

~~CONFIDENTIAL~~  
UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of )  
 )  
TEXAS UTILITIES GENERATING )  
COMPANY, et al. )  
 )  
(Comanche Peak Steam Electric )  
Station, Units 1 and 2) )

Docket Nos. 50-445-2

and 50-446-2

DOCKETED  
USNRC

'84 AUG 23 A11:27

OFFICE OF SECRETARY  
LOCKE, JIM & SCOTT  
BRANCH

WRITTEN TESTIMONY OF IRWIN L. GOLDSTEIN

Q: State your name please.

A: Irwin L. Goldstein.

Q: And what is your occupation?

A: I'm a Professor and Chairman of the Department of Psychology at the University of Maryland.

Q: And do you have a specialty within the psychology area?

A: Yes, I'm an Industrial Organization Psychologist.

Q: And what does that mean?

A: An Industrial Organizational Psychologist is an individual who studies the work behavior of individuals in work organizations.

Q: And is Exhibit 1 a copy of your resume?

A: Yes it is.

Q: And is it accurate to the best of your personal knowledge?

A: Yes, with one addition. I am President-Elect of Division 14 (Division of Industrial and Organizational Psychology) of the American Psychological Association.

Q: Have you had experience evaluating large organizations?

A: Yes. I have been a consultant on numerous occasions to large organizations to evaluate large work forces. My work has consisted of designing studies to determine the nature of problems among the work force and based upon the results of those studies designing appropriate personnel systems to be implemented to correct the problems.

Q: Dr. Goldstein, what is your major area of specialty in the industrial psychology area?

A: My major area is the design and evaluation of training and instructional systems for persons in work organizations.

Q: What does an Industrial Organization Psychologist do?

A: We study the kinds of things that facilitate and inhibit learning in an industrial environment. For example, when a training program is designed to teach persons how to utilize safe behavior in an organization, it is my area of study that determines whether and how what is taught in the training program gets put into effect when the individuals get into the actual work situation.

Q: Are there other sources of learning for the members of a work force other than specifically designed training programs?

A: Yes. There are various theories about how people learn and there is a lot of good supporting data for each of them.

One way that individuals learn is that when they do something and they are reinforced and get rewarded, then they are more likely to do that particular act in the future. One way that individuals learn to behave is related

to the fact that they are rewarded for behaving in one way, or don't receive any reward or are punished for behaving in another way.

Q: What does that mean in practical terms, in terms of the workforce of a large industrial site like a construction site for a nuclear power plant?

A: Using the example of safe or unsafe behavior, if an individual did something that was unsafe, and there was a punitive action associated with that unsafe behavior, then they would be less likely to do it in the future. Or, if a person did something that enhanced safety, and they were rewarded for doing that then they would be more likely to continue that kind of behavior. The situation gets more complicated than this because people don't actually have to be involved in the action to learn. For example, one of the things that has been learned about human learning and behavior is something that is called "vicarious learning" -- that is that individuals learn to watch what happens to other people and learn from that. Our original learning theory was that a person has to be involved in the action to learn. Later on it was realized that persons don't have to actually be involved but that they can see someone else make the response and watch what happens to them and learn from that.

Q: Does this work equally with regard to sending negative messages as well as sending positive messages?

A: Absolutely. Persons can learn almost anything by watching another individual perform and seeing the consequences of what happens to that individual. For instance if individuals who wear their safety glasses around construction machinery are told by their production supervisor to take their safety glasses off because it interferes with their production, and if they don't take those safety glasses off they are going to be docked a day's pay and the individual doesn't take the safety glasses off and does get docked a day's pay, the message that other individuals clearly receive is that if they don't respond when they are told to take off their safety glasses then they are likely to have trouble with management. The interesting thing that comes of those situations is that many of these same companies eventually get to Safety Week and they put up safety signs around the plant and say "safety is our business" and what is found when studies are done is that the employees consider "Safety Week" a big joke because the signs say "'safety is our business" and management puts up these signs, but when it really comes down to the behavior of the individuals who try to wear the safety glasses, management is not really supportive. Thus the employees learn not to wear the glasses even though management preaches safety.

Q: What is the phenomenon by which the learning experience is transmitted from one part of a large construction site throughout the entire construction site?



A: Most of this depends upon communication through the "grapevine." There is a grapevine through organizations and as incidents occur in organizations they get talked about and people learn about them. Employees learn about what the facilitators are in an organization (the things that support behavior) and what are the inhibitors (the kinds of things that do not support behavior). By that the company rules, and the climate of the organization becomes clear.

Q: Explain a little bit about how the grapevine works.

A: Well, sometimes messages get distorted, but it's our experience in organizations that the informal grapevine is a very important point of information. People do talk to one another, they meet each other at lunch, they meet after lunch, they meet coming to work and the word spreads. The grapevine is the mechanism by which the workforce learns what management does as contrasted to what it says.

Q: Would that be true at every large construction site?

A: Well, I don't know of any organizations that don't have a grapevine. I would find it really remarkable to hear that there is any organization that doesn't have an informal network of communication.

Q: Within the workforce which source of information is likely to be more believed -- a regularized, approved channel of communication like a newsletter or a bulletin board, or the grapevine?

A: It's the question here of not what management says, but how they actually perform. So, management can say all day long in all of their written messages we support quality

control inspectors, but the first time that a nonconformance report appears and a quality control inspector gets called on the carpet for it, and the next time he gets called on the carpet for it, and the next time he gets fired, it doesn't matter what the written message is. It's the behavior that counts.

Q: What are the types of behavior that take place on a construction worksite that can be inhibitors of conduct?

A: Well, firing and hiring are probably the most dramatic, because if you fire somebody from an organization they're leaving the organization, but it doesn't need to go that far. It can range all the way from docking a person for a day's pay to intimidation.

Looking at some of the answers given in 1979 interviews alot of the kinds of things mentioned there would be the kinds of things that would provide learning experiences for somebody as related to what happens to quality control inspectors. So, for example, if management sides with craft instead of supporting quality control; or if they get various kinds of pressure ranging from arguments to name-calling to physical intimidation; or if the inspectors feel that their job is not important because they feel that they are being undermined; or that they are urged to always be more lenient; the inspectors would begin to get a message that management views their job in a particular kind of way. One of the views that shows up in the questionnaire is that the workforce feels that management has a production

orientation rather than a quality control type orientation. If these kinds of things are the pervasive atmosphere at the plant, then it wouldn't have to have this particular event occur to each worker personally for that worker to learn what's going to happen if he/she gets involved in that particular situation.

Q: You mentioned pervasiveness, does it take a pervasive number of the events to occur before the learning experience happens, or does it take substantially less than that in order for the learning experience to have occurred on the worksite?

A: It isn't necessary to have a tremendous number of events for this type of thing to occur. What is needed is enough events that people believe that that is the message being transmitted. Obviously the more dramatic the event, the less of them that are needed. It doesn't take a lot of people being fired for reporting something, for example, in order for people to get the message that they shouldn't report that thing, or that's just not something to do in their best interest. In most of the cases, what tends to happen is that every time something like this is reported and something negative happens to the worker -- be it physical intimidation, or be it a layoff, or be it a threat, or be it moved to another job, or be it not being permitted to perform their job, or be it a talking to of some sort -- if that is the typical type of behavior that you get in response to a person performing their job, they learn that they better not do it.

**Q:** Are the following examples of negative responses to reporting safety problems which will tend to inhibit such reports?

1. you get fired for reporting a safety problem;
2. you get counselled by your superior that if you keep reporting those kinds of problems you may get fired;
3. you get yelled at by your superior for slowing production by reporting safety problems;
4. you get yelled at by someone who is not your superior but who works at the plant and is one of the other bosses, and you're told if you keep reporting safety problems you will slow production and that is not acceptable;
5. you get told by someone who is your equal that they are going to go to their boss and see to it that you get told by your boss to stop reporting safety problems;
6. you get told by your highest authority that the most important thing at the plant site is to make sure that whatever you do you know that you're absolutely right before you issue any kind of order that may slow down the production at the plant;
7. you find that if you raise a safety problem that you are going to have to go to your boss and your boss's boss and attend meetings and explain and justify your conduct before they will agree with you that there's really a problem.

**A:** Yes.



Q: Do these kinds of negative messages impact on other employees?

A: Yes. Other people don't have to have that happen to them personally for them to learn what the lesson is.

Q: Have you reviewed the facts associated with the Atchison firing as found by the Secretary of Labor?

A: Yes.

Q: With respect to that event, in your opinion does it represent an example of conduct by management which would discourage the QC or QA inspector involved from doing what he or she believed was his or her job?

A: Yes.

Q: Does this incident represent a specific example of the kind of concerns which you found expressed in the 1979 surveys?

A: Yes.

Q: Is this the kind of conduct from which the work force learns what should and should not be done on the plant site?

A: Yes.

Q: Have you reviewed the facts associated with the Hamilton firing as found by the hearing board?

A: Yes.

Q: With respect to that event, in your opinion does it represent an example of conduct by management which would discourage the QC or QA inspector involved from doing what he or she believed was his or her job?

A: Yes.

Q: Does this incident represent a specific example of the kind of concerns which you found expressed in the 1979 surveys?

A: Yes.

Q: Is this the kind of conduct from which the work force learns what should and should not be done on the plant site?

A: Yes.

Q: Have you reviewed the facts associated with the Dunham firing?

A: Yes.

Q: With respect to that event, in your opinion does it represent an example of conduct by management which would discourage the QC or QA inspector involved from doing what he or she believed was his or her job?

A: Yes.

Q: Does this incident represent a specific example of the kind of concerns which you found expressed in the 1979 surveys?

A: Yes.

Q: Is this the kind of conduct from which the work force learns what should and should not be done on the plant site?

A: Yes.

Q: Have you reviewed the facts associated with the so-called T-shirt incident?

A: Yes.

Q: With respect to that event, in your opinion does it represent an example of conduct by management which would discourage the QC or QA inspector involved from doing what he or she believed was his or her job?

A: Yes.

Q: Does this incident represent a specific example of the kind of concerns which you found expressed in the 1979 surveys?

A: Yes.

Q: Is this the kind of conduct from which the work force learns what should and should not be done on the plant site?

A: Yes.

Q: Have you reviewed the facts associated with the QA Audit Report?

A: Yes.

Q: With respect to that event, in your opinion does it represent an example of conduct by management which would discourage the QC or QA inspector involved from doing what he or she believed was his or her job?

A: Yes.

Q: Does this incident represent a specific example of the kind of concerns which you found expressed in the 1979 surveys?

A: Yes.

Q: Is this the kind of conduct from which the work force learns what should and should not be done on the plant site?

A: Yes.

Q: Have you reviewed the facts associated with the Susie Neumeyer allegations?

A: Yes.

Q: With respect to that event, in your opinion does it represent an example of conduct by management which would discourage the QC or QA inspector involved from doing what he or she believed was his or her job?

A: Yes.

Q: Does this incident represent a specific example of the kind of concerns which you found expressed in the 1979 surveys?

A: Yes.

Q: Is this the kind of conduct from which the work force learns what should and should not be done on the plant site?

A: Yes.

Q: Have you reviewed the facts associated with the Bob Messerly allegations?

A: Yes.

Q: With respect to that event, in your opinion does it represent an example of conduct by management which would discourage the QC or QA inspector involved from doing what he or she believed was his or her job?

A: Yes.

Q: Does this incident represent a specific example of the kind of concerns which you found expressed in the 1979 surveys?

A: Yes.

Q: Is this the kind of conduct from which the work force learns what should and should not be done on the plant site?

A: Yes.

Q: When these kinds of events occur and the grapevine has gotten the word, what would management have to do to counteract the impression created by these events?

A: I think what management would have to do is to design a program that people believe in. They would have to acknowledge what their problems are. They would have to bring in individuals and work with them to design a program



that those individuals feel would be effective in countermanding the particular difficulties in the past.

One of the important parts of such a program is that it can't be passive. It can't wait for people to come to it because the message to people so far would have been "if you're smart don't go to management." So, now management has to go and seek these individuals out and design a program that they learn to trust.

Q: As you know the Comanche Peak plant had reports that these kinds of negative signals had occurred on the plant site. What is your opinion of the effectiveness of the management's response to these conditions which consisted of complaint resolution mechanisms like a Hotline and an ombudsman and several vehicles for communicating management's support of quality control such as speeches, slogans on signs and a slide show.

A: Basically, it's a passive system. First of all the complaint system requires people to come to them so that until some people come to them and get good experiences from it it won't work. If indeed they go ahead and get a call, and they're not likely to get many calls, but if they get a call and deal with it in an effective manner and take whatever that problem is and really resolve the problem and the reasons for the problem, then they're more likely to turn the workplace around, because the person who tried the system will say "I called over such and such and did you hear what happened to me." So what counts is not whether you have a Hotline or an ombudsman, but what you do to

respond to Hotline calls. It's the actions that carry the message. All the speeches and talks and slogans won't do much, if anything, unless there is action that includes rewards for reporting safety problems and no more negative responses for reporting safety problems.

For instance, if there is a manager about whom there are complaints that he is not open to communication, and the manager will say "well, my door is open" -- it doesn't matter if the door is open. What matters is that when the person comes in and tries to communicate what does the manager do about it -- does he treat the problem non-defensively, does he try to get at what the problem is, if it really is a problem does he try to correct it, does he try to give feedback back to the individual so he knows what's going on, and those kinds of things.

Q: Dr. Goldstein, based on the information you have seen about the conditions at the Comanche Peak Nuclear Plant during the period 1979-1983 could you say that there was not a major problem with QC personnel feeling that they were not able to freely carry out their work?

A: Well certainly it's not possible to say that. From the materials included in the questionnaires and the particular examples I have seen it is fairly clear that some percentage of the quality control inspectors feel that there is a problem with their job.

Q: And is it clear that part of the problem with their job as they perceive it is an inhibition on their ability to carry it out as they feel that they should.

A: A number of them do note concerns about pressure, feelings of a production orientation as versus a quality control orientation and so there are individuals who feel that they cannot carry out their job the way they feel it should be carried out.

Q: If one wanted to find out the answer to the question "Has there been a pervasive atmosphere at the Comanche Peak Nuclear Plant since 1979 which inhibits QC inspectors from carrying out their work?", what would one have to do to get the answer to that question?

A: Well it would be hard to find out about 1979. What would have to be done is to find out about 1984 because it is very difficult to get retrospective information unless there are a large number of individuals there who were there since 1979. But basically what you would want is a study which would examine the inhibitors and facilitators from the perspective of these individuals performing their job, and to carry it out in a sound professional way using measurement instruments that have been developed and soundly tested so that you knew the characteristics, the reliability and the validity of the instrument, and could have faith in the characteristics of the instrument that you were using. Certainly you would want to conduct interviews before the instrument was chosen so that it was known what the issues were so that the instrument you used really reflected the

issues being studied. Management would have to conduct the study in such a way that there was trust in the individuals performing the study. A liaison team would have to be set up including members of the various parts of the organization including management, construction people, inspectors so that they would work together to determine who should be sampled, how many people should be sampled, and how the study should be conducted. The people in the study must feel that the study is being conducted for their benefit.

Also, it would have to be conducted in a way that would protect the individuals interviewed so that it would be truly anonymous. It's helpful in those situations to have persons outside the organization conducting the study. It may be necessary for the study to be conducted off-site so that individuals do not feel intimidated by the organizational situation. It would also be helpful for the individuals not to lose work time for participating in the study. It would have to be conducted in a sound scientific way that would allow the collection of the data necessary to make the judgment on what the facilitators and inhibitors are and have been.

Q: If such a study were done do you think it would give us fairly reliable data upon which one could base a judgment or opinion as to the existence or non-existence of this pervasive attitude that we're discussing?



A: Certainly studies have been conducted which have in the past approached such issues, but there are certain conditions which underlie the study. So, for example, if it is going to have the honest and cooperative support of management and they've made it clear to the organization that they really want this data or need this data, if the study is allowed to include a sample of the number of people that are needed in order to conduct the study, and if it is permitted to be conducted in such a way which leads to a cooperative atmosphere in getting the data, only then is it likely that such information will be obtained.

Q: What would the value be of such a study for overcoming the problems of which you have become aware at the Comanche Peak site?

A: Based upon the results of such a study, a program could be designed and recommended which would be likely to overcome the problems. But first the real problems have to be found.

Q: Following the 1979 surveys the management response to the concerns expressed by the QC inspectors was to have the boss of the QC inspectors call them into his office five or six at a time, hold up the summary of a survey and say in effect "I know that some of you indicated that you had these problems and I don't know which ones of you said it and I want to just let you know that quality is what your job is here, you don't have the responsibility to be responsive to production, nobody can keep you from doing your job and you've got my support". In your judgment was that an

adequate response to the concerns expressed in the 1979 survey?

A: If he then goes out and behaves consistent with what he just said it would be an adequate response. But if it's just a verbal response, and he doesn't do anything different and he doesn't act on the concerns that came out in the 1979 survey and the problems continue, then the message is that things are still as they are.

Q: What does the 1983 survey (the so-called White Paper Report) indicate about whether the problems identified in the 1979 survey related to QC inspectors opinions of management support for their job and their feelings about the freedom to do their job?

A: It does indicate that some of the same problems still existed. However, it is difficult to judge because I am not sure of the procedures used in collecting the data.

Dated: August 20, 1984

March, 1984

## VITA

### IRWIN L. GOLDSTEIN

Date and Place of Birth: October 4, 1937; New York, New York  
Social Security Number: 104-30-5172  
Marital Status: Married, two children  
Present Address: 8806 Gramercy Lane, Laurel, Maryland 20708

#### Education:

Secondary: Stuyvesant High School, New York City

#### Colleges Attended:

Queens College of New York	9/55 - 2/57	General Program
City College of New York	2/57 - 6/59	B.B.A., Psychology, June, 1959
University of Maryland	9/59 - 1/64	M.A., General Psychology, January, 1962
		Ph.D., January, 1964
		Major: Experimental
		Minor: Industrial

#### Professional Employment:

1. University of Maryland, College Park, Maryland. 9/66 to the present.  
Title - Professor and Chair (Department of Psychology, 7/1/81)  
Duties-
  - a. Leadership and Administration of the Department of Psychology.
  - b. Designing, analyzing, and supervising of research in the areas of training and instructional systems, evaluation, industrial/organizational psychology and human performance.
  - c. Teaching courses in Industrial/Organization Psychology and Engineering Psychology.
2. Ohio State University, Columbus, Ohio. 9/63 to 9/66.  
Title - Assistant Professor (Department of Psychology)  
Duties-
  - a. Developing and administering the doctoral program in Engineering Psychology.
  - b. Teaching courses in Engineering, Industrial and Sensory Psychology.
  - c. Designing, analyzing and supervising of research in the areas of visual information processing, decision making and man-machine systems.
3. National Institute of Health Fellowship, University of Maryland. 9/62 to 8/63.  
Title - Predoctoral Fellow  
Doctoral thesis research - The effects of response category restriction and stimulus complexity on observer responses.

4. Institute for Behavioral Research, University of Maryland. 6/62 to 6/63  
 Title - Junior Research Associate  
 Duties- Assisting in designing and conducting experiments investigating the effects of retinal burns on visual acuity.
5. University of Maryland, College Park, Maryland. 2/60 to 6/62.  
 Title - Teaching Assistant  
 Duties- a. Teaching discussion sections of Introductory Psychology (4 semesters).  
 b. Preparing laboratory experiments and lecturing on laboratory techniques for laboratory sections of experimental psychology (Sensory and Learning, 2 semesters).
6. Human Sciences Research, Arlington, Virginia. Summer 1961.  
 Title - Research Assistant  
 Duties- Literature research and preparation of a report on observer systems.
7. Executive Appraisal, Queens, New York. 1957 to 1958 (part-time).  
 Title - Research Assistant  
 Duties- Data collection and analysis of market research data.

Editorships, Honors, Professional Activities:

Associate Editor, Journal of Applied Psychology (1980 - present)  
 Associate Editor, Human Factors Journal (1976 - present)  
 Editorial Board, Frontiers of Industrial and Organizational Psychology (1983-88)  
 Editor, JSAS Section on Engineering Psychology (1977 - 1979)  
 Editorial Board, Organizational Behavior and Human Performance (1972 - 1979)  
 Associate Editor, Journal of Motor Behavior (1969 - 1976)

Fellow, American Psychological Association: Elected to Fellow by The Society of Engineering Psychology and by The Society of Industrial/Organizational Psychology  
 Fellow, Elected to Fellow by the Human Factors Society  
 Fellow, Elected to Fellow by Maryland State Psychological Association

Elected Member at Large to Executive Committee of the Society of Industrial/Organizational Psychology of the American Psychological Association (1980 - 1983)  
 Editor, Society of Engineering Psychology Newsletter (1973 - 1979)  
 Chair, Committee on mid-year scientific meeting - Society of Industrial/Organizational Psychology (1983 - present)  
 Member, American Psychological Association Subcommittee on Continuing Education Sponsor Recognition (1976 - 1979)  
 Appointed Member, National Research Council Committee on Research in Human Factors (1980 - present)

National Aeronautics and Space Administration Summer Fellow (1967)  
 National Institutes of Health Pre-doctoral Fellow (9/62 - 8/63)  
 Psi Chi  
 Sigma Xi  
 Outstanding Educators in America for 1975

Listings:

American Men of Science  
Marquis Who's Who in the East



listings (cont.)

Dictionary of International Biography  
Contemporary Authors  
Outstanding Educators of America  
Personalities of the South  
The World Who's Who of Authors  
International Authors and Writers Who's Who

Contracts and Grants:

Co-Investigator (1/65 to 1/66 while at Ohio State University) for contract from Rome Air Development Center to investigate "Influence of Stress Variables on Display Design" (\$34,000).

Principal Investigator (6/66 to 1/69, University of Maryland) for contract from National Institute of Health to investigate "Observer Error in the Visual Processing of Radiographs" (\$12,000).

Principal Investigator (2/71 to 1/74, Co-Investigator - 4/67 to 2/71, University of Maryland) for contract from Air Force Office of Scientific Research for "Analysis of Experiments in Life Sciences" (95,000).

Co-Investigator (4/75 to 3/76, renewable until 3/78, University of Maryland) for contract from the Office of Naval Research for research entitled Enhancing the ability-performance relationship: A study of some psychological and contextual factors affecting total group and differential validity (\$58,000).

Principal Investigator (5/80 to 2/84, University of Maryland) for contract from Air Force Office of Scientific Research for research entitled An Evaluation and Research Model to Examine Minority Introduction to Engineering Programs (\$242,000).

Books:

Howell, W.C., & Goldstein, I.L. (Eds. & Authors) Engineering Psychology: Current perspectives in research. New York: Appleton/Century/Crofts, 1971.

Goldstein, I.L. Training: Program development and evaluation. Calif: Brooks/Cole, 1974.

Goldstein, I.L., Tuttle, T.C., Wood, D.G., Grether, C.B. Behavioral action intervention strategies. Columbia, Md.: Westinghouse Behavioral Services Center, 1975.

Publications:

Ross, S., Goldstein, I.L., & Kappel, S. Perceptual factors in eating behavior in chicks. Journal of Comparative Physiology and Psychology, 1962, 55, 240-241.

Yarczower, M., Kappel, S., Frey, R., Goldstein, I.L., Weissman, H., & Blumberg, H. Effects of amount, percentage of reinforcement and deprivation condition on runway time. Psychological Reports, 1962, 11, 406.

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- Goldstein, I.L., & McGinnies, E. Compliance and attitude change under conditions of differential social reinforcement. Journal of Abnormal and Social Psychology, 1964, 68, 567-670. Chosen for inclusion in McGinnies, E., & Ferster, C.B. (Eds.) The reinforcement of social behavior: Selected readings. New York: Houghton Mifflin, 1971.
- Schum, D., Goldstein, I.L., & Southard, J. Research on a simulated Bayesian information processing system. Transactions of the Professional Technical Group on Human Factors in Electronics of the IEEE, 7, #1, March, 1966, 37-48 (Invited paper).
- Goldstein, I.L. The effects of stimulus complexity and restrictive response subclasses on observer responses. Journal of Experimental Psychology, 1965, 71, 104-108.
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- Goldstein, I.L., Emanuel, J., & Howell, W. Effect of percentage and specificity of feedback on choice behavior in a probabilistic information processing task. Journal of Applied Psychology, 1968, 52, 163-168.
- Goldstein, I.L., Johnston, W., & Howell, W. Complex vigilance: Relevant and irrelevant signals. Journal of Applied Psychology, 1969, 53, 45-48.
- Howell, W.C., & Goldstein, I.L. Engineering psychology in the 1970's: A view from the ivory tower. Journal of Organizational Behavior and Human Performance, 1970, 5, 159-169.
- Goldstein, I.L., & Allen, J.C. Effects of irrelevant stimuli on the processing of information in complex displays. Journal of Applied Psychology, 1971, 55, 110-113.
- Goldstein, I.L., Mobley, W.H., & Chelimi, S.J. The observer process in the visual interpretation of radiographs. Journal of Dental Education, August, 1971.
- Goldstein, I.L. The application blank: How honest are the responses? Journal of Applied Psychology, 1971, 55, 491-492.
- Goldstein, I.L., & Mobley, W.H. Error and variability in the visual processing of dental radiographs. Journal of Applied Psychology, 1971, 55, 549-553.
- Dorfman, P.W., & Goldstein, I.L. Spatial and temporal function as cues in a time sharing task. Journal of Applied Psychology, 1971, 55, 554-558.

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- Goldstein, I.L. Irrelevant information: Is there any? Proceedings of the American Psychological Association, 1972, 7, 677-678.
- Goldstein, I.L. (Invited paper) Irrelevant information as a variable in complex displays. Behaviormetric, 1973, 3, 67-73.
- Goldstein, I.L. Toward individualized instructional systems. (Invited paper) In Dubin, S. (Ed.) Maintaining Profession and technical competence of the older engineer: Engineering and psychological aspects. Washington, D.C.: American Society of Engineering Education, 1974.
- Goldstein, I.L. Training. In Margolis, B., & Kroes, B. (Invited paper) Human side of accident prevention: Psychological concepts and principles which bear on safety. Springfield, Ill.: Charles C. Thomas, 1975.
- Dorfman, P., & Goldstein, I.L. The effects of task coherency preview and speed stress on timing and anticipation. Journal of Motor Behavior, 1975, 7, 45-55.
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- Goldstein, I.L. Instructional technology and evaluation. Invited Address, to Fourth Annual Community Clinical Workshop, University of Maryland, 1974.
- Goldstein, I.L. Human factors and training as procedures for accident reduction. Invited talk to NASA managers, May 1975.
- Goldstein, I.L. Fair employment practices beyond personnel selection. Symposium chairperson at American Psychological Association Meetings, Sept., 1975.
- Hussein, A. & Goldstein, I.L. A current assessment of continuing education in psychology. Symposium presentation at American Psychological Association, 1976.
- Goldstein, I.L. Building individual continuing education plans, symposium presentation at American Psychological Association, 1977.
- Goldstein, I.L. Pursuing validity in the evaluation of training programs. Colloquium at Georgia Institute of Technology, 1978.
- Goldstein, I.L. Understanding research in organizational environments: Can process measures help? Presented at a symposium at Eastern Psychological Association, 1978.
- Goldstein, I.L. Training. In Conference on Human Factors in Productivity. Presented at Virginia Polytechnic University. 1978.
- Goldstein, I.L. Need assessment and evaluation processes in the design of training programs. Workshop presented at American Psychological Association, 1978.
- Goldstein, I.L. Discussant for Symposium Collision course for applied psychologists: regulation, professional competency and liability. American Psychological Association Meetings, 1978.
- Goldstein, I.L. The disruptive influence of organizations on training programs. Paper presented at a symposium at Eastern Psychological Association, 1979.



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- Goldstein, I.L. Perspectives on training and development research in the 1970's. Invited Address - American Academy of Management, 1979.
- Goldstein, I.L. Training research in the 70's: Many questions and a few answers. Invited Address - Human Factors Society, 1979.
- Goldstein, I.L. conversation with the annual review author - Invited speaker - Division 14 of the American Psychological Association, 1979.
- Goldstein, I.L. An answer to team training instructional techniques: The design of needs assessment and evaluation procedures - Invited paper Team Training Conference sponsored by Rand Corporation, 1979.
- Goldstein, I.L. Training research in the real world - Invited speaker to the Metropolitan New York Association for Applied Psychology, 1980.
- Goldstein, I.L. Perspectives on Training Research in the 70's: A view toward the 80's. Invited speaker for Houston Symposium III Psychology & Society: Information Technology in the 1980's, 1980.
- Goldstein, I.L. Discussant for Symposium on Team Training. Human Factors Society, 1980.
- Goldstein, I.L. Issues in training research. Chair of symposium presented at American Psychological Association Meetings, 1981.
- Goldstein, I.L. Training. Discussant of session presented at American Academy of Management Meetings, 1981.
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- Goldstein, I.L. & Wexley, K.N. Needs assessment approaches in the design of training systems. Workshop presented at American Psychological Association, Los Angeles, 1983.
- Goldstein, I.L. Discussant for symposium: Integrated criterion measurement for large scale computerized selection and classification. American Psychological Association meeting. Los Angeles, 1983.
- Goldstein, I.L. Chair of symposium: Conversation with the Annual Review Authors, American Psychological Association Meetings, Los Angeles, 1983.

## University of Maryland Administrative and Service Appointments:

### **Department of Psychology**

Advisor, Psi Chi (National Undergraduate Honorary Society in Psychology), 9/71 to 6/72  
Assistant Chairman, (Acting Chairman, Spring 1977), 7/68 to 7/81  
Director of Graduate Studies, 7/69 to 7/81  
Chair, Department of Psychology 7/81 to present (on leave 9/83 to 7/84)

### **University and Behavioral & Social Sciences Division**

Acting Dean for Graduate Studies and Research, 9/83 to 7/84  
Academic Council (College of Arts and Sciences), 9/67 to 6/69, 9/71 to 6/72  
Committee on Programs, Curricula and Courses (PCC - college of Arts and Science), 9/71 to 6/72  
Committee on Research of the Faculty Assembly, 9/71 to 6/72  
Student-Faculty Advisory Committee to the Bookstore, 6/69 to 6/71  
College Park Senate, 1/74 to 6/77, 9/80 to present  
College Park Senate Executive Committee, 9/74 to 8/76, 9/81 to present  
College Park Senate Committee on Faculty Research, 9/71 to 6/72, Chairman, 6/74 to 6/77  
Graduate Council, 1/74 to 6/75, 6/76 to 6/79  
Academic Council, Division of Behavioral and Social Sciences, 6/73 to present  
Graduate School Ad Hoc committee on Graduate Student Service Appointments, 9/70 to 6/71  
Graduate School Ad Hoc Committee on Graduate Admissions, 10/73 to 6/75  
Graduate School Ad Hoc Committee on the Structure, role and Function of Graduate Education at the University of Maryland, 4/74 to 6/75  
Graduate School Ad Hoc Committee to Analyze the Governor's Commission (Rosenberg Committee) on Education, 6/75 to 10/75  
Graduate School, Committee on Academic Standards, 6/76 to 6/79  
Chancellor's Task Force for Reviewing Academic Resources and Reallocations, 9/75 to 6/76  
Division of Behavioral and Social Sciences Budget and Planning Committee, 10/78 to 7/81  
President's Advisory Committee on Graduate Education, 10/78 to present  
Chair, Graduate Faculty Subcommittee of President's Advisory Committee on Graduate Education, 10/78 to 9/80  
Chair, Search committee for Dean of Graduate Studies and Research, 11/79 to 5/80  
Chair, Division of Behavioral and Social Sciences Ad Hoc Committee on Teaching, 9/79 to 6/80, 9/81 to 6/83  
Chair, Internal Evaluation Committee of College of Business and Management, 9/80 to 1/82  
Chair, Internal Evaluation Committee of the Department of Hearing and Speech Sciences (9/83 to 1/84)  
Member, University Academic Planning Advisory Committee (9/83 to present)

## Courses Taught at University of Maryland:

### **Undergraduate:**

Introduction to Psychology  
Engineering Psychology and Training Models  
Survey of Industrial Psychology

**Graduate:**

**Introduction to Industrial and Organizational Psychology**  
**Training Procedures and Evaluation in Organizational Settings**  
**Seminar in Performance Theory**  
**Seminar in Industrial Psychology**  
**Seminar in Environmental Psychology**

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DOCKETED  
USNRC

In the matter of

TEXAS UTILITIES GENERATING  
COMPANY, et al.

(Comanche Peak Steam Electric  
Station, Units 1 and 2)

)  
)  
)  
)  
)  
)

Docket Nos. 50-445-2<sup>'84</sup> AGO 23 A11:27  
and 50-446-2

TO BE OFFERED INTO EVIDENCE BY CASE



September 27, 1983

TRANSCRIPT FROM A CONFIDENTIAL SOURCE  
OBTAINED DURING WEEK ENDING SEPTEMBER 16, 1983

TOLSON: I wanna try to resolve what I perceive to be a communication problem. The claim with us in the craft -unintelligible- the account for the QC program is to report all negative results of inspections in protective coatings on Inspection Reports\_\_ that's what we've tried to say in this procedural maze, OK\_\_ that's what I want. OK. I don't want to use NCRs in my department's report, "in the QC ranks," because what that creates for me from a managements' standpoint is a stop-work condition. And I know that neither one of us wanna make this kind of decisions. That's what they pay me to do, OK. And for those of you that have been around here a while, should know Mr. -unintelligible, even though he's been in and out, will attest to the fact that if I need to I'll shut this entire fuckin job down to get across -unintelligible- to record. It is not an easy decision to make, there's a lot of money at stake but if I have to make it, I will. Now, you guys are paid to communicate through channels to me what's going on. And we take a hard look at what's going on by analyzing the results of the inspections, OK. All right, now that's an ongoing thing that we look at all the time and that's a part of Bob's job and part of Tom's job is to I guess -unintelligible- things -unintelligible- is to continually look back and to see what we can do to improve the -unintelligible- (loud noises) or the inspection effort to meet our ultimate objectives, which I've been talking about for a couple of weeks, which is to get -unintelligible- along correspondence to the Installation Department, cause that's why we're all here and that's what we're all paid to be. Now, I guess my question to you in this group, and this groups been selected as a sample of the inspection force on days.



TOLSON'S Q.: What in a procedural maze, causes people to think that we're asking them to write nonconformance reports? What have we fucked up in our procedures that we would lead you to that? JIM?

A. (SOURCE UNK.)

Ah, an NCR is when the quality is indeterminate\_\_\_it's warranted then and then you send it on to engineering and then. . .

TOLSON'S INTERRUPTION: In bringing back to where I started,

INTERRUPTED COMMENT: (SOURCE UNK.) I think I got it.

TOLSON'S INTERRUPTION (Cont.): we wrote the program we thought we'd get in another. . . .

-----LONG PERIOD WITH NOTHING RECORDED-----

TOLSON: to get you to communicate to us to provide the inspection report. Now that's what we're really trying to do at this meeting. Frankly, that's what I'm trying to do with all of the inspection in the NON-ASME area, OK. I guess if any folks decided to do it a little differently and before too long, they're going to do the same thing I'm doing. It's more efficient to do it that way and efficiency is one of the things that I'm paid to lookout for, OK. Now, to me it's a black and white situation that the paint either meets the spec or it doesn't meet the spec. I

can't conceive of a situation getting underway, quote "that you want to call indeterminate," and even then, the intent in the language in the procedures is to get you to record that in the Inspection Reports.

Q. (SOURCE UNK.)

And that's when, after the -unintelligible-\_\_

TOLSON'S A.: It doesn't matter when it happens, OK, It really doesn't. I mean that's what I'm trying to tell you, the procedure, now I'm trying to figure out did we not say that clearly enough where you could all understand what I'm saying.

COMMENT: (SOURCE UNK.)

I don't see where an inspection report would handle every situation.

ANOTHER'S COMMENT: (SOURCE UNK.)

I don't either.

TOLSON: Let's talk about a few you've done then.

Q. (SOURCE UNK.)

What about for instance something that they coated a couple years ago and you run across something like the paint falling off the wall\_\_how would you report that on an inspection report?

TOLSON'S A:

I think that it's not perhaps spelled out in as much detail as I could make it if I had to but I believe that I'm smart enough to figure out a way to communicate that.

Q. (SOURCE UNK.)

You mean just verbally?

TOLSON'S A.: No. We don't have a verbal program, we have a formal program and the vehicle is the Inspection Report. That's where I'm trying to get the group to, OK, and that's why I'm asking, How do we get there? OK, now if the paint falls off the wall, OK, I think there's enough attributes on the Inspection Report, the UNSAT and in the REMARKS columns to state where the problem is.

COMMENT: (SOURCE UNK.)

Yeah, that's what I'm saying, this took place a couple of years ago.

TOLSON: It doesn't matter when it took place.

Q. (SOURCE UNK.)

Well, what if there is no Inspection Report?

TOLSON:

Huh?

Q. Well, what if there is not Inspection Report for that area?

TOLSON: There's an Inspection Report for everything that you do.

COMMENT FROM SEVERAL OBSERVERS: (SOURCES UNK.)

I think he's talking about a new. Make out a new one.

TOLSON: You can do that Neil, but huh, like a, you know, in my judgement, it's not required, OK. Even if you want to add another line on the attribute, if your more comfortable with it from a communications standpoint, that is certainly acceptable, OK. And I believe if you go back to 1800 that covers the Inspection Report, that latitude is in there like we say something about Supplementary Sheets. And I can carry you back into civil records and show some luxurious language that Mr. Britton used, OK. OK. See, all I'm asking is communicate to me what's going on, OK. Don't put yourself in my position and stop work, because I haven't delegated that authority, OK. We're just talking about paint, and don't confuse what I'm saying about paint with what we would do with equipment because it's a completely different element, OK. A completely different element. What we're talking about is protective coatings and the containment and the communication of some findings that need to be corrected to meet the requirements, OK. That's all we're talking about. I've got another example.

SIMULTANEOUS GROUP INTERRUPTIONS (all unintelligible except, "I thought we were here to communicate.")

TOLSON:

That's what we're here for.

Q. (SOURCE UNK.)

I still don't know the answer to my questions, I mean, How are we going to report this on an IR?

TOLSON:

Give me an example?

1st PERSON's A. (SOURCE UNK.)

Well, the one I just used.

A 2nd PERSON INTERRUPTED: (SOURCE UNK.)

Let's just say your walking down the hallway and

1st PERSON INTERRUPTED: (SOURCE UNK.)

Yeah, tha's what I'm sayin, just

2nd PERSON: (SOURCE UNK.)

And and you spot a place you have some, you see where the paints gone.

1st PERSON: (SOURCE UNK.)

Right, and it was put on a couple years ago.



TOLSON:

OK, fine.

2nd PERSON: (SOURCE UNK.)

An to me, which is what I'm sure Ron is trying to say is you get out the IR and you isolate that area where the problem is, mark it 'unsat' in the remarks column and say the paint is coming off the wall and a

1st PERSON: (SOURCE UNK.)

On the original IR that was generated at that

2nd PERSON: (SOURCE UNK.)

Right, and you generate it right then, you don't have to generate it back. Cause you see 2 years ago Don, they didn't have any -unintelligible- several interrupted at once

1st PERSON: (SOURCE UNK.)

Right, that's what I was saying, they just wrote 'good'

2nd PERSON: (SOURCE UNK.)

Cause we won't have any -unintelligible- What we need to do is write an IR right today.

TOLSON:

Let's not, let's not say we didn't have any documentation. No documentation

2nd PERSON: (SOURCE UNK.)

Well, that was a wrong statement, it was there, but

TOLSON:

Left a little bit to be desired, that's an improper way to phrase it, OK.

1st PERSON: (SOURCE UNK.)

Without documentation, wouldn't that be determined 'indeterminate'?

TOLSON:

We determined that years ago Joe. That's the reason we set up the backfit inspection program, see.

1st PERSON: (SOURCE UNK.)

So you just go back to that area.

TOLSON:

Sure, that's what we're doin.

2nd PERSON: (SOURCE UNK.)

And then normal procedure, craft would come in and take it off us.

TOLSON:

Ok. That's all I'm trying to do. There was an NCR issued when the lack of documentation had covered the entire protected power plant. Ok, I don't need anymore, I already know I got a problem. And that's the reason we sat down and came up with the concept of the backfit inspection, Ok, now that's history. Now we're at a stage where we wanna make whatever the conditions are meet the requirements. See, we're in a fix-it mode, and don't got anything that is indeterminate; everything out there is indeterminate until we finally get down to the ?SATS thing and buy-off on the -unintelligible-, and that's the name of today's ballgame.

Q. 3rd PERSON: (SOURCE UNKNOWN)

Till the last document is up for ? we won't close out any NCR.

TOLSON:

Anything closed, OK. Now, take Joe's, Joe Davis?

A. PERSON: (SOURCE UNKNOWN)

John Davis.

TOLSON:

Take John's example, ah, I feel like we have more than an ample number of inspectors, ok, but not so large of a group where we can't communicate with each other in terms of what's ??? An what we're trying to do, from a private management standpoint, is start at the top of the goddamn containment structure

and work our way down. -unintelligible- this paint off the walls today at elevation 810, it's still going to be there when we get down that low, ok. It ain't goin anywhere, unless they can figure out some way to glue it up on the wall, and ah ah, it's not goin anywhere. So we're to tryin to come from top to bottom. If you concentrate our intelligence and efforts in that arena and don't worry about this shit that we have got to do, then we can manage to work together and get the job done, and I think it'll make things a lot better, ok. And that's what I ask you to consider cause that's what we're coming to from the management's standpoint, ok. Now, I think we're essentially complete with the fact that inspectors on the line are ???, at least that's my understanding.

4th PERSON: (SOURCE UNKNOWN)

On small spot here.

TOLSON:

Where's the one small spot?

4th PERSON: (SOURCE UNKNOWN)

Oh it's over here (\*squeaky noise is made - sounds like someone rubbing the spot on the wall\*) 995 -unintelligible- add a little 28 to 43 I believe.

5th PERSON: (SOURCE UNKNOWN)

Glad it's not 268.

-unintelligible- Never done that much . . . laughter I've done it three times  
laughter

TOLSON:

Ok, all right.

PERSON: (SOURCE UNKNOWN)

-unintelligible- We don't have to be over here Well, there's a spot in the  
elevator, but I don't know when they're ever gonna shut that down for us to get  
in there, so

TOLSON:

Where?

SEVERAL PERSONS: (SOURCES UNKNOWN)

On the bottom.

-unintelligible-

TOLSON:

Now, let's go to the other extreme. I don't want to blow your mind but I need to  
discuss it. Ah, Cory got to know me real well several months ago because one of  
his initial contributions was a generic NCR that he was personally concerned  
with, Ok; which we put it into the system, which we will always do, ok; and  
evaluate it, analyze it from an engineering standpoint and we decided we weren't  
concerned with Cory's original concern, ok. So, it was put to bed and I think  
that Cory's accepted that, ok. He may not agree with it, but that's not



necessary. What is important is that you accept it, ok, because there's other ?folks that are paid? to make those kind of decisions. I don't encourage those kind of things, but I won't discourage it, ok. If you've genuinely convinced yourself in your own mind that there might be a problem, then if you read between the lines in our Procedure Manual of what we're tellin ya, ok, it is that you have the authority to issue those kinds of nonconformance reports, but you don't have the authority to stop work, ok; and that means that you don't -unintelligible- a hold -unintelligible- on those kinds of situations, ok because you haven't given me an opportunity to do my job yet and I think we do not have the ability to -unintelligible- ok, and we have a communicative . . .

PERSON: (SOURCE UNKNOWN)

But it hadn't gotten to, it hadn't

TOLSON:

We hadn't communicated at that point, ok. Ah, if we don't have that option doin the 160 bond, don't even consider it because I'm tryin, I'm tryin to manage what Neil knows is a costly conflict between inspection and craft, ok. And I'm tryin to do what I can to keep from getting you all from getting wound up in a conflict. Now, there's no reason to get yourself into that, that's, shit, life's too short to come out here and spend 10 hours a day arguing with some miserable son of a bitch about a fine detail that's really not too important one way or another, ok. And we have to appreciate what crafts problem is, ok, and I personally sympathize with them because I'm not sure I'm going to work on that side of the house from a union standpoint because I don't like being too too

?uncomfortable. Ah, you know those guys are uptight, damn it ah, I have to watch out for that because I don't want to put you all into the situation where we ah, somebody gets the shit kicked out of them or something like that. That's a dumb way to manage and I don't want you all doing this, it's not worth it.

Q. (SOURCE UNKNOWN) Unclear

I want to make a suggestion to QA. It's called a 2 points that might get into something that you probably couldn't, I don't know if you can or cannot answer the procedure to qualify -unintelligible- applicators shelf life if you want it to

-unintelligible- considered.

TOLSON:

You mean on a nonconformance report?

A. (SOURCE UNKNOWN) - unclear

I believe that's the only thing that basically uses it.

TOLSON:

I wouldn't recommend to anybody to go and put a hold tag on

INTERRUPTED COMMENT (SOURCE UNKNOWN)

No no, I'm just sayin

laughter

-an applicator-unintelligible--

laughter

TOLSON:

Be careful because your shelf-life - yes, if this exceeded the shelf-life, I want that painted or I'll paint. That's a clear cut indication in that, all right, but, you go back another way -unintelligible- on shelf-life, your gonna have to deal with inspection report to verify

Q. Whose shelf-life?

\*\*((AUDIO PORTION OF TAPE = BAD FROM THIS POINT ON))

\*UNABLE TO DISTINGUISH VOICES FROM ONE ANOTHER

And you got a reject tag which says the same things that -unintelligibel-

Yeh, seems with the applicator you got to list him too. You got to list him too on -unintelligible-

Well, I don't want you goin out again and tellin the inspection peoples to start putting reject tags on people

laughter, oh no.

TOLSON:

because you ??? should be dealt

No, just put it on the areas where -unintelligible-

TOLSON:

Now I've considered puttin hold tags on -unintelligible- for the last 5 years.

\*DUE TO POOR QUALITY OF AUDIO, THE REMAINDER OF THE TAPE IS INAUDIBLE.

STATEMENT

PLACE: 1/9/84 1940

DATE: Bay City Tx

I, William A. Dunham, hereby make the following voluntary statement to Mr. D. D. Driskill, who has identified himself to me as an Investigator with the U. S. Nuclear Regulatory Commission. I make this statement freely with no threats or promises of reward having been made to me.

I have read the 15 page document entitled:  
TRANSCRIPT FROM A CONFIDENTIAL SOURCE OBTAINED  
DURING WEEK ENDING SEPTEMBER 10, 1983, dated  
September 27, 1983 shown to me by NRC Investigator  
D.D. Driskill. This document is an accurate  
transcription of the tape I gave to Mr. Driskill  
during September 1983.

I have initialed each page of the  
document, supra, I discuss here.

This statement is true & correct to the best  
of my knowledge & belief, so help me God.

*William A. Dunham*

Subscribed & sworn to before me this 9th day  
of January 1984 at Bay City Tx

*Donald Driskill*