

JUL 30 1993

OSTI

The Westinghouse Waste Isolation Division  
Management and Supervisor Training Program

Brad Gilbreath  
Westinghouse Electric Corporation  
Carlsbad, NM 88220

April 23, 1992

**DISCLAIMER**

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

**MASTER**

**DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED** *Se*

The Westinghouse Waste Isolation Division  
Management and Supervisor Training Program

Presented by Brad Gilbreath

Introduction

This breakout session focuses on the use of a self-paced, self-study program to train managers and supervisors. Lessons learned from the development, implementation, and administration of the program will be shared.

Background Information

The Westinghouse Waste Isolation Division (WID) is the management and operating contractor (MOC) for the Department of Energy's (DOE's) Waste Isolation Plant (WIPP). Managers and supervisors at DOE facilities such as the WIPP are required to complete extensive training. To meet this requirement, WID created a self-paced, self-study program known as Management and Supervisor Training (MAST). All WID managers and supervisors are required to earn certification through the MAST program. Selected employees are permitted to participate in MAST with prior approval from their manager and the Human Resources Manager.

Initial MAST certification requires the completion of 31 modules. MAST participants check out modules and read them when convenient. When they are prepared, participants take module examinations. To receive credit for a given module, participants must score at least 80 percent on the examination.

Lessons Learned

Self-paced training programs are cost-effective

We estimate that cost savings resulting from the use of MAST to train all current WID managers, supervisors, and selected employees will be \$1.2 million. Estimated cost savings resulting from the use of MAST at the WIPP over a 25-year period are estimated to be \$4.4 million. These cost saving figures were derived by comparing MAST program costs with costs of a comparable classroom-based program. Major cost saving areas associated with MAST include the following:

Work supported by the U.S. Department of Energy  
under DOE Contract No. DE-AC04-86AL31950  
DOE/WIPP 92-021C

- Participant learning time
  - Approximately 85 percent of MAST modules are completed during non-work hours, e.g., at home. Thus, the great majority of our management and supervisor training takes place during non-compensated hours. Classroom-based training normally must be completed during work hours.
- Trainer preparation
  - Trainers usually spend about two hours preparing for each hour of classroom training. No trainer preparation time is required for MAST.
- Trainer delivery
  - With MAST's self-study approach, there are no trainer delivery costs. The MAST coordinator simply hands out modules to participants. Classroom-based courses require trainers to deliver course material to trainees via stand-up training.

Participants retain much of what they learn

Participants retain much of the information learned through the reading/testing approach used in MAST. In preparation for MAST examinations, some participants read modules more than once. Several of our participants read modules three times before requesting an examination. This type of review is normally not feasible in classroom-based training.

MAST examinations are open-book. When completing examinations, trainees tend to go back and review the module to ensure that they answer correctly. This review reinforces retention of material read previously.

Participants' time is used effectively

Research indicates that we listen at about a 25 percent level of effectiveness. If this is true, trainees spend only one fourth of their time in classroom-based training effectively listening to their instructors. We believe that time spent reading MAST modules is used at a much higher level of effectiveness than 25 percent. Participants read MAST modules when they choose to; if they become distracted, participants can put the module down and come back to it later.

Self-study is convenient for participants

Participants read MAST modules when and where it is convenient. If faced with a busy schedule, a participant can "take a breather" from the MAST program. When the schedule becomes less hectic, the participant can begin completing modules again. Many MAST participants find it difficult to complete modules at work. As was previously mentioned, 85 percent of the

modules are completed outside regular work hours (at home, during travel, at lunch, etc.)

Modules are adaptable for use by other organizations

Self-study modules can be shared between organizations and adapted for use. For instance, MAST has been adopted by the Westinghouse Environmental Management Company of Ohio (WEMCO). WID and WEMCO share modules as they are developed. Modification of a module from another location is much more cost-effective than preparing an original module.

Modules can provide company-specific information

MAST modules emphasize need-to-know knowledge for WID supervisors and managers, incorporating information from WID procedures and Westinghouse policies. Critical incidents are included in each module to share lessons learned. "Critical incidents" are real-life occurrences that happened at the WIPP. They illustrate highly effective or ineffective behavior by a WID manager, supervisor or employee. This type of company-specific information is not normally included in off-the-shelf videos or university-based training courses.

Start out right

When introducing a self-paced training program, use of an introductory module similar to MAS-100, Introduction to the MAST Program, is a good idea. In MAS-100, the requirements of the MAST program are thoroughly explained. As with other MAST modules, participants must pass an examination which tests their knowledge of information contained in MAS-100. This minimizes confusion among participants concerning MAST program requirements.

Top management support is vital

Support from our top official, WID's General Manager, has been instrumental to the success of MAST. The General Manager has demonstrated the importance of MAST to our management team by completing modules and examinations on a regular basis. A program like MAST would have difficulty gaining a foothold within an organization without this type of support.

Carefully choose your module writer

The person selected to prepare self-paced modules will have a definite impact on the success of the program. The assigned person should have good writing skills. Without those skills, several negative consequences are likely. First, preparation of modules may require far too many review/editing/correction cycles before modules are approved for use. Second, the readability of the modules will suffer. Module references and information sources, such as procedures, are often obtusely written and difficult to follow. The module writer must be able to transform such documents into readable, understandable information.

Good interpersonal skills are important because so much of module preparation is based on acquiring information and assistance from people throughout the organization. Intraorganizational support for module writers with poor interpersonal skills would probably erode quickly.

Resourcefulness is also important. Preparing self-paced modules requires acquiring useful information from a variety of sources, many of which are difficult to locate. Organizations should choose module writers who are proficient in steering around roadblocks and devising alternative ways to get what they need.

#### Control the module review process

Another lesson we have learned at WID is the importance of avoiding "endless review cycles." For MAST modules, two formal reviewers are established for each module. These two reviewers must approve modules before they are issued. The Manager of Human Resources Development and Total Quality (HRD&TQ) reviews each module for instructional content. A cognizant manager reviews each module for subject matter content.

When a module is given to a reviewer, we make it clear that we expect a timely review of the module. We usually ask reviewers for a 24 hour turnaround. We must convey our sense of urgency to reviewers, because the majority of reviewers adhere to the 24 hour turnaround requests.

Modules are not submitted to the cognizant manager for review and approval until we feel the module is ready to be issued. Even so, a few cognizant managers prefer to have additional people proofread a module before they give approval for use. This is what we refer to as the "endless review cycle." Each reviewer has a preferred writing style and opinions about what should be included in a module. Incorporating numerous opinions into a module, however, would be difficult. Therefore, we use the following strategy to circumvent the endless review cycle: We allow the cognizant manager to circulate the module to whomever they choose, but we require that editorial comments be directed to the cognizant manager. The cognizant manager then reviews the comments, decides which are valid, and incorporates valuable reviewer input into one copy of the module. This removes the module writer from subject matter disputes and conflicting reviewer opinions.

#### Build a file of useful reference materials

Building a source file for each module ahead of time is a good idea. A "source file" is a file folder for relevant articles and other reference material. Writers of modules need to be constantly on the lookout for useful information. Upon discovery, such information can be stored in the appropriate source file for future use.

#### Plan ahead to obtain computer-based systems

At WID, records were kept by hand the first few months after MAST was introduced. This made the generation of reports a slow process. For example, one of the reports we generate compares the level of MAST module completion among

the various WID departments. Generating this report by hand was time-consuming. We now have a computer-based recordkeeping system that makes the generation of a variety of reports quick and easy.

Another useful computer-based system to acquire is an examination bank. Examination banks contain two examination questions for each enabling objective. When a trainee requests an examination, examination bank software randomly generates an examination with one question per enabling objective. WID is presently installing such a system. Examination banks greatly reduce any risk of cheating.

Rely primarily on scenario-based examination questions

Our experience at WID has shown that the best examination questions are those that are scenario-based. For example, an examination question related to the Freedom of Information Act (FOIA) might read as follows:

While speaking with his manager, an employee said, "Responding to these FOIA requests is beginning to demand a lot of my time. Should I track how much time I spend on them?" The employee's manager stated, "Yes, because the requestors can be charged for the cost of assembling the information." Was the manager's response accurate? Why?

YES - the DOE has the right, in certain instances, to charge requestors for the cost of assembling information

YES - persons requesting information through the FOIA must be charged by WID for the cost of assembling information

NO - the manager was misinforming the employee; information is provided in response to FOIA requests free of charge to U.S. citizens

NO - Technical Integration uses standard cost estimates which are used as a basis for charging requestors

We believe scenario-based questions are better for several reasons. First, managers and supervisors relate better to these types of questions than to rote memorization questions. Second, we write questions so that wrong answers (distractors) are typical mistakes managers and supervisors make. Thus, the examination serves to focus in the participant's mind the right approach and also makes the participant aware of the wrong approach for a given scenario.

Say "no" when appropriate

As with anything, we have learned there are occasions when one must say "no." We have received requests to bring examinations to managers so that they can complete examinations without having to leave their office. In the worst case, a manager requested that I bring an examination to his house after work! Needless to say, if such requests were honored we would need more HRD&TQ staff just to maintain our production schedule for new modules.

Protecting the security of examinations also requires saying "no." At WID, we trust our managers and supervisors, but this does not prevent us from maintaining total control over examinations. If examinations were illegitimately acquired and circulated, it would lessen motivation for participants to study modules. Therefore, examinations are stored in a locked file cabinet and are administered primarily in our HRD&TQ Trailer. We have consistently refused requests from managers to mail examinations to them.

Set realistic module production schedules

It can be difficult to predict how long it will take to produce self-paced modules. Therefore, you should be cautious when planning a module production schedule. The completion of five modules was required before I had a good feel for how long, on average, it takes to produce a module.

Don't count on the time required for producing modules to decrease significantly as you progress along the learning curve. I have required an average of six weeks per module. This time requirement has remained steady.

Focus on "need-to-know" information for managers and supervisors

Module writers should keep the reader in mind at all times. Write from a supervisory/managerial perspective. The goal is to provide readers with useful information. Avoid the temptation to include "nice-to-know" information in modules.

Involve the line organization

To ensure that module content is accurate, we involve many employees in the creation of MAST modules. A module writer benefits from two or more perspectives on a given subject. We identify knowledgeable employees and gather their input. In addition to increasing the accuracy of modules, this seems to increase ownership of the MAST program among line managers and supervisors.

Modules and examinations must be extremely well-written and 100 percent accurate

MAST modules are shared with many other organizations. For example, modules have been sent to audit groups as an example of a response to audit findings. This high degree of visibility means that we have to be careful about what we include in our modules.

MAST modules are retained by participants and used as guides to good work practices. Participants refer to modules when faced with abnormal situations. Thus, it is imperative that modules contain accurate information.

When participants are required to complete examinations, it amplifies the scrutiny applied to the subject matter upon which examinations are based. If a question is missed, a participant's first impulse is to say that the module was unclear on that point or that the examination question was "tricky." Therefore, the module text and examination questions must be clear and precise.

You cannot please all your readers

MAST program participants range from people with a high school education to those with a doctoral degree. Participants at the low end of the reading spectrum may say a module is "difficult," while participants at the other end of the spectrum say it is "simplistic."

You will not accommodate all preferred learning styles

The majority of our managers at WID prefer to learn by reading. Nonetheless, we have a contingent of MAST participants with other preferred learning styles. Some prefer to learn by hearing; for them, classroom-based training would work better. Others prefer to learn by doing; for them, role-playing, practice and on-the-job coaching would work best. Unfortunately, our training budget will not allow us to accommodate all preferred learning styles. We have compensated by choosing a medium which appeals to a majority of MAST participants. We are planning to incorporate other approaches into the MAST certification maintenance program, which will begin in June 1993.

Give senior management a realistic idea of how long it will take to launch a new self-paced training program

Many actions must be completed before a new self-paced training program can be launched. Recruiting, hiring and orienting a module writer was the most time-consuming step encountered when launching the MAST program. Make sure that senior managers at your site understand that developing and implementing a high-quality, well-thought-out program will require a large time investment. This will help to minimize impatience among your senior managers during the post-design/pre-implementation phase. At WID, seven months were required. Don't buckle under and compromise your standards if you are pressed by others to speed up the process.

Follow good communication practices when launching self-paced programs

During the early stages, we publicized the MAST program in the following ways:

- Through our site newspaper (TRU News)
- Through informal one-on-one sessions with various managers and supervisors from throughout WID
- A presentation at an all-managers meeting

The WID General Manager provided helpful opening remarks stating that, 1) he supports the program, 2) the program is required, and 3) he considers a manager's performance in MAST as an indicator of the manager's overall performance.

This combination of communication methods worked extremely well for us.



## Summary

As a result of our experiences with self-paced training at WID, we are optimistic about this approach to training managers and supervisors. When properly administered, self-paced training is inexpensive, efficient and effective. Consequently, we predict that adoption of this approach will increase significantly in the future.

02194