



# Training the Effective Sapper

*By Major William L. Jones*

**E**ffective countermine training is almost universally accepted as being in about the same state as it has been over the past 40 years—unsatisfactory. This has created the MICMIS Study which has generated the need for a sapper military occupational specialty (MOS).

The design of a program of instruction supporting an MOS is normally done through a process called systems engineering. This involves three basic steps prior to developing the actual lessons. First, the job itself is examined, and a list of tasks is prepared that shows everything the specialist must be able to do. Second, these tasks are examined to determine where they can best be learned—service school, unit, or on-the-job training (OJT). Third, the tasks selected for training are each broken down further into knowledges that are then taught or trained as parts of specific lessons.

In evaluating a program to train an effective sapper, one task—that of finding a mine or booby trap—cannot be analyzed by listing knowledges, because such a list will not enable the graduate to consistently find the mine or booby trap. When this is the case, the task has not been trained. An easy path is to regulate the task to OJT, but now—as in

the past—the price in combat is too high, and the problem is not solved. The program of instruction under development must therefore, of necessity, include—along with the remaining conventional MOS tasks—the task of finding mines. This article concerns itself with the training of the unique task of “finding mines and booby traps.”

Extensive attempts in recent years have been made to determine and analyze the human characteristics or traits which make up the outstanding patrol point men. Whatever enables them to find mines and booby traps better than others has not yet been isolated. Some individuals just excel in this skill more than others. The experts who have been interviewed and tested learned their skills by experiencing real live situations. Their skills were trained and sharpened to a fine edge through individual adaptation—much the same as a child’s reflexes are automatically adapted to his environment. These specialists are not constant with each other when they explain why they are more skillful than their contemporaries.

Education of an individual takes many forms other than that normally found in the classroom. Reports by some of

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our most noted educators document that both humans and animals rapidly learn tasks on their own simply by being put in a situation where they desire to do the task successfully and the means to do it are available. For a simplified illustration let us put a mouse at location X and food at location Y.

On the first trial the mouse takes 1 1/2 hours to find the food with obvious difficulty. Subsequent attempts shorten until the mouse learns this maze and gets the food within a few seconds. The mouse is next placed in a new maze. Does he completely start over? No. The mouse has learned to learn. Experience is transferred and both his initial trial time and his total learning of the new maze are appreciably shortened. Now, if this trained mouse could talk could he really explain why he is faster now? Does he himself really know all the cues he acts upon when he moves through the maze? This principle of the mind's automatically learning to adopt a new environment also works with humans, and although the cues providing stimulus are not always identified, learning still takes place.

This theory is currently widely used during military field training, but success is dependent on rigid adherence to the following two factors—

- The student motivation must be very strong, causing either a fervent desire to be successful or an equally strong fear of failure. The motivation should parallel, as much as possible, that of the combat environment for which it is being prepared.
- The learning or training environment must be as close as possible to the real environment. This is difficult, since conditions such as fear, fatigue, and time require very careful analysis and preparation and are essential if valid skill transfer is to take place. A seemingly minor compromise can sometimes destroy the environment sufficiently so that effective learning transfer does not occur. The student learns to train but does not learn to accomplish the task. These principles can now be applied to the countermine task of “Find an Enemy Mine or Booby Trap.”

Motivating men is a leadership problem that is always present in training, both in units and at service schools. Most men attempt to do well, but need some inducement to sustain themselves if the environment becomes tough. Sapper training will be complex and physically demanding and will require a high efficiency level with detailed accuracy under conditions of stress. The student must work hard to pass the instruction program and then be motivated

sufficiently to maintain his skills and knowledge beyond graduation. One proposal is to authorize hazardous duty (demolition) pay for sapper training—and continuously for sapper graduates who can maintain proficiency, regardless of their current assignment. Controlled testing with very high minimum standards would be required quarterly or semiannually to include new information learned by individuals through self-study programs that each sapper needs to continue. These rigid standards, if maintained, will generate an esprit that will sustain the sapper corps—the hazardous duty pay will compensate for the real explosive hazards in this specialty plus offer the needed intense training motivation by providing a very real and tangible loss that will result from failure. I know of no other motivation that will provide the needed desire during and after the course that will generate the needed performance quality.

From the training viewpoint the best environment would be a real one—real mines employed by and against a real enemy using real weapons and ammunition. To save injuries, compromises have to be made, but each compromise must be seriously considered for necessity and for proper compensations. For example, when eliminating the mine itself, a training aid must be substituted that looks, feels, and functions the same. The mine is replaced with a duplicate that does everything except injure men. This single substitution is serious. From the motivation point of view, fear of failure, needless to say, is drastically reduced. Given the fervent desire to pass the course as outlined in the paragraph above, this compromise can be partly compensated by failing a student and dropping him from the program the fifth time he unsafely detonates a device, regardless of the circumstances. This automatic negative motivator parallels closely the concern real mines cause. In theory, the first accident should be grounds for failure, but the loss of potentially good sappers would be too high. In combat, men are hot, tired, and impatient. In training, hard physical requirements, long hours, tight schedules, and a strict cadre can reconstruct many of these hazardous distractors. A third environment pitfall is that individual consistency in the work of the mine layer trains the countermine student in those specific consistencies. By having two or more teams of students—who do not meet—work against each other, each will develop and employ improvisations, based on their analysis of other teams designed to deliberately deceive. This adds the challenges and diversity that are needed.

A side benefit is the discussion within an installing team analyzing if and how a system being employed could be

countered. Thus it can be concluded that, to learn the task of finding a booby trap, it must be learned in the most dynamic, realistic fashion possible. The course must be structured around a 24-hour day and be physically and mentally demanding.

In developing a sapper course using the above ideas, the problem of managing and controlling the students arises. To maintain realism, the missions must be exceptionally clear with the instructors relegated to quietly grading leadership, evaluating mine and countermine techniques, and declaring casualties.

The missions will initially involve simple tasks but ultimately evolve to large-area problems with many alternative solutions. The support requirements can be kept to a minimum, since most preparation is done by two or more squad-sized student units continuously working against each other. Techniques will grow in sophistication as time passes.

A key reminder should be emphasized at this point. Devices used for training must be installed and removed prior to real equipment failing; in this, the installing squad will miss the major portion of the training potential. An example of one exercise toward the end of the course might be—

- SQUAD #1: Move from A to B (distance of six miles) between 0600 and 0830 tomorrow. Booby traps are very likely to be about. This squad has the alternative of picking several routes, using trails or not.

- SQUAD #2: This squad must outwit Squad #1. Keep in mind that the squad roles will soon be reversed. By designating squads or patrols as the basic school training units, graduates will live many examples of dynamic training and, as a result, will be able to take a wealth of training ideas to their future assignments.

The sapper program has the potential opportunity to develop a viable countermine plan. If all the aforementioned constraints and conditions are met, the Army's new sapper will have pride in his ability and sufficient confidence in his subject—so that he will become its advocate and inspire confidence wherever he goes. 

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## SAPPER COURSE CONCEPT

The course will be approximately 7 to 9 weeks in duration, rigorous both mentally and physically in its demands on the student. Input requirements and graduation/qualification standards will be very high since the graduate will be considered an expert in theory and practical application of combat demolition techniques, all phases of mine/countermine warfare, and to instruct troops of all arms in appropriate phases of demolitions and mine/countermine warfare. The first two weeks of the course will consist of demo/mine/countermine obstacle planning and design, methods of instruction and physical acclimation with emphasis on the student learning to teach his peers appropriate subject matter. The last weeks will be conducted in the dynamic training mode, and will concentrate on detailed use of all demo/mine/countermine hardware (including foreign materials) and intensive physical development. Throughout the course, the role of instructor will phase from that of the traditional instructor to that of monitor/supervisor; the last 1 1/2 to 2 weeks of the course will be administered by students under instructor supervision. The use of live explosive/mines in practical exercises will also progress during the course. All students will employ and handle all available U.S. explosives/mines and representative items from foreign nations. Maximum emphasis will continually be placed on stress situations, developing high skill/confidence levels, and producing a professional instructor expert. The major portion of this program of instruction will not be time structured to a 40-hour week but be continuous field training 12 hours per day, 6 days per week. Graduation will be a challenge requiring high motivation and aptitudes.