PFN: 052-21B10-D02D
Date: 040719

TRAINING SUPPORT PACKAGE
COMBAT ENGINEER

Detect Explosive-Hazard Indicators By Visual Means

PREPARED BY
U.S. Army Engineer School

Victoria L Palmer	19 Jul 04
Foreign Disclosure Office (Approval)	**Date**
	7-19-04
Safety (Approval)	**Date**
James P. Flynn	21 July 04
Environmental (Approval)	**Date**
Ralph N [illegible]	22 July 04
POI Manager (Reviewer)	**Date**
Jesse L. Fullerton	22 Jul 04
Course Manager (Reviewer)	**Date**
Directorate of Training (Approval)	**Date**

TRAINING SUPPORT PACKAGE (TSP)

TSP Number / Title	052-21B10D02D / Detect Explosive-Hazard Indicators by Visual Means
Effective Date	XXXX
Supersedes TSP(s) / Lesson(s)	New developed TSP
TSP Users	Various MOS's will use this TSP
Proponent	The proponent for this document is the Engineer School.
Improvement Comments	Users are invited to send comments and suggested improvements on DA Form 2028, *Recommended Changes to Publications and Blank Forms.* Completed forms, or equivalent response, will be mailed or attached to electronic e-mail and transmitted to: US ARMY ENGINEER SCHOOL ATTN: ATSE-DOTLD 320 MANSCEN LOOP STE 270 FORT LEONARD WOOD, MO 65473-8929 Telephone (Comm): (573) 563-7785 Telephone (DSN): 676-7785 e-mail: rutledgeje@wood.army.mil
Security Clearance / Access	Unclassified
Foreign Disclosure Restrictions	FD7. This product/publication has been reviewed by the product developers in coordination with the (installation/activity name) foreign disclosure authority. This product is NOT releasable to students from foreign countries.

PREFACE

Purpose

This Training Support Package provides the instructor with a standardized lesson plan for presenting instruction for:

Task Number	Task Title
Individual	
052-192-1269	Detect Explosive-Hazard Indicators by Visual Means
Collective	
05-3-0407	Perform an Engineer Reconnaissance

This TSP Contains

TABLE OF CONTENTS

Detect Explosive-Hazard Indicators by Visual Means
21B10D02 / Version 3
15 Jul 2004

SECTION I. ADMINISTRATIVE DATA

All Courses Including This Lesson

Course Number	Version	Course Title
Various courses will use this TSP		

Task(s) Taught(*) or Supported

Task Number	Task Title
	INDIVIDUAL
052-192-1269 (*)	Detect Explosive-Hazard Indicators by Visual Means
	COLLECTIVE
05-3-0407 (*)	Perform an Engineer Reconnaissance

Reinforced Task(s)

Task Number	Task Title

Academic Hours

The academic hours required to teach this lesson are as follows:

	Resident Hours/Methods
	1 hr 45 mins / Conference / Discussion
	5 mins / Lecture
Test	0 hrs
Test Review	0 hrs
Total Hours:	2 hrs

Test Lesson Number

	Hours	Lesson No.
Testing (to include test review)		N/A

Prerequisite Lesson(s)

Lesson Number	Lesson Title
None	

Clearance Access

Security Level: Unclassified
Requirements: There are no clearance or access requirements for the lesson.

Foreign Disclosure Restrictions

FD7. This product/publication has been reviewed by the product developers in coordination with the U.S. Army Engineer School foreign disclosure authority. This product is NOT releasable to students from foreign countries.

References

Number	Title	Date	Additional Information
FM 20-32	Mine/Countermine Operations.	29 May 1998	29 May 1998
GTA 05-10-044	Mine Awareness (SANDI)	01 May 1999	May 1999
GTA 09-12-001	Unexploded Ordnance (UXO) Procedures.	03 Jan 1992	1995
TC 20-32-5	Commander's Reference Guide for Land Mine and Explosive Hazards (IRAQ)	13 Feb 2003	13 Feb 2003

Student Study Assignments

None

Instructor Requirements

Instructors ITC Certified.

Additional Support Personnel Requirements

Name	Stu Ratio	Qty	Man Hours
Assign alternate instructors as needed (Enlisted)	1:25	3	2 hrs

Equipment Required for Instruction

Id Name	Stu Ratio	Instr Ratio	Spt	Qty	Exp
7000-21-000-0069 Overhead Projector w/Computer Interface	1:50		Yes	3	No

Materials Required

Instructor Materials:
Lesson Plan, lane material, instructor guide, and slides.

Student Materials: None

Classroom, Training Area, and Range Requirements

Classroom, General Purpose, 1500SF, 60 Person
Field Training Area

Ammunition Requirements

Id	Name
None	

Instructional Guidance

NOTE: Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.

Lesson Plan, lane material and slides. View CD: Explosive Hazards Awareness dated April 2004.

Proponent Lesson Plan Approvals	Name	Rank	Position	Date
	Rutledge, Jesse	GS 12	CMF 12 WARRIOR BRANCH CHIEF	19 July 2004
	Lastrapes, Joe	GS 13	WARRIOR ENGINEER CHIEF	19 July 2004
	O'Donovan, Tom	COL	USAES DIRECTOR OF TRAINING	19 July 2004

SECTION II. INTRODUCTION

Method of Instruction: Lecture
Instructor to Student Ratio is: 1:25
Time of Instruction: 5 mins
Media: -None-

Motivator

For centuries, explosives have injured, maimed and killed soldiers. The recent Global War on Terrorism intensified the threat. Easy manufacture and employment of explosive hazards are ideal for disrupting operations, spreading fear and panic, destroying both property and the will for a soldier to continue. Relying on visual inspection of an area or route to locate explosive hazards (mines, booby traps, improvised explosive devices (IEDs), and unexploded ordnances [UXO]) is problematic and should not be solely relied upon as the primary method to locate explosive hazards.

Terminal Learning Objective

NOTE: Inform the students of the following Terminal Learning Objective requirements.

At the completion of this lesson, you [the student] will:

Action:	Detect Explosive-Hazard Indicators by Visual Means
Conditions:	Given examples of the different types of visual indicators (deliberate and environmental) for possible explosive hazards.
Standards:	Detect all environmental and deliberate visual indicators of explosive hazards. Notify immediate supervisor of any indicator.

Safety Requirements

Low: Instructors should complete a risk assessment before conducting training, operations, or logistical activities.

Risk Assessment Level

Low

Environmental Considerations

NOTE: It is the responsibility of all soldiers and DA civilians to protect the environment from damage.
Instructors should complete a risk assessment before conducting training, operations, or logistical activities. Risk assessments assist instructors in identifying potential environmental hazards, develop controls, make risk decisions, implement controls, and ensure proper supervision and evaluation. FM 3-100.4, Environmental Considerations in Military Operations.

Evaluation

NONE

Instructional Lead-In

Indicators of explosive hazards can be broken down into 2 groups. The type of indicator may tell us something about the explosive hazard and therefore give us a better chance of understanding the situation. Look for different indicators to explosive hazards.
Different indicators include:
Deliberate- indicators deliberately placed to warn of an explosive hazard.
Environmental- the way that nature reacts to human activity.

SECTION III. PRESENTATION

1. Learning Step / Activity 1. Gather Information on the Threat

Method of Instruction: Conference / Discussion
Instructor to Student Ratio: 1:25
Time of Instruction: 10 mins
Media: VGTs

SHOW SLIDE # 1

NOTE: Explosive hazards are placed so they cannot be seen. Spotting an explosive hazard as an initial indicator is extremely rare and should not be the primary focus of detecting these hazards. Explosive hazards come in many shapes and forms. When one indicator is identified, look for other indicators in the area.

INSTRUCTOR SLIDE NOTES:

Examples of explosive hazards include:

- Top left: Examples of the many different types of mines that are encountered in the Contemporary Operating Environment.
- Bottom left: An example of unexploded ordnance (UXO) encountered in Afghanistan.
- Top right: Example of an improvised explosive device (IED). IED's may range in size from a soda can to a large vehicle.
- Bottom right: 250 lb bomb was configured in the center of the courtyard in Afghanistan. The device was connected by detonating cord to numerous anti-personnel mines; possibly to cause further casualties among reinforcing units or soldiers rendering aid to those injured by initial mine strikes.

NOTE: Indicators are categorized into three types that may alert a soldier that an explosive hazard is present or may have been employed.

- **Absolute indicator**: Does not require any other confirmatory action. It is the observation of an actual explosive hazard or a seen detonation.
- **Strong indicator**: Something that (by itself) is enough to suggest that you may be in an explosive hazard area. **Look for other indicators!**
- **Weak indicator:** Something that requires supporting evidence before it can be used to confirm the likely presence of an explosive hazard threat. **Look for other indicators!**

SHOW SLIDE # 2

NOTE: It is extremely important to gather information on the area that you are in. Leaders, graphic training aids, handbooks, intelligence briefings and mine/ordinance recognition boards are all sources of information.

CAUTION: RECOGNITION FEATURES FOR EXPLOSIVE HAZARDS ARE EVER CHANGING BASED ON THE ENEMY'S CAPABILITIES AND AVAILABLE RESOURCES.

INSTRUCTOR SLIDE NOTES:

Prior to any mission, know the latest explosive hazard threat.

- Top left: Know what types of items are currently in use.
- Bottom left: Known techniques, patterns and likely locations of emplacement. IED placed along the road in Iraq, camouflaged with grass.
- Top right: Where items in the area have previously been placed. United Nations cleared area in Iraq.
- Bottom right: Seek intelligence on your current movement. IED placed in the roadway with red detonation cord.

NOTE: Conduct a check on learning and summarize the learning activity.

2. Learning Step / Activity 2. Identify Deliberate Indicators

Method of Instruction: Conference / Discussion
Instructor to Student Ratio: 1:25
Time of Instruction: 15 mins
Media: VGTs

SHOW SLIDE # 3

NOTE: Deliberate indicators are deliberately placed to warn of an explosive hazard, they may be manufactured or improvised.

a. Manufactured

NOTE: Indicators that have been manufactured for the purpose of warning others of a hazard. Manufactured materials are generally obvious but weathering and age can reduce the visual impact and ease with which you can spot them.

SHOW SLIDE # 4

(1) Red rectangular or triangular signs

INSTRUCTOR SLIDE NOTES:

- Signs attached to wire, stakes, posts, or pickets with a written warning on one side.
- Internationally agreed conventions require minefields to be marked. This will not be done all the time. Signs are red and either triangular or rectangular in shape. Red is the universal warning color, if not in a red sign then a red marker of some sort. This is a fairly common convention across the globe for mine signs. The skull and crossed bones is also a warning.

SHOW SLIDE # 5.

INSTRUCTOR SLIDE NOTES:

Official UXO marker, which should be recognized by military forces worldwide.

SHOW SLIDE # 6.

(2) Minefield Fence

INSTRUCTOR SLIDE NOTES:

- Regardless of how well or pathetic the fence may look, never step over or go around it (in the immediate vicinity). Keep in mind that it is there for a reason.
- Photo taken at Bagram Afghanistan, in it you can see standard US marking, a non-governmental organization marking and soviet minefield marking fence.

Report all suspected areas to the immediate supervisor.

b. Improvised

SHOW SLIDE # 7

NOTE: Materials that have been obtained locally can be used to mark an area to warn others of the hazard. Improvised indicators can be extremely difficult to spot. This group of indicators requires sharp-eyed soldiers who keep a look out for anything that appears to be out of place such as twigs, bits of wood or material in trees. Not all armies and fighting organizations mark hazards to the same standards as required by the United States Army.

(3) Individual painted rocks.

INSTRUCTOR SLIDE NOTES:

- Afghanistan. Not many trees are around because they have been used for firewood. The locals steal any manmade materials they can. The most common material that is not valuable, therefore will not be stolen, are stones/rocks.

- Red marks on prominent rocks or painted stones laid out. The UN uses this system of marking. 'SP' is start point. There will be a marked and known minefield nearby.

- All the painted stones/piles of rock tell us that there is probably a hazard in the area.

- Top right. Check if the locals are using the footpaths. Some will go through mined areas. Ask/See/follow the locals.

- Cans on sticks are unnatural. This is often seen and ignored. Water bottles are used in the Middle East instead of cans, as they are more plentiful.

Look for other indicators!

SHOW SLIDE # 8

INSTRUCTOR SLIDE NOTES:

(4) Markers on overhead wires. Why did someone go to all the effort to put plastic bottles on telegraph wires? Are they target reference markers? Range markers? Or are they marking a minefield?

(5) Pile of rocks. Piles of white rocks are used to mark explosive hazards. This is a classic marker used around the world.

SHOW SLIDE # 9

INSTRUCTOR SLIDE NOTES:

(6) Different color tapes attached to a stick, tree limb, picket, pole, or wall.

(7) Crossed sticks, or twigs. Look for crossed sticks as in 'don't pass this way'.

Look for other indicators!

SHOW SLIDE # 10

(8) Formations of stones.

NOTE: Used by the UN to mark safe lanes and cleared areas. Stones are usually in regular patterns and close together.

Look for other indicators!

INSTRUCTOR SLIDE NOTES:

- Still Afghanistan. This series of photo's show a variety of methods of marking mine activity using rocks and stones.
- Top left: Up close you can see the original warning piles of rocks. Subsequent to that there is now action to clear the minefield and the rows of stones in the distance mark the cleared lanes and stones are marking safe access routes.
- Bottom left: Line of stones marking a cleared route through a contaminated area. Look for indicators as to which side of the line to walk on.
- Top right: An individual mine has been highlighted.
- Bottom right: This photo shows the use of white painted rocks in piles, individual rocks marking the route and white paint marks on the walls possibly showing that the individual building has been searched and cleared. It shows that mine activity has taken place and that caution must be taken. In some villages there were mines laid in the yards. The houses collapsed during the fighting and the mud and brick covered the mines. The houses were rebuilt, new mines laid, and then the houses were again destroyed. This happened many times. The result is that the yard now has several layers of mines.

NOTE: Where there is one explosive hazard, there are usually more in the area. **Look for other indicators!**

SHOW SLIDE # 11

(9) Pieces of cloth attached to poles, sticks, or walls. Poles with the top painted red.

INSTRUCTOR SLIDE NOTES:

- Red flag attached to a pole and an individual pole are pretty obvious however there is no indication of where the threat is. Note the boxes at the base of the flag. **Look for other indicators!**
- What about an arrow? Does it point to a mine? A minefield? Is it a safe lane? Or is it simply a field marker to guide someone. How long will these type markers last? What about leaf fall or snow?

SHOW SLIDE # 12

Sometimes one sign leads to another.

INSTRUCTOR SLIDE NOTES:

- In this case an X on the tree is the initial warning. This is fairly easy to see. Next to the tree is a single stick stuck into the ground. This stick is not natural.

SHOW SLIDE # 13

- Use of red paint to mark the road surface. Individual mine? Minefield? How far are the mines? **Look for other indicators!**

- Reoccupied buildings with marking tape in the yard. Locals could be moving around an area but not through. Do not be fooled by the ease that the locals show when moving about in hazard areas. Extreme caution is required.

Report all suspected areas to the immediate supervisor.

NOTE: Conduct a check on learning and summarize the learning activity.

3. Learning Step / Activity 3. Identify Environmental Indicators

Method of Instruction:	Conference / Discussion
Instructor to Student Ratio:	1:25
Time of Instruction:	15 mins
Media:	VGTs

SHOW SLIDE # 14

NOTE: Changes to the environment caused by the emplacement or detonation of an explosive device. Once an explosive hazard has disturbed the natural surface of the ground, nature usually has a way of showing where this event took place. Unusual erosion, plant growth, or animal casualties may be vital clues to alert you that there might be mines, booby traps, improvised explosive devices (IEDs), or a UXO present.

CAUTION: YOU MUST BE ALERT FOR SIGNS OF ANYTHING OUT OF PLACE OR UNNATURAL AS YOU MANEUVER THROUGH AN AREA. IF YOU SEE SOMETHING THAT IS A POSSIBLE INDICATOR, STOP, ASSESS THE INDICATOR, AND LOOK FOR OTHER INDICATORS TO CONFIRM OR DENY THE SUSPICIOUS AREA BEFORE CONTINUING OR TAKING FURTHER ACTION.

SHOW SLIDE # 15

(1) Dead animals or animals with missing or damaged limbs.

INSTRUCTOR SLIDE NOTES:

- Dead animals. Look for what caused the death. Top left; there is a blast hole where it looks like there was a mine strike as well as traumatic damage to the animal.

- Bottom left. This animal has a damaged leg, which could indicate mine damage. How far has the animal walked before collapsing at this spot? Don't know...**Look for other indicators!**

- Two dead horses. Both have blast holes next to them. (Also, they appear to be in a cut grass field.) Note the longer grass at the top right of the photo.

- Dead camel in the desert. If there are no other indicators, no knowledge of hazards in the area, carry on. This camel died naturally outside of a UN post in Kuwait...animals die naturally too.

- Also, look for smaller animals dead or injured such as lizards, dogs and goats. These could also be indicators.

Look for other indicators!

SHOW SLIDE # 16

(2) Human remains.

INSTRUCTOR SLIDE NOTES:

- Fresh remains will not last long and it is more likely that soldiers will see bones or items of clothing to alert them to the presence of a possible explosive hazard. This picture was taken adjacent to the minefields around Bagram Airbase in Afghanistan. These remains are actually in a Soviet AP minefield belt consisting of PMN-2 mines. Shown are the pelvis and femur along with the sole of a shoe of an unfortunate person traversing the minefield.

SHOW SLIDE # 17

INSTRUCTOR SLIDE NOTES:

- Not very pleasant. The left photo is a Bosnian who picked up Cluster Bomblets. Right photo a bomb maker who made a mistake.

SHOW SLIDE # 18

(3) Wilted or dead patches of vegetation.

INSTRUCTOR SLIDE NOTES:

- Top picture: Well-trodden path with overgrown bush, why is the bush not cut? (This is Afghanistan where just about all trees have been cut down for firewood). Are locals avoiding that area? **Look for other indicators!** (In this case an unexploded bomb lying on the surface).

- Bottom left: Freshly disturbed soil in the yard with a poorly buried mine. Look for other indicators, as mines are not usually laid singularly. Grass will continue to grow in mined areas. It may have different weeds or grow faster than the surrounding grass. In drier countries that have vegetation, mined areas will have greener grass/plants growing over buried mines. This is because the metal cased mines get condensation forming on them during the night, which then gives the plants more water than the surrounding plants. Look for other variations in the vegetation/regular patterns or shapes.

(4) Lush grass among thin grass.

- Bottom right: Plowed land, footpaths and unkempt grass in-between. Look for other indicators; stake mine under the bush with the trip wire running along the edge of the field. Note that there are no leaves on the trees, the mine was probably laid during the summer and this picture is now during fall.

Look for other indicators!

SHOW SLIDE # 19

(5) Disturbed or odd features in the ground or patterns that are not normally present in nature.

INSTRUCTOR SLIDE NOTES:

- Top left photo. Blast hole left by an IED in Iraq.
- Top right photo. Shallow holes out of place showing signs of ejected debris could be confused with battle damage or animal burrowing.
- Bottom photo. Shows the effects of an exploded buried anti-tank mine.
- Look for other indicators to establish a pattern if any.
- These indicators in dry or wet regions disappear quickly due to wind and rain filling in the holes.
- Look for depressions in the ground (regular or odd spacing) and other indicators to establish a pattern, if any.

Look for other indicators!

(6) Raised patches of earth (regular or odd spacing).

(7) Unused paths, routes, or trails.

SHOW SLIDE # 20

(8) Damaged vehicles.

INSTRUCTOR SLIDE NOTES:

- There might be more than one explosive hazard. The vehicle might have missed several hazards before hitting this one.
- The road shoulders may be mined or booby trapped to catch rescue vehicles going around the casualty or rescue personnel attempting to get to the incident.
- Top picture is from the Balkans. This vehicle regularly used an unapproved short cut. One of the warring factions noted this and set an ambush.
- Bottom left. Obvious minestrike incident has occurred.
- Bottom right. An IED strike on a single vehicle.

CAUTION: THESE INDICATORS MAY REPRESENT AN IED OR BOOBY TRAP. BE ALERT FOR WIRES, DETONATING CORD, OR A SHOCK TUBE RUNNING FROM THESE DEVICES. CABLES OR WIRES USED IN COMMAND DETONATED DEVICES ARE SOMETIMES BURIED.

SHOW SLIDE # 21

(9) Roadway.

INSTRUCTOR SLIDE NOTES:

- Signs of road repair (such as new fill, pavement, patches, ditches, or culverts). Note the circular repairs to the road surface in a pattern. It is unknown if the road or the sides of the road is clear. Mines where laid in the road but have been removed and the road repaired. It is unknown if the sides of the road were mined. **Look for other indicators!**

SHOW SLIDE # 22

INSTRUCTOR SLIDE NOTES:

- Left photo: Looks like part of a possible cluster strike. There could be UXO in the area.
- Right photo: Look for disturbances in previous tire tracks or tracks that stop unexplainably. This IED was found on an unimproved roadway. Notice the tire tracks come to a stop with footprints on the other side.

Look for other indicators!

- Potholes in vehicle tracks on unimproved roads.
- Craters.
- Areas avoided by local civilians.

SHOW SLIDE # 23

(10) Mine or explosive packaging.

INSTRUCTOR SLIDE NOTES:

- Two mine dumps. Both indicate that mine laying has taken place in that area. The top one, although quite old looking, is orderly and well laid out. It might indicate that it was a well-disciplined unit who was in control of its actions. The mines may have been laid with discipline, marked, and properly recorded.
- Bottom mine dump. Looks like a real dump with no discipline. Looks like no order so you can expect the unit who created this mess to have been the same with their mine laying, marking and recording.

If you come across mine boxes, unattended vehicles, trailers, abandoned military equipment such as weapons, ammunition, uniforms, or papers, there is a strong chance that there are explosive hazards nearby. This is a strong indicator, but you must look for other indicators!

(11)Patches of new brickwork, plaster, or mud on walls.

SHOW SLIDE # 24

(12) Dispensers and sub-munitions.

INSTRUCTOR SLIDE NOTES:

- Dispensers (Cluster Bomb Units) are bombs that contain a load of smaller bomblets (sub-munitions) that are released over the target. The bomblets are designed to cover a larger area than a single bomb. The spread of bomblets means that multiple targets can be engaged with just one weapon.
- Middle Photo - Shows a cluster bomb, which was dropped but did not separate so the sub-munitions were not released and are now in a very dangerous, unstable condition.
- Remaining Photos. Show what the bomb cases look like if you come across them.

SHOW SLIDE # 25

(13)Abandoned defensive positions, trenches, and destroyed buildings.

INSTRUCTOR SLIDE NOTES:

Defensive positions include tank sites and destroyed convoys/vehicles. Any position that has been attacked by cluster bombs must be treated as dangerous due to the high incidence of sub munition duds.

SHOW SLIDE # 26

INSTRUCTOR SLIDE NOTES:

Always assume defensive positions have defensive minefields, IED's or booby traps placed around them. Learn what SOP's were used by the enemy/warring factions so that you can anticipate possible hazard locations.

- Left photo from Bosnia. An abandoned fire trench with a staked fragmentation mine left behind with a tripwire over the trench.
- The other picture is from Baghdad International Airport. It shows a defensive fighting position above a building/bunker. The doorway led into a weapons cache full of mortars, RPG's and AK-47 rifles. All items were booby-trapped.

SHOW SLIDE # 27

(14) Abandoned buildings, piles of wood, or materials not claimed by the locals.

CAUTION: BUILDINGS ARE EXCELLENT SITES FOR BOOBY TRAPS. ASSUME THAT ALL UNSECURED BUILDINGS ARE BOOBY-TRAPPED.

INSTRUCTOR SLIDE NOTES:

- Military debris. Not in itself an indicator of mines unless you can read 'mines' on the sides of boxes. **Look for other indicators!**
- Long unkempt grass in a back yard next to well cut grass at the back of the house in the distance.
- Local behavior. Locals standing on the concrete and definitely NOT in the grass.
- Abandoned house in good condition next to an occupied house in area where housing is in short supply.

NOTE: Each of these pictures has several strong indicators. A soldier would be very unwise to attempt to enter either of these areas.

Look for other indicators!

(15) Trip wires, strings, or cables.

(16) Evidence of electrical wires, batteries, mousetraps, clothespins, steel tubes, or springs.

Report all suspected areas to the immediate supervisor.

NOTE: Conduct a check on learning and summarize the learning activity.

4. Learning Step / Activity 4. Practical Exercise

Method of Instruction: Conference / Discussion
Instructor to Student Ratio: 1:6
Time of Instruction: 1 hr
Media: -None-

NOTE: Conduct a check on learning and summarize the learning activity.

SECTION IV. SUMMARY

Method of Instruction: Conference / Discussion
Instructor to Student Ratio is: 1:25
Time of Instruction: 5 mins
Media: VGTs

Check on Learning

Determine if the students have learned the material presented by soliciting student questions and explanations. Ask the students questions and correct misunderstandings.

Review / Summarize Lesson

SHOW SLIDE # 28

INSTRUCTOR SLIDE NOTES:

Recognition of explosive hazards is ever changing based on the enemy's capabilities and available resources.

SECTION V. STUDENT EVALUATION

Testing Requirements	NONE
Feedback Requirements	**NOTE:** Feedback is essential to effective learning. Schedule and provide feedback on the evaluation and any information to help answer students' questions about the test. Provide remedial training as needed.

Appendix A - Viewgraph Masters

Viewgraphs 1-27, Indicators Slide Presentation

SLIDE 1 Explosive hazards
SLIDE 2 Gather information
SLIDE 3 Deliberate indicators introduction
SLIDE 4 Signs
SLIDE 5 Official UXO sign
SLIDE 6 Minefield fence
SLIDE 7 Individual painted rocks
SLIDE 8 Markers on overhead wires
SLIDE 9 Tape and crossed sticks
SLIDE 10 Formations of stones
SLIDE 11 Pieces of cloth and metal pole
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SLIDE 13 Red paint to mark the road surface
SLIDE 14 Environmental indicators introduction
SLIDE 15 Animals
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SLIDE 18 Wilted or dead patches of vegetation
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SLIDE 20 Damaged vehicles
SLIDE 21 Roadway 1 of 2
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SLIDE 23 Mine or explosive packaging
SLIDE 24 Dispensers and sub-munitions
SLIDE 25 Abandoned positions 1 of 2
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SLIDE 28 Summary

Appendix B - Test(s) and Test Solution(s) (N/A)

Appendix C - Practical Exercises and Solutions

PRACTICAL EXERCISE(S)/SOLUTION(S) FOR LESSON 1: 21B10D02D

PRACTICAL EXERCISE SHEET PE 1

Title

Detect Explosive-Hazard Indicators by Visual Means

Lesson Number / Title

21B10D02 / Detect Explosive-Hazard Indicators by Visual Means

Introduction

The purpose of the practical exercise is to provide the students an opportunity to identify the potential hazards based upon recognition of natural, man-made and improvised indicators.

Motivator

This practical exercise will confirm the understanding of the material put forth during the class of detect explosive hazard indicators by visual means and enable the soldier to trust their newly acquired skills. Additionally, it will prepare the soldier to operate in an explosive hazardous environment by challenging the soldier to detect cues that may otherwise go unnoticed. Though the practical exercise has implicit limitations in that it is impossible to present all types of indicators, it will broaden the soldiers' exposure and enable them to better understand and interpret the environment in which they are operating.

Terminal Learning Objective

NOTE: The instructor should inform the students of the following Terminal Learning Objective covered by this practical exercise.

At the completion of this lesson, you [the student] will:

Action:	Detect Explosive-Hazard Indicators by Visual Means
Conditions:	Given examples of the different types of visual indicators (deliberate and environmental) for possible explosive hazards.
Standards:	Detect all environmental and deliberate visual indicators of explosive hazards. Notify immediate supervisor of any indicator.

Safety Requirements

Low: Instructors should complete a risk assessment before conducting training, operations, or logistical activities.

Risk Assessment

Low

Environmental Considerations

Instructors should complete a risk assessment before conducting training, operations, or logistical activities. Risk assessments assist instructors in identifying potential environmental hazards, develop controls, make risk decisions, implement controls, and ensure proper supervision and evaluation. FM 3-100.4, Environmental Considerations in Military Operations.

Evaluation

NONE

Instructional Lead-In

Indicators of explosive hazards can be broken down into 2 groups. The type of indicator may tell us something about the explosive hazard and therefore give us a better chance of understanding the situation. Look for different indicators to explosive hazards.

Different indicators include:

Deliberate- indicators deliberately placed to warn of an explosive hazard.

Environmental- the way that nature reacts to human activity.

Resource Requirements

Instructor Materials: Lesson Plan, lane material, instructor guide, and index cards. (1 per student)
Listed below is Department of Defense Identification Code (DODIC) numbers, and nomenclature serial numbers (NSN) of items available through DOD, DA and commercial supply channels that can be ordered to make explosive hazard training aids.
Suggested lane material items:

LANDMINES
D30-1549, AP, VS-50 ITALIAN
D30-1217, AP, PRB-409, BELGIAN
D30-1551, Mine AP Blast, VS MK2
D30-1547, AT, TM 57, USSR
D30-1545, AP Bounding Frag, Valamra 59, ITALIAN
D30-1543, AT, VS 2.2, ITALIAN
D30-1354, AP, POMZ, USSR
D30-1259, AP, OZM-3, USSR

PROJECTILES
D30-1358, 81MM Mortar, Illumination
D30-1484, 120MM Mortar,S-843, USSR
D30-1471, 81MM Mortar,M66, YUGO
D30-1477, 130MM PROJO, OF-482, USSR
D30-1476, 122MM PROJO, D462, USSR
D30-1470, 100MM PROJO, Armor Piercing, PSV

SUBMUNITIONS
D30-1258, PTAB, 2.5, USSR
D30-1163, A01-SCH, USSR
D06-1634, MK-118 ROCKEYE, USA
D30-1168, ZAB, 2.5 INCENDIARY, USSR
D30-1257, PTAB 1.5, USSR
D30-1256, PTAB 2.5, USSR
D30-1779, AO 2.5 RT, USSR

GRENADES
DVC-T30-11, RGD-5, USSR
DVC-T30-12, RKG-3, USSR
D30-1366, AZ-58K-100, GERMAN
D06-1798, M67, USA
D30-1393, HUSAM, EGYPTIAN
D30-1346, No 36 MK1, BRITISH
D30-0578, PG-7M, USSR
D30-1241, OG-9, USSR

MISCELLANEOUS ITEMS
9905-00-999-3044, MINE SIGN
TRIPWIRE
FUSE PRONGS
PARACHUTE SUSPENSION CORD (550 CORD)
FENCE (CONCERTINA or BARBED)
COKE CAN
WATER BOTTLE
SPRAY PAINT

Student Materials: NONE

Special Instructions	NONE
Procedures	**Site Layout:** The minimum lane requirement 5m X 150m. When setting up a lane use the terrain to place the inert ordnance. Place the items, as they would appear on the battlefield. Start with 2 lane markers at the beginning of the lane and one marker at the end of the lane in the center. From the start line out, you should place inert ordnance throughout, placing some deliberate and natural indicators alongside some of the ordnance. Place at least three indicators from each group, deliberate (manufactured and improvised) and environmental. After completing the set up, the instructor should walk through and record in order, all of the indicators that have been placed. The lane instructor needs to be wary of setting in a lane that does not effectively engage the soldiers (in other words, do not put 20 absolute targets center mass in the lane). In addition to the above, remember to utilize the "improvised indicators" available within the area the lane is being established in (i.e. rocks, branches, twisted grass, etc.). The lane instructor should ensure that the emplacement of the indicators is done in such a manner as to provide a variety of types and levels. There must not be any obstructions on the lane itself – this would defeat training further. Combinations can also be employed to enhance teaching points (two or three weak indicators in a small vicinity that lead to a stronger indicator to elicit differing points of view; or, utilizing a trip wire attached to a staked fragmentation mine to reinforce the necessity of looking for other indicators). Note: It is recommended that the instructor use the Instructor Guide for set-up of the lane. **Conduct:** Begin the exercise with an explanation on the markers indicating the lane boundaries (the 2 starting markers and one center of the lane at the end). The lane instructor will pass out a 3X5 card to each soldier. Divide the soldiers into 2-man buddy teams and brief the soldiers on the conduct of the lane. The instructor needs to stress the necessity of individual effort in order to gain the maximum training effect for all soldiers. The soldiers will travel the lane at a moderate pace (intent is to have soldiers moving as they would on a low threat mission), spread at an appropriate interval in order to sustain buddy team effort, and record their findings on the cards. After all soldiers have completed the lane, the instructor will conduct a moving review of the lane, as well as, reinforcement of the classroom instruction. This will be accomplished by moving back to the start point with the complete group. The instructor will identify each of the encountered indicators. The instructor will solicit the appropriate information regarding the indicators. Note: It is imperative the instructors do not become a distraction to the groups. Multiple instructors talking to multiple students, even when every bit of information/instruction is completely accurate, can result in students missing a vital bit of information/instruction.
Feedback Requirements	**NOTE:** Feedback is essential to effective learning. Schedule and provide feedback on the practical exercise and any information to help answer students' questions. Provide remedial training as needed.

Appendix D - Student Handouts (N/A)