. 66. In all federal criminal trials the jury consists of 12 members, in which case proof **beyond a reasonable doubt** must be established by the unanimous vote of all 12 jurors.

LAW – the legislative pronouncement of the rules which should guide one's actions in society; “the aggregate of those rules and principles of conduct promulgated by the legislative authority [court decisions], or established by local custom. Our laws are ... derived from a combination of the divine or moral laws, the laws of nature, and human experience, as [each] ... has been evolved by human intellect influenced by the virtues of the ages. Human laws must therefore of necessity continually change as human experience shall prove the necessity of new laws to meet new evils, or evils which have taken upon themselves new forms, or as the public conscience shall change, thus viewing matters from a different moral viewpoint.” 123 N.W. 504, 508.

LEGAL CAPACITY TO SUE – requirement that a person bringing suit have a “sound mind, **lawful** age, and [be] under no restraint or legal disability.” 125 P. 2d 1010, 1016, such disability referring to “infancy, lunacy, or want of title in plaintiff in the capacity in which he sues.” 198, N.W. 554. The term “has no reference to failure of the petition to show a right of action in the plaintiff.” 186 S.W. 1004, 1006.

DEFINATIONS – (Continued)

SETTLEMENT – generally, the conclusive fixing or resolving of a matter; the arrangement of a final disposition of it. See 116 N.J. Super. 390, 397. A compromise achieved by the adverse parties in a **civil suit** before final **judgment**, whereby they agree between themselves upon their respective rights and obligations, thus eliminating the necessity of judicial resolution of the controversy. See **accord and satisfaction; out-of-court settlement; property settlement**. Compare **plea bargaining** in the criminal context.

SUBPOENA – a writ issued under authority of court to compel the **appearance** of witness at a judicial proceeding, the disobedience of which may be punishable as a **contempt** of court. 183 N.Y.S. 2d 125, 129.

SUBPOENA DUCES TECUM – under penalty you shall take it with you. Type of subpoena issued by a court at the request of one of the parties to a suit requiring a **witness** to bring to court or to a **deposition** any relevant **documents** that are under the witness's control. 139 So. 794. See, e.g., Fed. R. Civ. Proc. 45(b).

SUBROGATION – “one’s payment or assumption of an obligation for which another is primarily liable.” McClintock, Equity §123 (2d ed. 1948). “This doctrine is not dependent upon **contract**, nor upon privity between the parties; it is the creature of **equity**, and is founded upon principles of natural justice ... Subrogation has been generally classified as being either legal or conventional. Legal subrogation arises by **operation of law** where one having a **liability**, or right, or a **fiduciary** relation in the premises, ...

Subrogation typically arises when an insurance company pays its insured pursuant to a policy; the company is then subrogated to the cause of action of its insured. Similarly, under **worker’s compensation acts** the board is subrogated to the injured worker’s right ...

SUIT – “a very comprehensive [word], ... understood to apply to any **proceeding** in a court of justice by which an individual pursues [a] remedy which the law affords. The modes of proceeding may be various; but, if a right is litigated in a court of justice, the proceeding by which the decision of the court is sought is a suit.” 91 U.S. 367, 375. Formerly applied only to proceedings in **equity**, and now applicable to proceedings in **courts of law** as well. May also be used in relation to criminal proceedings, but this is a less proper usage than its more frequent appearance in reference to civil cases. See 144 N.W. 491. See also **action; friendly suit; litigation; multiplicity of actions [suits]**.

SUMMARY JUDGMENT – preverdict **judgment** rendered by the court in response to a **motion** by plaintiff or defendant, who claims that the absence of factual dispute on one or more issues eliminates the need to send those issues to the **jury**; a “device designed to effect a prompt disposition of controversies on their **merits** without resort to a lengthy trial, if in essence there is no real dispute as to salient facts or if only a question of law is involved.” 172 S.E. 2d 816, 817. See Fed. R. Civ. Proc. 56 Compare **directed verdict, summary proceeding**.

DEFINITIONS – (Continued)

TRIAL – a judicial examination of issues between parties, whether they are issues of law or of fact, before a court that has jurisdiction over the cause. 158 S.E. 2d 212, 217. Trials are governed by established procedures and court rules, and usually involve offering of testimony or evidence. 168 N.Y.S. 2d 83, 86.

BENCH TRIAL – the trial of a matter where the court sits without a jury; trial by judge. Both parties must waive any constitutional or statutory right to trial by jury. Compare **jury trial**.

TRIAL BY JURY – see **jury trial**.

REPORTS

During deposition and cross-examination, your reliance on only partial facts in the case will severely limit your ability to present the tried of facts with any meaningful opinions.

... Reports that are clear and easy to understand and follow a flowing sequence and clearly describe the events and questions being investigated, the resources and materials that have been studied in preparation for the opinions formed, a brief statement of your qualification, and a clear and concise statement of each of your opinions, will weather any storm and any amount of cross-examination time and time and time again. ... your reports will stand clear as to the quality of your investigation, the quality and clarity of your opinions, and will serve as an excellent advertisement for future attorney clients.

What is the single most difficult problem associated with authoring a report? Getting started. Sometimes referred to as “writer’s block.”

The written forensic report, like transcripts of trial or deposition testimony, is a durable expression of your views and opinion which is frozen in time, capable of being supplemented, but usually not of being modified. Hence, extremely careful thought, review, proofreading and critical assessment should go into this document.

There are three report contexts. First, the retaining attorney may wish you to write no report to protect discovery of your opinions as a legal strategy. Second, a brief summary report may be requested as an aid to mediation, settlement discussions, preliminary testing of the waters and so on. Finally, the full-fledged forensic report may be required. Note, that in federal cases, reports are expected to include all opinions that will be expressed, and experts may be barred from expressing any opinions at trial that are not in the report.

Deliver a Daubert-proof expert report:

(Daubert v. Merrell Dow Pharm., Inc. - challenging the admissibility of expert evidence)

Prepare a thorough, well-documented report that meets Daubert's admissibility criteria as follows:

Qualifications

- Citations to reference materials are critical.
- Footnotes and references must support the expert's assertions.
- Expert's credentials and methodology should be explained.
- The report must include a detailed recital of expert's qualifications (don't assume resume will be read).
- Have expert include details about relevant experience outside litigation to show how his opinions were formed by experience in the field.
- Make sure expert stresses relevant research that was paid for by independent entities. Expert's appointments to government or scientific panels help dispel notion that he is outside the mainstream or a hired gun.
- A detailed narrative of professional achievements will show the court that many knowledgeable people and reputable organizations have considered your expert credible.
- The report should explain the relevance of research in the area to the court. Remember, peer review can include presentations the expert has given at professional conferences or academic department meetings.
- If expert has discussed his opinion with peers who concur, that information should be included.
- Expert should explain in the report the relevance of memberships in specific professional organizations, especially those that require the completion of specific research – not merely the payment of dues – to qualify for admission.

Expert Report Requirements Of Federal Rule of Civil Procedure 26(a)(2)(B)

Pursuant to FRCP 26(a)(2)(B), your final report must contain the following information:

1. A complete statement of all opinions to be expressed and the basis and reasons therefor;
2. The data or other information that you considered to form your opinions;
3. Any exhibits to be used as a summary of or in support of your opinions;
4. Your qualifications, including a list of all publications that you have authored within the past ten (10) years;
5. The compensation paid for your report and testimony in this case;
6. A listing of any other cases in which you have testified as an expert, either at trial or at a deposition, within the past four (4) years.

Challenging the Report

- If the science is on your side, tell the court you may bring a *Daubert* challenge
- Ask your opponent's expert to identify pre-litigation experience, publications, etc. that relate to the subject.
- Ask the witness to explain their methods – which is ground for excluding their opinions. If the defense expert's report does not have a methodology section, get one of his published papers and use it as a depo exhibit to show that the expert conducts litigation work differently and less carefully than his scientific work.
- Use your expert to demonstrate how the opponent's expert has departed from the standards of the profession.
- Have your expert explain by affidavit how a test could be performed to verify or refute the opposing side's hypothesis.
- Use a second "methodology" expert to comment on your opponent's inappropriate methodology.

THE FORENSIC ENGINEER

In short, the forensic engineer is a detective who helps determine the probable cause or causes of an incident and helps the courts determine, who, if anyone, is responsible and to what degree. A forensic engineer may render an opinion regarding responsibility for the incident.

Investigation is a vital part of the forensic engineers' function. It is here that he collects facts that will lead to a conclusion.

From field investigation, the forensic engineer can produce calculations, etc., to determine why the event happened and to develop theories about causation.

The forensic engineer's report may be based on the detailed investigation -- either from the field or from reviewing boxes of documents, or both.

In court, all testimony must be based solely on the detailed investigation -- either from the field or from documents, or both.

There is a need for expert opinion and testimony to assist judges, juries, arbitrators and mediators that hear arguments from all parties. To make proper judgments and awards, these persons must be presented with detailed facts about the case derived from the investigations of impartial experts, the forensic engineers.

Each party in a lawsuit may use an impartial investigator so that all possible facts are revealed and any alternative conclusions or professional opinions are aired.

The conclusions drawn by these expert witnesses and the credibility of the witnesses are, in great part, the heart of the entire litigation. In the final analysis, the judge or judging body may very well have to make a decision based heavily on the credibility and relative experience of the individual forensic engineers.

Where there are differing opinions or conclusions, the deciding factor may be the qualifications and specific experience of the expert witness and even the witness' conduct while presenting his testimony.

the Forensic Engineer

A Professional Engineering Expert with Detective Skills and Courtroom Savvy, the Forensic Engineer Combines Various Talents to Play Vital Roles in Construction Disputes and Litigation.

Forensic engineering is not a household term. Indeed, it is not even familiar to many professional engineers. However, it is a segment of the engineering profession that is growing constantly, especially in this age of rising litigation.

Forensic simply means that which belongs to or is related to courts of judicature. The forensic engineer, then, is one who is concerned with any engineering aspects of legal problems. These may include investigation of the physical causes of accidents and other sources of claims and litigation, preparation of engineering reports, testimony at hearings and trials in administrative or judicial proceedings, and the rendition of advisory opinions to assist the resolution of disputes affecting life or property.

In short, the forensic engineer is a detective who helps determine the probable cause or causes of a construction failure and helps the courts determine who, if anyone, is responsible and to what degree. Joseph S. Ward, a past president of the American Society of Civil Engineers and a professional engineer in private practice in Montclair, N.J., has extensive forensic experience, and parallels this field with that of forensic medicine. Just as television's Dr. Quincy performs autopsies to determine the cause of death (and often give clues

to the person responsible), Ward views the forensic engineer as performing autopsies on bridges, dams, and other engineered constructed works to find out why they failed. If it is within the defined scope of his services, the forensic engineer may render an opinion regarding responsibility for the failure.

In this regard, the function of the forensic engineer has probably been around for as long as there have been structures. There was undoubtedly some discussion in Pisa about the incline of the bell tower; the owners may have wanted to know on whom they should lean: the designer? the contractor? the excavator? Throughout the ages, people have wanted to know why buildings collapsed, bridges fell, roofs leaked, and so on. In these instances, experts were more than likely consulted. With such a history, why then hasn't the forensic engineer been more prominent?

One reason might be that only recently have owners of failed structures or victims of these failures turned to the courts for recourse. The increase in construction-related claims is so great that Dr. Harvey A. Kagan, professor of civil engineering at Rutgers and a forensic engineer, has referred to the development and filing of claims as a growth area in itself. He cites several reasons, including increased consumerism, which spurs more individuals and corporations to reject shoddy work, and a shift in the relationship between contractors and design professionals. Contractors no longer categorically accept decisions of these professionals and will use the courts to settle design disputes following construction. Architects and design engineers are now having to defend themselves and the accuracy of their documents.

With these many claims comes the need for expert opinion and testimony to assist the judges, juries, arbitrators, and mediators that hear arguments from all parties. To make proper judgments and awards, these persons must be presented with detailed facts about the case derived from the investigations of impartial experts. The conclusions drawn by these expert witnesses and the credibility of the witnesses are, in great part, the heart of the entire litigation. These impartial experts are the forensic engineers. Their areas of expertise cover not only civil engineering but any of the engineering disciplines, such as electrical, traffic safety, product liability, fire investigation . . . vir-

tually every area of engineering endeavor.

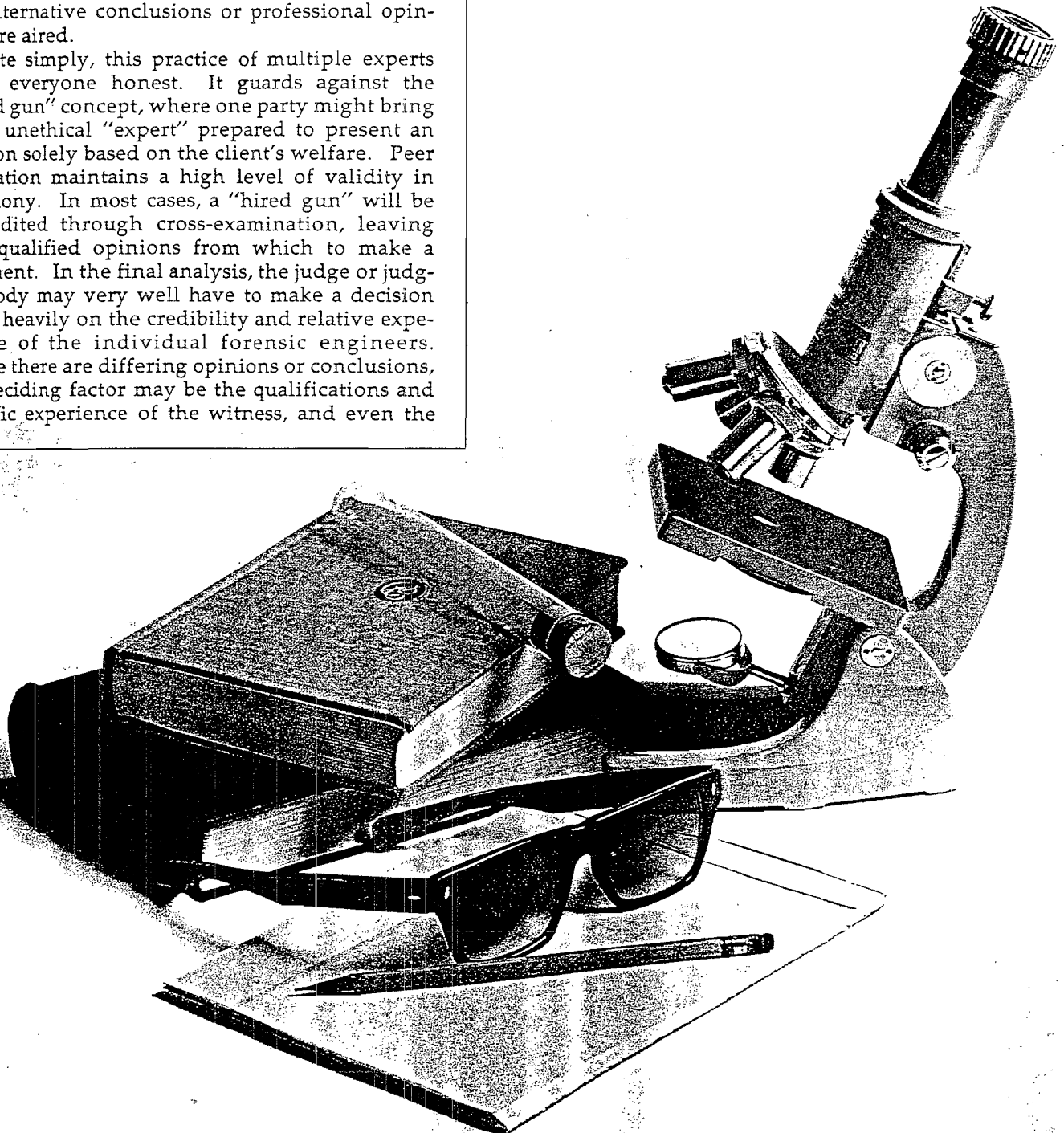
Although vital to the judicial system, these expert witnesses are not obtained by the courts or other judging bodies. Forensic engineers are usually hired by the parties in the dispute. They may represent attorneys, insurance companies, owners, architects, structural designers, various engineering concerns, contractors, subcontractors, product manufacturers, municipal governments . . . even the defense department and other government agencies. Though their clients may be opposing parties, the forensic engineers, themselves, are not adversarial. Each party will have an impartial investigator so that all possible facts are revealed and any alternative conclusions or professional opinions are aired.

Quite simply, this practice of multiple experts keeps everyone honest. It guards against the "hired gun" concept, where one party might bring in an unethical "expert" prepared to present an opinion solely based on the client's welfare. Peer evaluation maintains a high level of validity in testimony. In most cases, a "hired gun" will be discredited through cross-examination, leaving only qualified opinions from which to make a judgment. In the final analysis, the judge or judging body may very well have to make a decision based heavily on the credibility and relative experience of the individual forensic engineers. Where there are differing opinions or conclusions, the deciding factor may be the qualifications and specific experience of the witness, and even the

witness's conduct while presenting his testimony.

FORENSIC ASSIGNMENTS

Although there are several areas and numerous activities in which forensic engineers may be assigned, they are almost always connected with disputes or some form of legal procedure—litigation, arbitration, or mediation. Regardless of the final circumstance of these procedures, the forensic engineer must always proceed with his assignment in the same way because he may ultimately have to





testify under oath and support any opinions and conclusions with meticulous documentation. Ironically, it is often this impetus to prepare a case that will withstand the rigors of the courtroom that keeps the claim from reaching the courts, i.e., early settlement.

"In my experience," says Joseph Ward, "I have been involved in literally hundreds of cases over the past 35 years, and probably less than 25 percent have resulted in a trial or arbitration where I have presented expert testimony. Attorneys and their clients usually welcome the opportunity to settle matters as rapidly and judiciously as possible, rather than prolong the legal proceedings by going to court or arbitration."

A party's decision to settle early does not always arise from realizing the strength of the opposition's case. Often it comes from discovering the weakness of its own position. In this area, it is the responsibility of the forensic engineer to point out to a client when his case is faulty. It is not a service to tell a client only what he wants to hear. A forensic engineer must call the shots as they are. Painful as it might be, it is better to hear bad news in the boardroom than in the courtroom. And less costly, too.

Basic areas of activity for forensic engineers are those involving investigations, malpractice, and construction delays and problems. Although they may become interrelated, each offers a variety of assignments for the engineer.

"Investigation," says Dr. Kagan, who teaches Forensic Engineering at Rutgers, "may be connected with a collapse, an imminent collapse or some performance problem, such as leaks, cracks, settlements, or other failures." (A failure need not be catastrophic, any structure or material that does not perform as intended is a failure.) The malpractice area deals with accusations of not performing up to industry standards leveled at architects, engineers, contractors, subcontractors, or any party involved with a structure. "Construction delays and problems, although not as clear-cut as the other two areas, is one that is becoming more active," says Dr. Kagan. "It involves determining blame for projects that might be late, over budget, or not completed as required."

Investigation is a vital part of the forensic engineer's function. It is here that he collects the facts that will lead to a conclusion. In court, all testimony must be based solely on the detailed investigation—either from the field or from documents, or both.

Ideally, a forensic engineer will be called in immediately following a collapse or failure, so that he may see the scene exactly as it appeared after the event—the position of debris, condition of walls, beams, supports, etc. At this time, he will take photographs, make charts, take extensive notes, and document as much as possible before cleanup or other action is taken. Timing is critical because accurate documentation and, therefore, accurate

conclusions may avoid repetition in the future, saving lives and property. Once the field investigation is completed, these photos, documents, notes, etc., may be the only connection a forensic engineer has with the scene; by the time the case is brought up, the scene may have been demolished or even reconstructed.

At the highly publicized collapse of the walkway at the Hyatt Regency Hotel in Kansas City, great numbers of forensic engineers, representing all concerned parties, were on the scene within hours, documenting the damage, even before rescue operations were completed. Following the late-even-

ing collapse of the bridge over the Mianus River in Connecticut, more than a hundred forensic engineers were at the scene by morning. In Hartford, immediately after the collapse of the arena, the mayor called in forensic engineers and surveyors to document the positions of the debris, photograph the site, catalog the pieces, and make detailed notes on the condition of the area.

The investigation often requires a "team" of experts, each in a specialized field. For this approach, the forensic engineer assumes the role of a coordinator who orchestrates, tabulates, and assimilates the work of others. He then draws conclu-

What Makes a Good Forensic Engineer?

Anyone wanting to enter forensic engineering must first establish himself as a professional engineer, i.e., the education and the experience that leads to becoming an expert. This level of expertise is not achieved quickly. Many well-known forensic engineers have 20, 30, or more years of engineering experience backing them. Therefore, an engineer just out of school is not a candidate for this specialty, at least not at the level of expert witness. The young engineer, however, can gain valuable experience as part of the support team assisting the veteran forensic engineer.

Being a licensed professional engineer is not enough, though. Joseph S. Ward, a PE in private practice, points out that the qualifications and credibility of a forensic engineer are enhanced "if this individual maintains active membership in recognized engineering societies, particularly those that focus on the specialty areas involved in the investigation. Predominant in this respect is the prior presentation of papers on subjects that are directly related to the specific forensic engineering assignment."

But technical competence is only the start of becoming a forensic engineer. Whereas beef is essential to beef Stroganoff, it is the added ingredients that determine the specialty's identity. And so it is with the forensic engineer. To engineering ex-

pertise, add strength of conviction, a commitment to investigative technique, total impartiality, excellent oral and written communication skills, familiarization with legal procedure and rules, a knowledge of psychology and sociology, possible photography skills, and a sense of adventure. Mix this together with a personality that is even-tempered and thick-skinned, and serve—a subpoena.

In many cases, it is the personality ingredient that is the most problematic, especially if the individual is both sensitive and volatile. Marvin M. Specter, co-founder of The National Academy of Forensic Engineers, points out that the expert will be challenged routinely on his qualifications; his engineering competence and the validity of his investigation, testing, and analysis of the facts of the case will be brought under attack. Even his integrity may be called to question and tested under tough cross-examination by a trial attorney whose reputation and livelihood may be dependent upon the repudiation of the witness's testimony. "If you feel that you couldn't help but bristle or become visibly flustered on the stand when opposing counsel begins with questions about your fee structure, and the possible inference that you might be a hired gun, in it for the money, then, all other considerations aside, fo-

rensic engineering might not be for you at all," says Specter.

The National Academy of Forensic Engineers (NAFE) recognizes that individuals with all the right ingredients are not commonplace. In a recent Report to the Board, the Academy states, "Applications for membership require a comprehensive detailing of education, engineering registration, engineering experience, forensic case preparation, expert testimony, court qualifications as expert, professional society memberships, honors, and awards, and a pledge to the highest ethical standards in the practice of forensic engineering." It goes on to say that admission is also conditional upon NAFE's receipt, on a very probing Reference Inquiry form, of the required favorable reports from attorneys, judges, general claims adjusters, and NAFE members who have direct knowledge of the applicant's forensic practice.

At present, membership in the NAFE is about 200 and, although the Academy sees it growing, the executive board does not foresee explosive growth. "We may grow," says Specter, "to somewhere in the neighborhood of 500 members by the end of the century. If it grew to 1000, I would be amazed." It seems that, like the U.S. Marines, the field of forensic engineering is looking for a few good people.

sions from this unified effort.

The investigative process of the forensic engineer is pretty much the same as the FAA engineers who analyze a plane crash and look for the "black box." From field investigations, the forensic engineers can produce mathematical models and calculations to determine why things landed where they did and to develop theories about causation. A team from the National Bureau of Standards, using documented data it collected at the scene of the Hyatt walkway collapse, was able to construct a model of the scene back in Washington and reconstruct the accident from what it observed.

While not all investigations are of the high-profile variety—in fact, the average assignment of a forensic engineer involves disputes that never reach the media, such as roof failures (one of the highest areas of dispute), poor drainage, cracked walls, etc.—the same need for meticulous investigative methods exist.

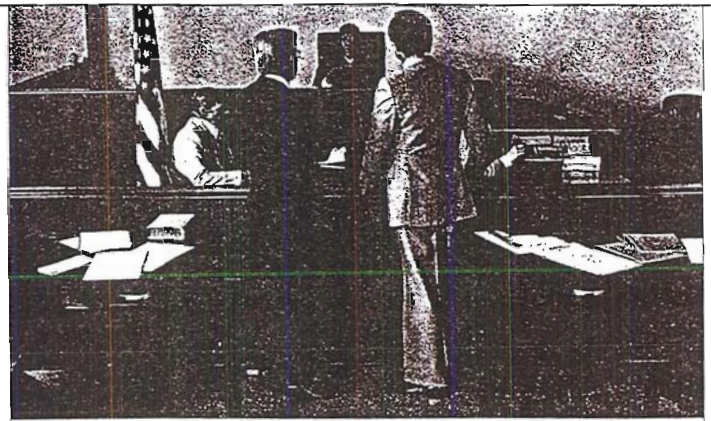
Field work is not the only investigation, however. Often a forensic engineer must proceed from documents only, including design and construction records that help recreate the conditions that existed at the time of the failure. For most assignments, the forensic engineer must literally examine boxes of material before he takes the next step—the report.

THE REPORT

The product of most investigations is a report of some kind that identifies what was done during the investigation and that analyzes and evaluates data uncovered. It may be oral or a more formal, comprehensive written document. It states the conclusions and opinions of the forensic engineer, based entirely on the facts of the investigation. This is the area in which the engineer must be the most careful because of the severity of the circumstances. The parties involved may be facing the loss of their jobs, reputations, careers, or vast sums of money. Responsible parties could even face imprisonment if criminal negligence is indicated. The forensic engineer must never editorialize but only state clearly and exactly what he believes. He must have hard data to substantiate any conclusion or opinion.

Once the report is completed, several things may happen. If the engineer functioned only as a consultant to an attorney, this may mark the end of the assignment. If, however, the report is a formal, written, and supported document, it may be distributed to all parties in the litigation. From this point on, the forensic engineer is identified as an expert witness and is subject to subpoena.

The forensic engineer can now be called upon to give a deposition, and his records can be subpoenaed by opposing counsel. It is at this time that many cases are settled. With all reports known to all parties, an out-of-court settlement may seem wise to a given party, based on the strengths and weaknesses of the cases. This underscores the importance of the forensic engineers' reports. Often



litigation begins, spurred by emotional responses of the parties; forensic engineering helps bring emotion in line with reality and probability.

In a minority of disputes, the parties decide they want their cases brought to court. When this happens, it is the testimony of the expert witnesses that most often influences the final outcome. However, when the forensic engineer hears the words, "All rise," he embarks on an experience that is not covered in most university curricula.

THE TRIAL

Lindley Manning, a professional engineer and associate professor of mechanical engineering at the University of Nevada, writes in *Engineering Times*, "There's a big difference between what you learn in school and what you find in practice as a forensic engineer."

Cross-examination by a skilled and aggressive attorney can be a stimulating challenge to the expert witness, and it requires considerable preparation. Unlike most engineering experiences, it takes place in a legal forum with special rules, procedures, and language that may be disconcerting to those who are not familiar with them. Joseph A. McQuillan, a consulting engineer in San Francisco and an attorney, believes that, as a rule, a consulting engineer has little in his background that prepares him for service as an expert witness.

During the trial, the expert witness becomes a teacher. In both direct testimony and cross-examination, the forensic engineer is addressing the court on all of the elements that led to his conclusions. It may appear to some who have technical expertise that the explanations may border on a professorial level by detailed explanation of basic engineering concepts. However, the witness must present testimony as he would to nontechnical laymen, as is usually the case of a judge, a jury, or one or more of the arbitrators.

The National Academy of Forensic Engineers, the National Society of Professional Engineers, the American Society of Civil Engineers, as well as other engineering and legal associations, such as the Association of Trial Behavior Consultants, all offer assistance to the professional engineer who wants to enter this special discipline—forensic engineering. But like any specialty, forensic engineering may not be for everyone.

The engineer as expert witness

Many lawsuits involving responsibility and damages hinge on technical testimony. Here is a summary guide for the prospective expert witness, written from the perspective of a geotechnical specialist, but applicable to all engineers.

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IT IS ESSENTIAL that the engineer be aware of certain laws, statutes, ordinances, working agreements, and contract agreements and related documents, and how they apply to engineering works.

Increased specialization in technical fields over decades and the increasingly litigious nature of our society have resulted in a great deal of collaboration between lawyers and engineers in litigation involving engineered projects.

Courts of law require that certain facts be established: first, that a duty is owed by one or more of the defendants to the plaintiff (injured party); second, that there was a breach of duty (e.g., negligent construction practices); third, that the breach of duty caused the damage for which relief is sought by the plaintiff; fourth, the extent of the damage. To accomplish this, in cases where the testimony of lay persons is inadequate, expert witnesses are permitted to render opinions based on the facts of the case.

An expert witness can be any person possessing special knowledge, skill, experience, training, or education sufficient to qualify in the subject to which his testimony relates. Such expertise must be established in the courtroom before the witness may testify as expert. The expert witness may then interpret and explain technical facts to enable the court to reach a decision.

Expert testimony is not indisputable and may be controverted by lay testimony establishing inconsistent facts. Since the court considers expert opinion when given as neither more nor less than evidence, a conflict between two experts constitutes a conflict in the evidence.

Your first appearance in court as expert witness likely will be far different from any professional experience you have had. Prior experience in appearing before a meeting of professional peers, at a technical committee hearing or in presenting a technical report will not have prepared you for the probable jolt your ego will undergo while on the stand. If

your next trip to the stand is a satisfying experience rather than an ordeal, then the objective of this article will have been fulfilled.

Pre-trial instruments of the court

Deposition. In this relatively informal procedure, usually called by opposing counsel, you are orally examined under oath before the trial to determine the facts in your possession. This is accomplished via questioning by opposing counsel. All questions and answers are recorded by a court reporter. The lawyer with whom you are working also is present. You respond under rules akin to courtroom cross-examination, and what seems to be a straightforward question may have legal implications.

This deposition may be used in the trial to impeach your credibility. Opposing counsel may attempt to trip you up in cross-examination by asking a similar question in a slightly different manner, hoping to obtain an answer different than that given in the deposition. If you are alert to the similarity of the questions, you may ask permission of the court to explain the difference in your answer as being an answer to a different question.

Interrogatory. Comprising a list of questions from opposing counsel requesting answers from you, the line of communication in this procedure is through the lawyer with whom you are working. Normally, you will give answers to the questions to the lawyer who, in turn, will edit and prepare them in proper form and return them to you for corrections. Your answers to the interrogatories will be notarized and may be used in the trial to impeach your credibility.

These procedural tools of discovery enable opposing counsel to "fish" for what you have discovered or concluded in your investigation. Some of the questions may be ambiguous and cannot be fully answered. Should a question be of this sort, your most suitable response would be that the question is ambiguous and cannot be answered. If the question is substantially duplicated by a previous question, your answer should refer by number to that question and response.

How to prepare testimony

- 1) Withdraw from a case following preliminary appraisal if circumstances and facts appear incongruous and you cannot willingly and ethically support them, or if you have a conflict of interest.
- 2) Investigate the lawyer before agreeing to work with him. He may be objection-

able even though the case is judged worthy.

3) Don't risk your reputation by working with a careless lawyer. An ignorant lawyer is bad, but a careless lawyer is a menace to the profession.

4) Have a definite understanding with the lawyer regarding the need for adequate investigation. Lawyers occasionally want to restrict severely the amount of time you spend in preparation in order to reduce costs.

5) Prepare yourself adequately for the case with the necessary field/laboratory/office investigation. The lawyer mistakenly may believe that technical facts are less than critical to the outcome of the case and that he simply can "out-argue" the opposition.

6) Fully document conditions bearing on the case. Maps, drawings and photographs that clearly demonstrate the facts and your interpretations and conclusions are important. These may be used to explain geologic or geotechnical principles, origin of features, changes induced to preexisting *in situ* conditions by human intervention, changes incurred with time, etc. Three-dimensional drawings or models are particularly beneficial in documenting subterranean conditions and demonstrating their legal relevance to surface features, processes and events.

7) Review your findings with the lawyer well in advance of the court date. A substantial portion of your time may be consumed in educating the lawyer regarding technical matters.

8) Go into court only when certain the lawyer knows all of your findings and conclusions.

9) If there are any skeletons in your closet, e.g., conviction of a crime involving



"Actually, I am familiar with Chapter ten, pages eighty-one to eighty-four of "Foundation Problems and Solutions, Vol. II." In fact, I wrote it."

moral turpitude or inconsistent testimony in prior similar cases, be certain to fully inform the lawyer.

10) Plan your presentation of testimony (in a general way) with the lawyer, preferably 2-4 days prior to the court date. A careful lawyer will prepare an outline and specific questions (with your assistance) so that the relevant facts and your conclusions will be fully affirmed in logical sequence, and your testimony (under oath) will be complete. Remain strictly

When opposing counsel does everything within his power to discredit your testimony, it usually signifies that you have favorably impressed the jury.

within the bounds of the case and present data only to elucidate; it is disadvantageous to load testimony with unnecessary information.

11) Take the witness stand only after having carefully prepared yourself. Be prepared to face skilled, and occasionally unfair, cross-examination of your testimony by opposing counsel. This may constitute 5-10 hours of preparation for each hour on the stand. Your preparation should include review of all work and reports bearing on the case, as well as books and any professional reports and published writings of your own that may have pertinence.

12) Be directed by the lawyer and lend him your full support and loyalty.

13) Through discussions with the lawyer, coordinate your testimony with the conclusions of other experts on your team.

14) Study portions of the deposition given by any expert or witness that touches upon the subject of your testimony.

15) Be aware when giving your deposition that opposing counsel may request and obtain copies of notes, correspondence, reports, etc., that you have in your hand at the time of taking the deposition.

16) For background in a lengthy case, study the transcript of relevant court proceedings (where permitted) prior to your appearance.

17) The use of notes to refresh your memory on a point or series of data is permitted while on the stand if reference to them is prefaced by appropriate remarks. The court may ask to inspect your notes in such event.

Following your swearing in, the lawyer (your team leader) will commence his questioning, usually starting with your qualifications and expertise pertaining to the subject of your testimony. After he has sufficiently elicited your qualifications as expert, opposing counsel may cross-examine you regarding your expert

qualifications—this is known as *voir dire*. Upon conclusion of the *voir dire* and the court's acceptance of your expert qualifications, the lawyer resumes direct examination, going into the subject of your testimony. When the lawyer has finished his direct examination, opposing counsel may cross-examine you on the subject of the direct examination.

After conclusion of cross-examination, the direct examiner may question you regarding subject matter brought out in the cross-examination. This redirect examination cannot present new subject matter or evidence, but must confine itself to exploration of any facts or contradictions brought forth in the cross-examination.

Upon conclusion of redirect examination, opposing counsel may recross-examine you. This recross-examination is limited to contradictory statements between the cross-examination and redirect examination. Ordinarily, the examination stops at that point, but the judge may exercise his discretion as to the extent of the examinations. The judge also may engage in reasonable examination of you at any time during the presentation of your testimony.

The tactics of eliciting evidence are those of the lawyer, not the engineer; he usually has definite opinions regarding the sequence of their presentation. This framework often is rather formal and rigid, and not to the liking of the engineer or geologist. Be mindful, however, that court procedure is calculated to elicit the truth in an orderly manner.

When opposing counsel does everything within his power to discredit your testimony, it usually signifies that you have favorably impressed the jury.

Guidelines for testimony—direct examination

1) State clearly and completely (as appropriate) your professional credentials, especially those relevant to the subject of your testimony. Include your education, practical experience, and professional registration or license. Emphasize your professional experience in the geographic area of concern.

2) Your presentation of testimony generally should follow one of two methods. One is to set forth all evidence bearing on the case. The other is to withhold some nonessential evidence which is damaging to the opposition, anticipating that opposing counsel will "rise to the bait" and request it during cross-examination (calculating that you omitted statements on the subject because they contradict your conclusions). This delayed introduction effectively strengthens your testimony and diminishes opposing counsel's enthusiasm for further questioning.

If opposing counsel fails to "take the bait" by not questioning you on the evi-

dence you have chosen to omit, the lawyer may attempt to elicit your statements on the subject during his redirect examination.

3) In opinion testimony, the lawyer will ask if you have an opinion, based upon the facts available to you, regarding some aspect of the matter being litigated, and you will answer. If you respond affirmatively, he then will ask you what that opinion is, and you will give the court your opinion without expanding thereupon. Then he will ask you upon what you base your opinion. Your answer to this question is a most important part of your testimony. Your success will depend largely on two factors: the extent to which you know, understand and look your role; and your ability to present your data clearly and in an easily understood manner.

4) The lawyer occasionally may have difficulty properly phrasing his question. Assist the lawyer by rephrasing his question if the meaning is not precisely stated. You can say: "Do you mean . . . ?" Other times, your use of qualifying words or phrases in answer to a question may compel the lawyer to delve more deeply into the subject. You may force him to ask you to explain if your answer includes "sometimes," "usually," or "under certain circumstances," thereby opening the door for your complete statement.

5) Define and simplify uncommon words and technical words or jargon whenever possible.

6) Present no opinion concerning subjects outside your specific area of expertise, even though the matter may be within your general field of knowledge. A qualified civil engineer expert in geotechnics, for example, may not be qualified to render opinion regarding a structural failure.

7) Display total impartiality. This requires conscious effort. An objective of opposing counsel may be to show prejudice.

8) Keep your eyes on the lawyer and listen carefully throughout his question; then direct your attention and answer to the jury or judge, not to the lawyer. (He should know the essence of your response before asking.) The case easily can be lost if you lose the attention of the jury (or the judge).

9) Speak in easily audible tones. As you have something worth hearing, speak to the jury (or judge) in an authoritative manner.

10) Try to appear competent yet modest while on the stand. As a jury or judge is inclined to be suspicious of undue assertiveness or arrogance, rely on the presentation of your professional credentials and your demeanor to reveal your authority on the subject of your testimony.

11) If you do not know the answer to a question, say so.

12) Exaggeration in your response to a question is likely to be a hindrance later in the trial. (An objective of opposing counsel may be to show that your testimony is improbable.)

13) Don't give a cursory "yes" or "no" answer to a complex question. Present the reasons leading to your conclusions if they clarify the basic points in question.

14) Answer only the question asked (if you can), allowing the lawyer to determine the order and presentation of evidence.

15) Don't be reluctant to admit a mistake or to qualify an answer. Your reputation (and the impression you leave with the court) for honesty and sincerity is valuable.

It is foolish to be "clever" in your response to a question. The cross-examiner is performing in his back yard and will have the distinct advantage; if you forget this, he'll show you a few tricks that you may not have heard about. Say as little as possible but as much as necessary.

Guidelines for testimony—cross-examination

1) Opposing counsel will deal with you in one of three ways: (a) as though you do not know your subject or the facts of the case, thereby discrediting you; (b) as though you are unsure about important facts or aspects of the case, thereby discrediting your testimony by eliciting from you conflicting statements for the record; or (c) as though you are well-prepared and truly an expert, in which event ordinarily few questions will be asked for fear of damaging answers.

2) You should never allow your answer to a question to be rushed, although the cross-examiner may try pressuring you to a hasty response. Theoretically, you have unlimited time to answer a question. If your correct answer would require several hours of calculations, so state and await court instructions.

3) Be deliberate and selective, accepting no confusing rapid-fire questions. The cross-examiner gains nothing by asking questions which go unanswered.

4) Do not hesitate, however, if the answer to a question is obvious. A prompt answer is highly effective as it often leaves the jury or judge waiting for the cross-examiner to resume his questioning.

5) The use of compound questions is a common technique of the cross-examiner in order to confuse the expert, jury or judge. Never attempt to answer such

questions in a single response; have the cross-examiner choose the one you are to answer.

6) Trick questions are a tool of the cross-examiner. Generally, limit your response to the question asked. You properly may be compelled by the judge to answer "yes" or "no" as the trick question indicates. You may meet the question by responding "Yes (or no) I can explain that," thereby immediately alerting the jury or judge to the attempted trick. Even if opposing counsel avoids your offer to explain, the lawyer with whom you are working will take note when he hears "I can explain that," and he will call forth your explanation on redirect examination. Another approach to trick questions requiring a "yes" or "no" answer is to reply: "I will be happy to answer if the court will allow me to qualify my response."

7) You may be asked if you have talked with anybody about the case. The response may be a statement that you have talked it over at length with the lawyer who called for your presence.

8) The cross-examiner may ask if the attorney told you what to say. Your best answer is that he told you to tell the truth.

9) If asked how much you are being paid to testify, state the amount frankly and matter-of-factly, adding "That is my normal fee."

10) Maintain your composure at all times; just politely smile and be courteous to the cross-examiner and the court. The jury and judge like to see a harassing cross-examiner fail.

11) The cross-examiner may ask if you frequently have differed from other experts. You may answer "Perhaps," adding that you still are convinced that your opinion was correct. (There may be room for such differences in close cases.)

12) It is foolish to be "clever" in your response to a question. The cross-examiner is performing in his back yard and will have the distinct advantage; if you forget this, he'll show you a few tricks that you may not have heard about.

13) Uninformed though the cross-examiner may appear, never underestimate his grasp of the facts. He may be better informed than you are on some point and act uninformed in order to discredit you on a technical matter.

14) If it is true that you have been called upon many times to testify as expert, admit it. The fact that your opinion is much sought after affirms your knowledge and professional competency. And if true, you may add that you are called in consultation very often. Should the cross-examiner ask "How often," thus indicating his inexperience, let him have it (the details).

15) Accept a book or professional paper as authoritative only if you know well its

contents relevant to the subject of your testimony. Opposing counsel may have a copy under the table.

16) Do not hesitate to question statements in textbooks by alleged authorities, if you disagree. When you know the book is outdated, inquire as to its copyright date or edition. Your alternative answer may be that textbooks are meant to present principles and so are often not entirely applicable in particular instances. You may also say, simply, "I can explain that." In the latter instance, when asked to explain, be certain that you name the textbooks which are most authoritative and which support your opinion.

17) When the lawyer with whom you are working "objects" to a question, remain silent. Listen carefully to the objection as he may perceive a subtle innuendo in a seemingly innocuous question, thereby alerting you to the dangers of the question. Await the judge's decision whether or not you may answer the question.

18) Say as little as possible but as much as is necessary.

General guidelines

1) Appear in court only when instructed to do so by the lawyer with whom you are working.

2) The jury will be highly critical of your appearance and demeanor; look, dress and conduct yourself accordingly.

3) Closely follow court procedure and the rules of evidence. Although they appear inexplicably restrictive, each has an important relation to the just determination of the controversy.

4) It usually is unwise to discuss any aspect whatsoever of the case in the corridor or (during recess) in the courtroom, except with the lawyer with whom you are working. Opposing counsel may have posted clerks near you, using what is overheard to your detriment on cross-examination.

5) Your effusive greeting of an opposing expert witness likely will attract attention, thereby enhancing his image. Even though he may be a friend or a colleague, you are obligated to make little of him and to destroy his opinion (rightfully) by your superior opinion.

6) Never consult with an opposing expert.

7) Promptly leave the courtroom upon completion of your testimony, unless otherwise requested by the lawyer. ▽

James E. Hough has had 27 years of experience as an engineering geologist, soil and foundation engineer, and geotechnical engineer in both the private and public sectors. He has published extensively on the subject of landslides. His most recent publication is Engineering Geology of the Cincinnati Area, published by the Geological Society of America.

TIPS FOR WITNESSES

How to Work With Your Attorney

Ask Questions. Your attorney will be asking you questions to learn what you know. Often, the attorney will not know the right words to use to get you to tell all that you know about the events. If you don't understand the question, ask for clarification. Don't be afraid to ask "Do you mean this—or do you mean that—?" Part of your job is to educate your attorney so that he or she can do the best job of transferring appropriate information to the jury.

Express Your Concerns. If you are concerned about anything (any of the events, the types of questions you are getting from the attorney or that you might get from an opposing attorney, the process of a court proceeding, or anything else), tell the attorney of your concerns and talk them out.

Separate Clear Knowledge From Uncertainties. Be clear as to what you know, and how you know it to be true, as opposed to what you suspect or what might be true. If you have suspicions about some events, express them so that the attorney can check them out.

What to Say in Court

Make Sure That You Understand the Question. Sometimes your own attorney or a cross-examining attorney will use the wrong term or misquote someone. Sometimes it is unintentional, but sometimes it is done intentionally by another side to trip you up. You can't tell the truth, the whole truth, and nothing but the truth unless you understand the question. Don't be afraid to ask the attorney to repeat the question or break it down into smaller chunks, especially if the attorney has predicated the question by asking you to assume a number of things as being true.

Tell the Truth. You are under oath to tell the *truth, the whole truth and nothing but the truth.* These three items are here for a reason. Be accurate. Be complete. But don't go beyond the answer to the question. If you tell the truth, no one can trip you up with your own testimony.

Stick to the Facts About Which You Have Personal Knowledge. If you are a fact witness, you are there to relate facts to the jury. If you are an expert witness, you are there to render a professional opinion based upon your education, your experience, and your understanding of the facts supporting your professional opinion. Don't add your personal conclusions or opinions.

Don't Guess. If you don't know the answer, or if you only know the answer to part of the question, be clear as to what you don't know.

Don't Volunteer. You will be responding to a question. Answer that question only—then stop. Don't go beyond the question that has been put to you at that time, even if you know where that question might be leading. Don't volunteer additional information. If you and your attorney have properly prepared yourself, the attorney will know that you will want to respond further and will ask you to do so when it is his or her turn.

How to Say It

Don't Memorize. Your answers will be more spontaneous and will be received as being more truthful if they are not memorized.

Don't Rush. When you are sure that you understand the question, form your answer carefully so that you answer the question fully. There is no need to rush. Make sure that the question has been completed and give your attorney time to object to the question if that is necessary. If there is an objection made, listen carefully to the objection and the judge's ruling; it will help you with your answer. Obviously, though, you don't want to be too slow to answer either, because the jury may think you are making up an answer. If you are in a deposition, the written sheet won't show how much time you take for an answer.

Leave Room For Adding To or Correcting Your Answer. Don't be too "final" with your words. You may wish to add to the answer later or you may need to correct it. If you realize that you have misspoken, or that the attorney meant one thing with the question and you understood something different, *correct your answer as soon as you realize the need.*

Don't Use Jargon That is Not Required. The jury can easily become confused if too many special words or too many abbreviations are used. If you absolutely must use a term of art, a colloquial term, a technical term, or any other term that is not in general use, explain it carefully. If it could be confused with another term, such as the NEC vs. the NESC (National Electrical Code vs. the National Electrical Safety Code), make sure you are clear as to which one you are using. In such a case, don't use an abbreviation; use the full name.

Speak Clearly. Be sure that your answer can be heard and understood by the jury and the judge. Speak loudly enough to be heard over the courtroom noise, but don't yell. Form your words carefully and distinctively to make it easier for those who are hard of hearing. Don't chew gum or put your hand over your mouth.

Use Powerful Language. Don't say "I think," "I believe," "in my opinion," "it must have been," or "I guess." It looks like you are not sure of yourself or you are lessening the importance of what you have to say. If you know something to be true, say so, but don't make up an answer. "Between three and four hundred feet" is a better answer than "maybe three hundred feet, or it could be four hundred feet." "Yes" is better than "I guess so."

Face the Jury. The jury is your audience. You may need to face the attorney in order to hear the question, but your answer should be given to the jury. The jury is interested in what you have to say.

How to React to Cross-Examination

You Are On An Island By Yourself. When you are on that witness stand, you can't look to your attorney, the judge, or the jury for help. Remember, you are the one who knows the facts. Stick to the facts and be truthful.

Be Courteous. This is a serious proceeding. Saying "Yes, sir" or "No, Ma'am" to the attorneys, and "Your Honor" to the judge will let the jury understand that you take this as seriously as they do. Show respect for their time and effort.

Don't Deny Discussing the Case. You are sworn to tell the truth. If you are asked about the people with whom you have discussed the case, be truthful. The jury knows that you will have talked with your attorney and, in some cases, with others.

Don't Argue or Lose Your Temper. The attorney on the other side has a right to question you and will try to bring out the things that you know that will be helpful to the other side. If you argue too much or give "smart" answers, the jury may believe that you have something to hide.

What to Wear

Show Your Respect For the Court. A court of law demands respect. Remember, the jury didn't ask to be there. Show respect for their time. Generally, the same clothes that you would wear to a wedding or a funeral will do just fine. Most of the time, men should wear a tie and a suit coat or a jacket. The only exception to this is that some craft workers may make a better impression if they dress more casually in a good shirt and pants (not old work clothes). Women should never wear slacks or shorts unless a special situation demands it. Talk with your attorney about appropriate wear.

REMEMBER, ASK QUESTIONS ABOUT ANYTHING YOU DON'T UNDERSTAND

TIPS FOR WITNESSES

LOOK 'EM IN THE
EYE, SMILE AND
TELL THE TRUTH.

1. **TELL THE TRUTH** - In a lawsuit, as in all other matters, honesty is the best policy. Telling the truth, however, means more than refraining from telling a deliberate falsehood. Telling the truth requires that a witness testifies accurately about what he knows. If you tell the truth and tell it accurately, nobody can cross you up.
2. **DON'T GUESS** - If you don't know, say you don't know.
3. **DON'T MEMORIZE** what you are going to say.
4. **UNDERSTAND THE QUESTION** before you attempt to give an answer. You can't possibly give a truthful and accurate answer unless you understand the question. If you don't understand the question, ask the lawyer to repeat it. He will probably ask the court reporter to read it back. Keep a sharp lookout for questions with a double meaning and questions which assume you have testified to a fact when you have not done so.
5. **TAKE YOUR TIME** - Give the question such thought as it requires to understand it and formulate your answer and then give the answer. Although, you can't be rushed into answering, it would look bad to take so much time on each question that the jury would think you were making up an answer.
6. **STICK TO FACTS** no hearsay, nor your conclusions, nor opinions. You usually can't testify about what someone else told you.
7. **DON'T BE TOO FINAL** - Don't say, "That's all of the conversation," or "nothing else happened;" say, "That's all I recall" or "That's all I remember happening." It may be that after more thought or another question you will remember something important.
8. **GIVE A POSITIVE ANSWER IF YOU CAN** - Avoid saying "I think," "I believe," "in my opinion" and "I guess." If you do know, say so, don't make up an answer. You can be positive about the important things which you naturally remember. If asked about little details which you don't remember, (and which most persons naturally would not remember), just say that you don't remember. But don't let the cross-examiner get you in the trap of answering question after question with "I don't know," or, "I don't remember."
9. **DON'T VOLUNTEER** - Answer directly and simply only the question asked you, and then stop. Do not volunteer information not actually asked for.
10. **CORRECT MISTAKES** - If your answer was wrong, correct it immediately.
11. **BEWARE OF QUESTIONS INVOLVING DISTANCES AND TIME** - If you make an estimate make sure that everyone understands that you are estimating and make certain your estimates are reasonable.

LEAVE A
LITTLE
WIGGLE
ROOM

12. **SPEAK UP** - Talk loud enough so that everybody can hear you. Speak clearly and distinctly. Do not nod your head for a "yes" or "no" answer. It must be a spoken answer so the court reporter can hear it and record it. Do not chew gum or smoke and keep your hands away from your mouth.
13. **YOU'RE ON YOUR OWN** - Don't look at the lawyer, or the judge, for help when you're on the stand. You're on your own. If you look at the lawyer for your side when a question is asked on cross-examination or for his approval after answering a question, the jury is bound to notice it and it will create a bad impression.
14. **DON'T ARGUE** - Don't fence or argue with the lawyer on the other side. He has a right to question you, and if you give him some smart talk or give evasive answers you will make a bad impression.
15. **DON'T LOSE YOUR TEMPER** no matter how hard you are pressed.
16. **BE COURTEOUS** - Being courteous is one of the best ways to make a good impression on the court and jury. Be sure to answer "Yes, sir" and "No, sir" and to address the judge, as "Your Honor."
17. **DON'T DENY DISCUSSING CASE** - If asked if you have talked to the lawyer on your side, or to an investigator, admit it freely. The judge and jury know that no capable lawyer would put a witness on the stand if he didn't know what facts the witness knows and, in a general way, what the testimony will be. Besides that, you're sworn to tell the truth.
18. **DON'T BE AFRAID** to look the jury in the eye and tell the story. Jurors are naturally sympathetic to the witness and want to hear what he has to say.
19. **GIVE A POSITIVE ANSWER** when you can. Don't let the lawyer on the other side catch you by asking you whether you are willing to swear to your version of what you know by reason of seeing or hearing. If you were there and know what happened or didn't happen, don't be afraid to "swear" to it. You were "sworn" to tell the truth when you took the stand.
20. **DRESS PROPERLY** - A court of law demands respect. Dress as though you were going to church. Men must wear ties and a suit coat or jacket. Ladies should not wear slacks or shorts.
21. **WAIT UNTIL THE JUDGE HAS RULED** on any question about which an objection has been made. You may never have to answer the question if the judge sustains your attorney's objection. You should listen carefully to all objections and all rulings when you are on the witness stand so that you can avoid future problems.

Go back, now, and reread these suggestions so you will have them firmly in your mind. We hope they won't confuse you. We hope they will help. These aren't to memoreize. Ask us about anything you don't understand. You will find there is really nothing at all to be scared about or nervous about in testifying. If you relax and remember you are just talking to some neighbors on the jury you will get along fine.



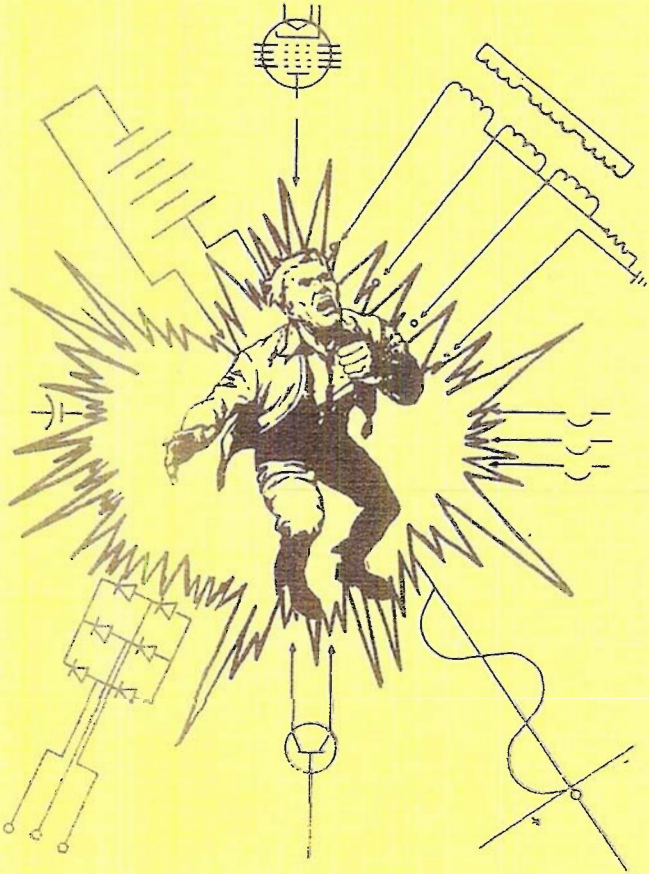
Electrical Hazards



U. S. Department of Labor
Mine Safety and Health Administration
National Mine Health and Safety Academy

Safety Manual No. 9

Reprinted 1994



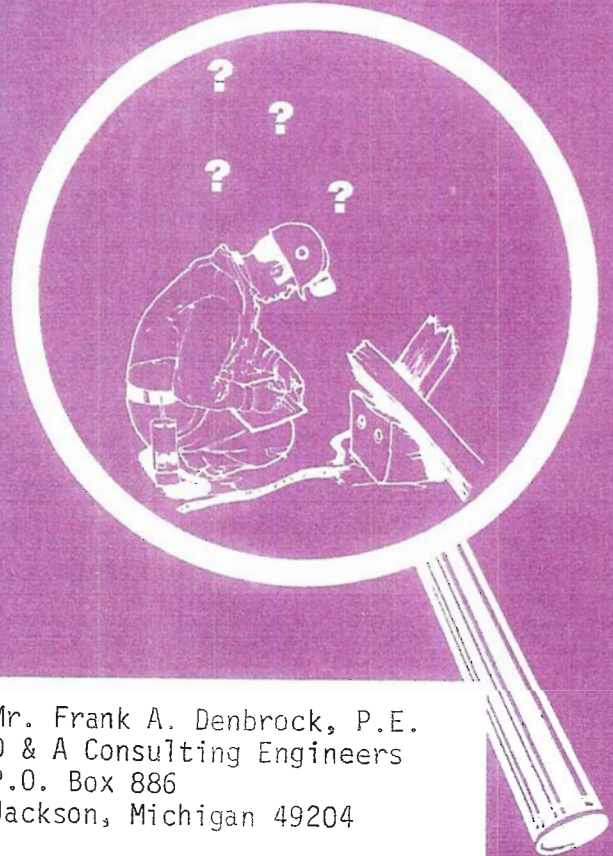
Accident Investigation



U. S. Department of Labor
Mine Safety and Health Administration
National Mine Health and Safety Academy

Safety Manual No. 10

Revised 1990



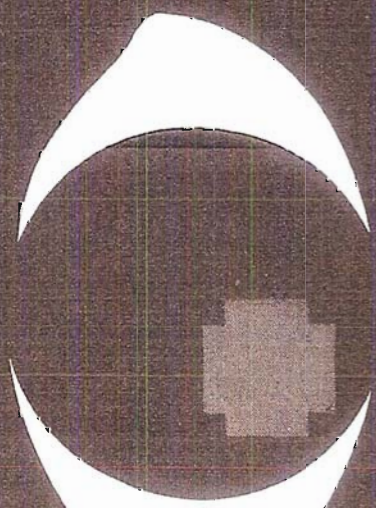
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Job Safety Analysis

U. S. Department of Labor
Mine Safety and Health Administration
National Mine Health and Safety Academy

Safety Manual No. 5

Reprinted 1995





"The Human Factor"

SAFETY EDUCATION & TRAINING DIVISION

A recent safety publication recently noted that human behavior is the toughest factor to control in eliminating unsafe acts by workers.

Most accidents, hazards and dangerous operations can be corrected when discovered and reported. However, the elimination of human failures is often a difficult and lengthy process.

The publication listed nine principal factors which cause unsafe acts and unsafe work practices. Ignorance, as a result of lack of experience or the inability to recognize hazards and dangers, is one of the factors.

It's this way with another. The worker may know how to do a job, but he doesn't think it's important. In other words, accidents always happen to someone else. This is the basic policy is why it's important that job safety rules be enforced.

Clowning around is another problem. (Or you might call it "horseplay.") Clowning around and horseplay on the job are in the same category and are always unsafe.

Unsanitary habits are also dangerous. These habits are common to many on the job, and if they are not corrected, they will continue until they are the cause of an accident.

When you hire often a new person on the job will be influenced by examples set by veteran employees. So watch out for unsafe practices. You'll be doing both yourself and them a favor.

Unnecessary shortcuts also can be hazardous. Don't change job procedures without the permission of your supervisor. Many valuable time-saving suggestions come from veteran employees, but these changes should be made only when they are used. Haste can result in accidents.

Another factor that can cause unsafe acts is lack of a tolerant control anger and losing your temper are two ways that can quickly turn into safety problems.

Unusual stress and fatigue are still other factors that can limit your ability to handle a job safely. They are just two of the many good reasons for keeping yourself in good physical condition.

Finally, one of the most dangerous factors is the lack of training. You will occasionally find a worker on your job who has done his own "supervised" training and acting on his own. Unfortunately, some experienced employees may be so familiar with their job routines that they become inattentive and carelessly hazardous.

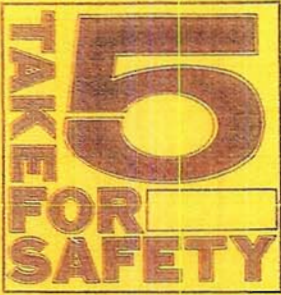
So overall, the responsibility for controlling human factors in safety really belongs to each of us. There is no way these human factors can be engineered out of our jobs. To control them we must be constantly alert and have a firm commitment to safety.

Human behavior may be one of the toughest factors to control, but it does present each of us with an opportunity to make important contributions to our own safety.

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U.S. DEPARTMENT OF LABOR

No. 78



You're Responsible

SAFETY EDUCATION & TRAINING DIVISION

Every person is the architect of their own fortune and that fortune, good or bad, depends on the individual's acceptance of personal responsibility.

At a young age, we are taught to assume responsibilities. ("Look before you cross the street . . . playing with matches is dangerous . . . be home before dark. . . .") Even today, as adults, we still learn and decide whether to accept certain obligations. Young or old, we make individual choices.

When responsibilities are shunned or rejected, someone must cope with the results. Police officers, judges, juvenile officers, and social workers respond to most of these rejections in our society. In safety, doctors, nurses, and funeral directors deal with the consequences of rejected responsibilities.

There are laws, both federal and state, designed to spell out responsibilities for safety in the workplace, (see Employer and Employees Rights and Responsibilities under Public Act No. 154-ITS No. 1749) but actual performance of these obligations still belongs to you.

By accepting and practicing safety responsibility, you insure your future both at home and on-the-job. You do the same for your fellow worker as well, because socially and morally you are responsible for preventing accidents to others as well.

If you see an unsafe act, do something about it — point it out so others are aware and can avoid future mistakes.

Point out to other employees when safety isn't being practiced. (IT MAY SAVE YOUR LIFE SOMEDAY!) After all, it's their responsibility to prevent an accident to you as well.

Be willing to serve on a safety committee. Be more than just a member, be active and creative.

Use good work habits — don't be impulsive, and remember that hurry up can hurt!

Develop the attitude that "if I do something wrong, I'm going to get hurt!" Then do the job the right way.

If you are a supervisor — help new employees learn that safety is the rule, not the exception. Teach them proper safety responsibility before you turn them loose.

Practice leaving personal problems and emotional stress away from the job.

Remember that accidents don't happen — they are caused.

Correct little mistakes before they grow into permanent bad habits.

While attempts may be made to cloud or reject the responsibility for safety, when all is said and done, safety responsibility is up to you. You are the architects of your own fortune.

"Practice safety — don't learn it through Accidental Experience."

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LABOR

NO. 34



"Safe Work Habits"

SAFETY EDUCATION & TRAINING DIVISION

A nineteenth century author wrote, "Habit is the deepest law of human nature."

Most of us would probably agree with that. Humans are quite often influenced by habit.

Habit and job safety are closely related. If you form safe work habits, it's a big plus for safety.

A national publication recently listed eight of the most common human elements involved in job safety. All are associated with habits, to some degree.

Recognition of hazards was one of the elements mentioned. By constantly being on the lookout for hazards, you enhance your own safety. In watching for hazards you must consider not just the obvious ones, but also hazards which might suddenly appear through some action of another employee or a chain of unusual circumstances.

Indifference was another of the human elements listed. An individual might know the correct procedures for doing his or her particular job, and just ignore them. Or there might be persons who don't know safety procedures and just leave it at that, rather than finding out what they are.

Daring behavior is another obvious human element that can lead to a job accident. Working without guards and taking shortcuts are examples of daredevil tactics. Horseplay is in the same category.

Setting a poor example also can lead to trouble. The actions of all of us have an influence on the safety-mindedness of other workers, particularly newcomers. If a veteran employee is involved in an unsafe act on the job, a new worker might observe it and be swayed to adopt the same practice.

Another weak link in the chain of safety is someone who is impulsive or always in a hurry. Haste is a trait that often leads to accidents.

We are using our time foolishly if we don't take time to be safe. Temper falls into the same category, as it usually flares up on the job in the form of impatience.

Training, or lack of it, is also a safety factor. The supervisor is responsible for training an employee to do a

job safely. However, as employees, we have to be responsible enough to ask questions if we don't understand instructions, or are in doubt about procedures. Also, it's very basic to safety that hazardous situations be called to the attention of the supervisor.

The eighth human element listed by the author was work habits. Of course, that is really the point of our talk.

We do our jobs from day to day, and in the process, good work habits are formed. But so are unsafe habits, unless we make an effort to break them. Some habits good or bad, are formed early in the job, while others develop naturally as time goes on.

A person might incorporate unsafe habits into the job and continue them for a long time before a mishap occurs. Other people might not be so fortunate. They could learn quickly how an unsafe act can catch up with them unexpectedly. Gambling with the law of averages is a bad bet.

First and foremost, the purpose of all safety efforts is to prevent accidents and injuries to human beings. As human beings, we all have the inclination to choose the easy method of doing something, or the fastest way to do it, without regard to safety.

By doing things the correct way, we gradually form safe work habits that carry through into our daily work, and this is one of the best safety devices available.

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LABOR

No. 69

SET-1838 Rev. (5/82)

NATIONAL ELECTRICAL SAFETY CODE



"SPECIAL" SECTIONS:

SECTION 1. INTRODUCTION TO THE NATIONAL ELECTRICAL SAFETY CODE

SECTION 2. DEFINITIONS OF SPECIAL TERMS


SECTION 3. REFERENCES

SECTION 9. GROUNDING METHODS FOR ELECTRIC SUPPLY AND COMMUNICATIONS FACILITIES

NATIONAL ELECTRICAL SAFETY CODE

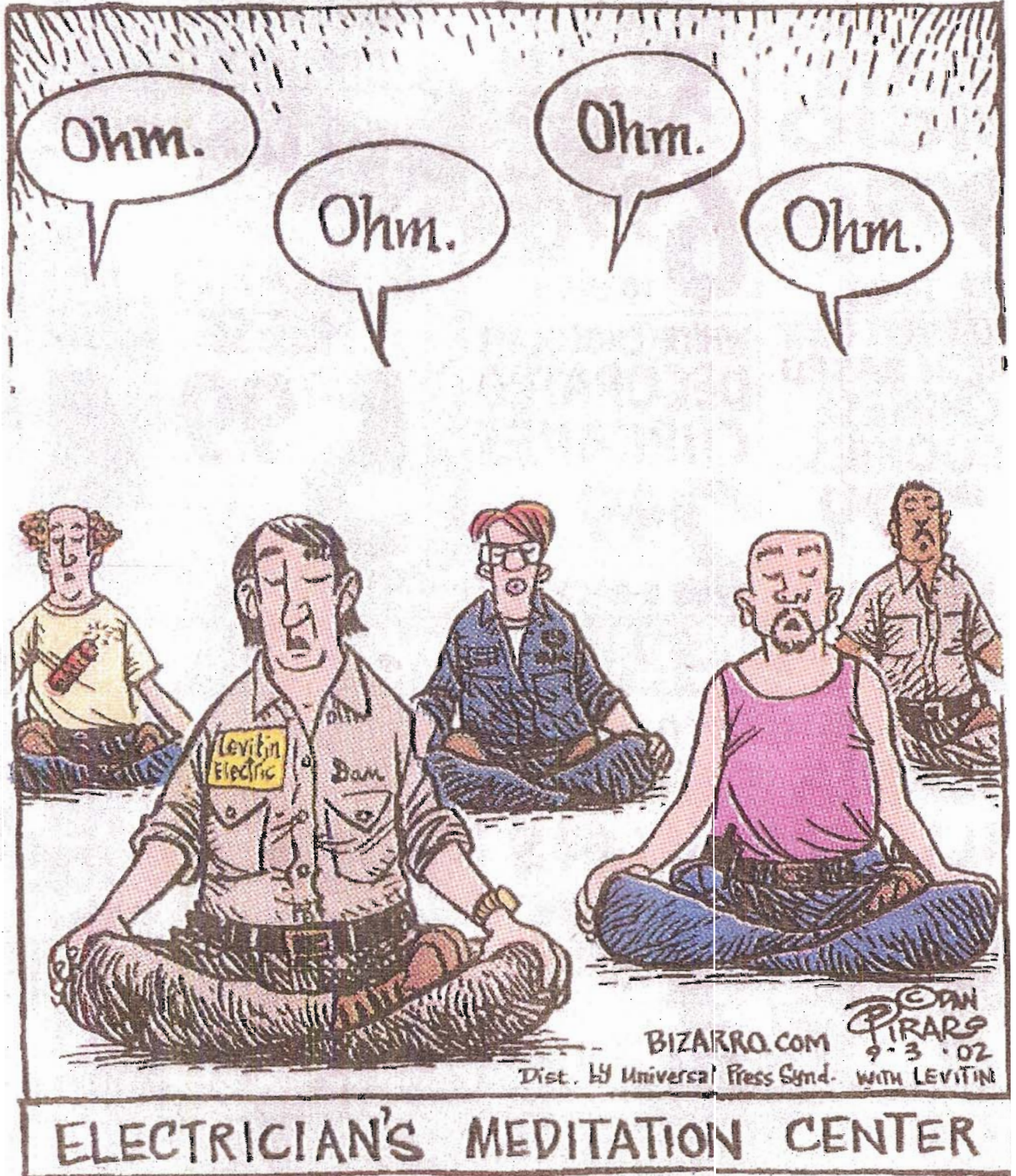
 **PART 1. RULES FOR THE INSTALLATION AND MAINTENANCE OF
ELECTRIC SUPPLY STATIONS AND EQUIPMENT**

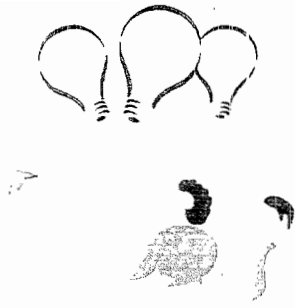
 **PART 2. SAFETY RULES FOR THE INSTALLATION AND
MAINTENANCE OF OVERHEAD ELECTRIC SUPPLY AND
COMMUNICATION LINES**

 **PART 3. SAFETY RULES FOR THE INSTALLATION AND
MAINTENANCE OF UNDERGROUND ELECTRIC SUPPLY
AND COMMUNICATION LINES**

 **PART 4. RULES FOR THE OPERATION OF ELECTRIC SUPPLY
AND COMMUNICATIONS LINES AND EQUIPMENT**

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**DON'T BE A
SMART-ASS!**



**Thank
You!**
**FRANK
DENBROCK**

"I'm sorry your honor, but we were unable to settle this out of court."