



FIELD COMMUNICATION





OVERVIEW



- Nomenclature
- Components
- Assembly
- Phonetic terms
- Controls
- Loading Single Channel Freq.
- Troubleshooting



LEARNING OBJECTIVES



Please Read Your

Terminal Learning Objectives

And

Enabling Learning Objectives





Nomenclature of the SINCGARS



- SINgle
- Channel
- Ground and
- Airborne
- Radio
- Systems





Nomenclature of the SINCGARS



DEFINITION:

- VHF-FM combat radios
- Primary means of command and control for combat, and combat service support
- Operates in
 - Single Channel (SC)
 - Frequency Hopping (FH)





Nomenclature of the SINCGARS



- Remote operations
- Retransmission
(retrans)



Nomenclature of the SINCGARS



- Frequency Range
 - The SINCGARS operates in the VHF range from 30.000 to 87.975 MHz





Nomenclature of the SINCGARS



POWER OUTPUT

- LO (low power)
200 to 400 meters
- M (medium power)
400 meters to 5 kilometers
- HI (high power)
 - 5 kilometers to 10 kilometers
- PA (power amplifier)
 - 10 kilometers to 40 kilometers

ONLY VEHICLES EQUIPPED WITH A POWER AMPLIFIER CAN USE THE "PA" SETTING







COMPONENTS OF THE MANPACK CONFIGURATION



- Six Components
 - Receiver Transmitter (RT)
 - Handset
 - Manpack Antenna
 - Battery Box
 - Battery
 - Field Pack





RECEIVER-TRANSMITTER (RT)





HANDSET





MANPACK ANTENNA





BATTERY BOX





BATTERY





FIELD PACK







ASSEMBLY OF THE AN/PRC-119A



- Visually inspect battery box for dirt and damage
- Stand RT on front panel guards, place battery box on RT and secure it to latches
- Place battery in battery box and mate connectors
- Close battery box cover and secure latches
- Screw whip antenna into base, only hand tighten



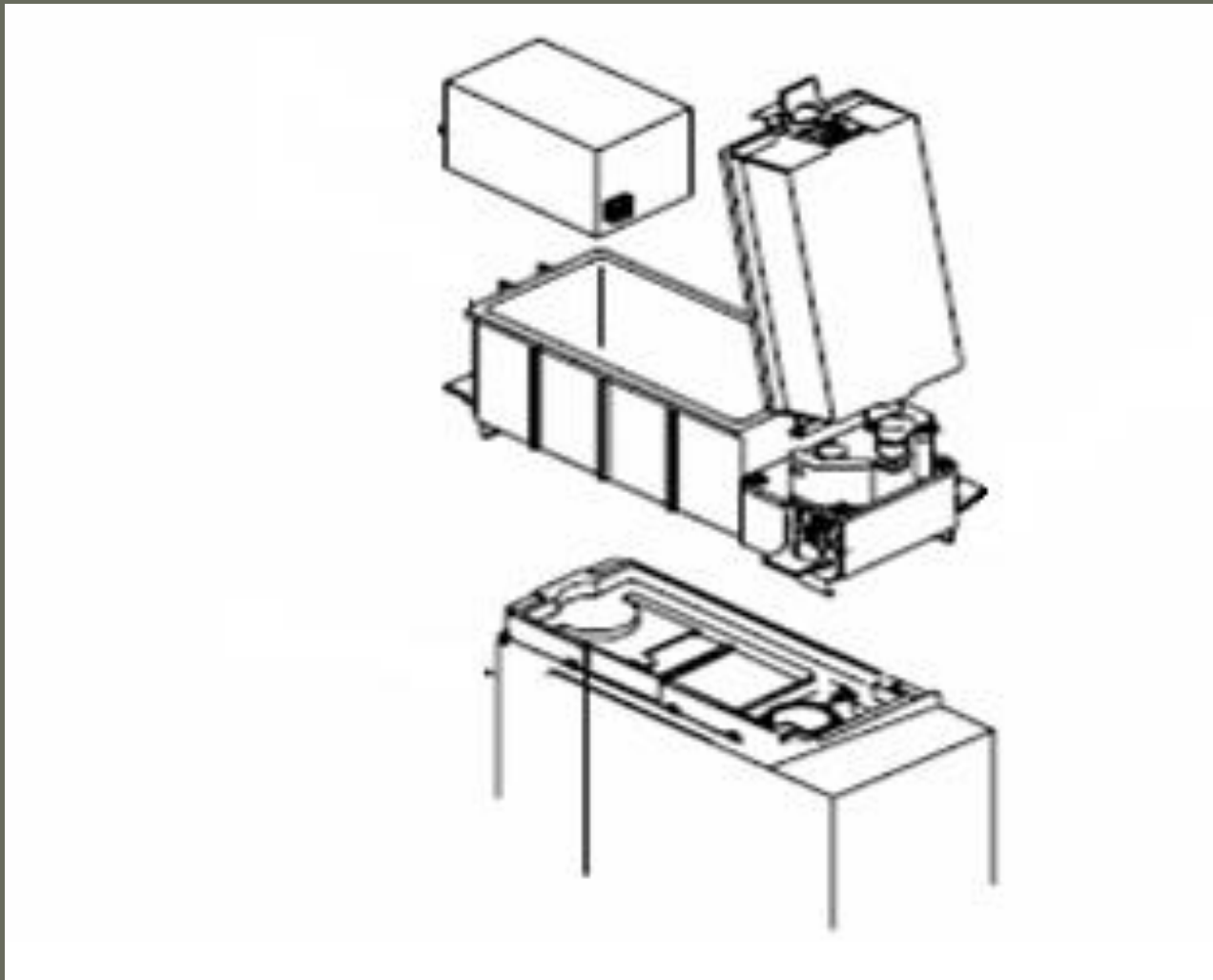
ASSEMBLY OF THE AN/PRC-119A



- Carefully mate antenna base with RT antenna connector. Make sure you:
 - Line up the grooves and only
 - Hand tighten **ONLY**
- Attach handset by lining up red dots and then pressing and turning clockwise

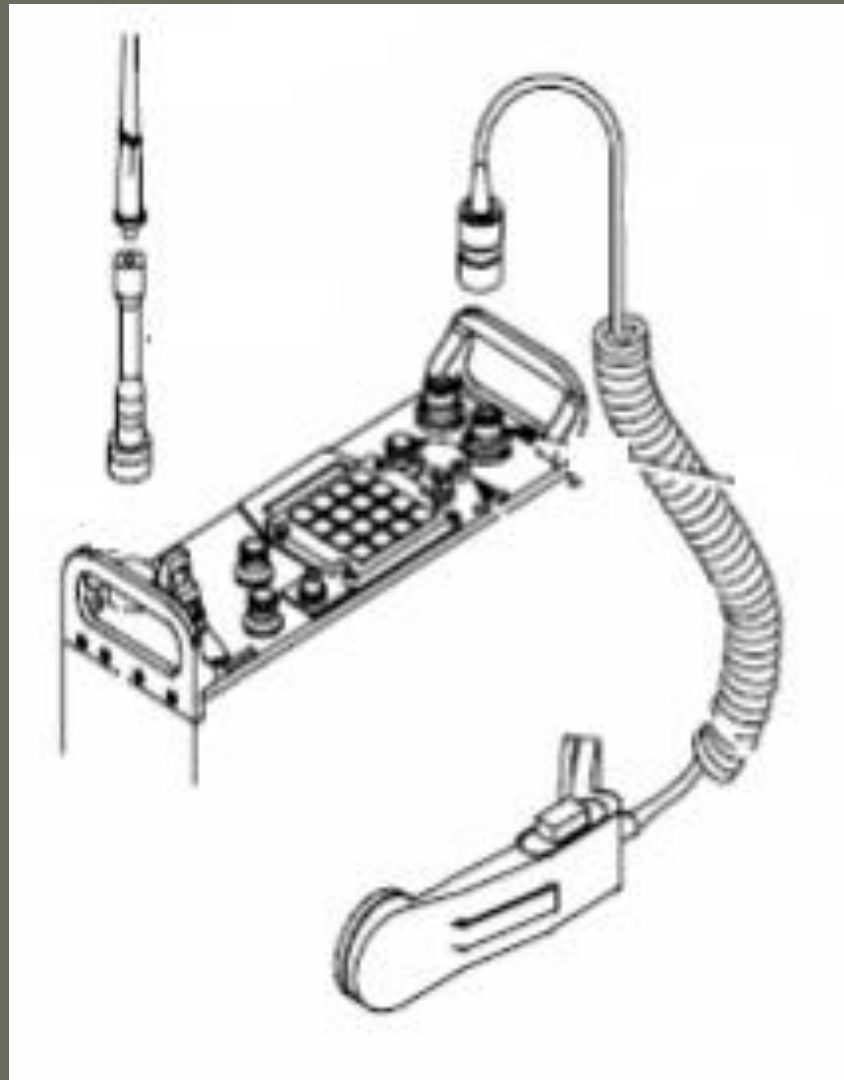


ASSEMBLY OF THE AN/PRC-119A





ASSEMBLY OF THE AN/PRC-119A







PHONETIC TERMS



- A - ALPHA
- B - BRAVO
- C - CHARLIE
- D - DELTA
- E – ECHO
- F – FOXTROT
- G – GOLF
- H – HOTEL
- I – INDIA
- J – JULIET
- K – KILO
- L – LIMA
- M – MIKE
- N – NOVEMBER



PHONETIC TERMS



- O – OSCAR
- P – PAPA
- Q – QUEBEC
- R – ROMEO
- S – SIERRA
- T – TANGO
- U – UNIFORM
- V – VICTOR
- W – WHISKEY
- X – X-RAY
- Y – YANKEE
- Z – ZULU



PHONETIC TERMS



- 1 - wun
- 2 - too
- 3 - tree
- 4 - fow-er
- 5 - fife
- 6 - six
- 7 - seven
- 8 - ate
- 9 - niner
- 0 - ze-ro





PROCEDURE WORDS



- THIS IS
- OVER
- OUT
- ROGER
- WILCO.
- SAY AGAIN
- I SAY AGAIN



PROCEDURE WORDS



- ALL AFTER
- ALL BEFORE
- WAIT OVER
- WAIT OUT
- READ BACK
- I READ BACK
- CORRECTION
- RADIO CHECK
 - roger over*
 - roger out*





CONTROLS



- Operating a radio consists of more than turning it “ON”
- Operation involves entering data using the keyboard, turning knobs, and following instructions from the net control station



- NOTE: Moving a switch to a setting that has a box around the letter requires the knob to be pulled out then turned.



CONTROLS



- Receiver-Transmitter (RT)
 - Most of the controls that the operator will use are placed on the face of the RT





CONTROLS



- FCTN (function) Switch 4 operating positions
 - SQ ON (squelch on)
 - Turns on the RT and the squelch
 - SQ OFF (squelch off)
 - Turns on the RT but not the squelch
 - REM (remote)
 - Disables all RTs front panel controls and allows them to be remote accessed.
 - RXMT (retransmit)
 - Used to operate RT in retransmit mode.



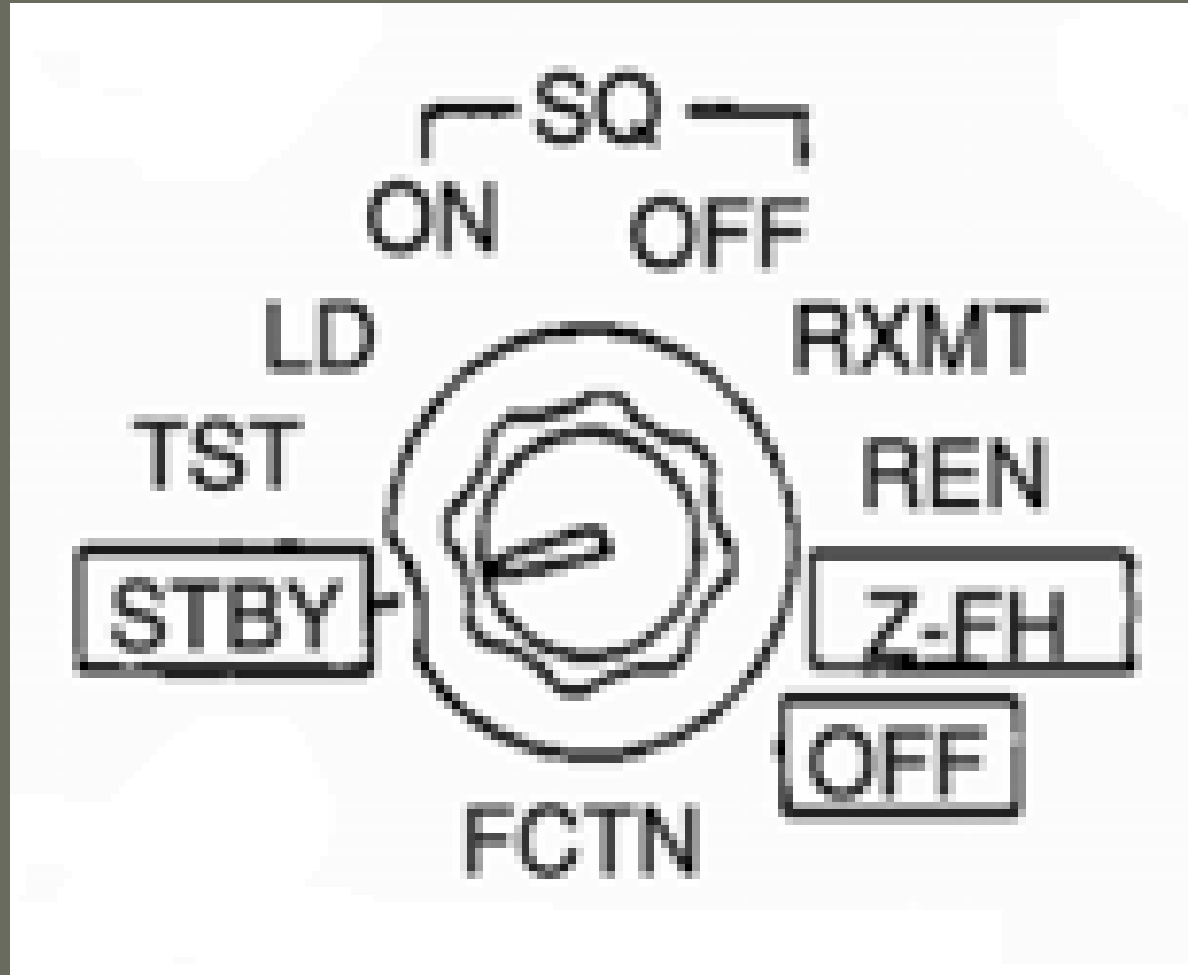
CONTROLS



- FCTN (function) Switch
 - STBY - Will cut power to the RT.
 - TST - Conducts self test
 - LD (load) - This position allows the operator to load frequencies, data and COMSEC into the radio.
 - Z-FH (zero-FH) – This position is used to clear all frequency hopping (FH) data
 - OFF (All Power OFF) - Memory is completely cleared when OFF for 5 seconds



FCTN SWITCH





CONTROLS

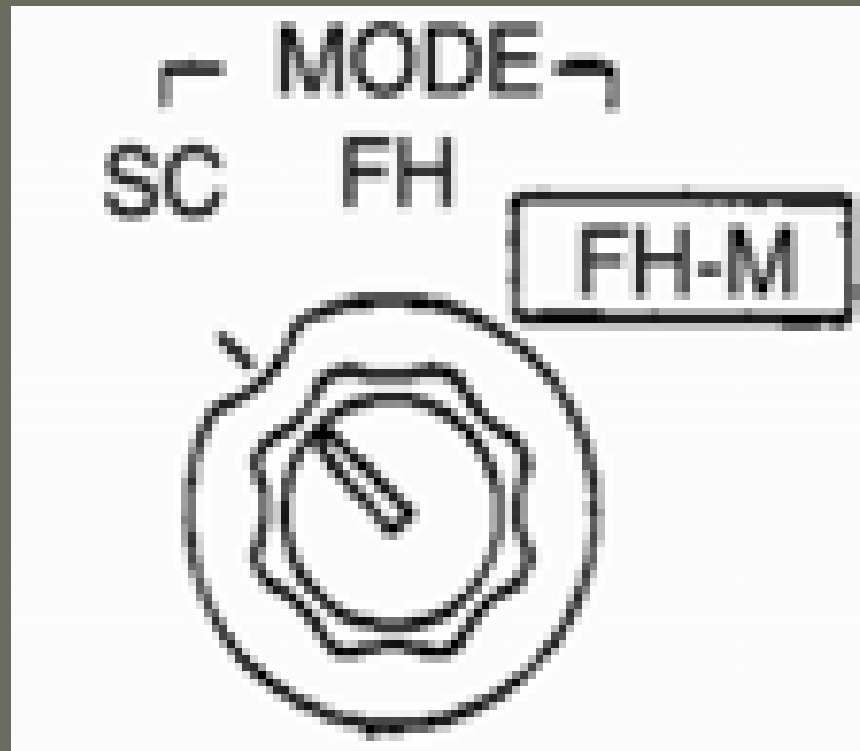


- Mode Switch
 - Sets the receiver-transmitter mode
 - SC (Single Channel)
 - FH (Freq hopping)
 - FH-M (Freq hopping master)





MODE SWITCH





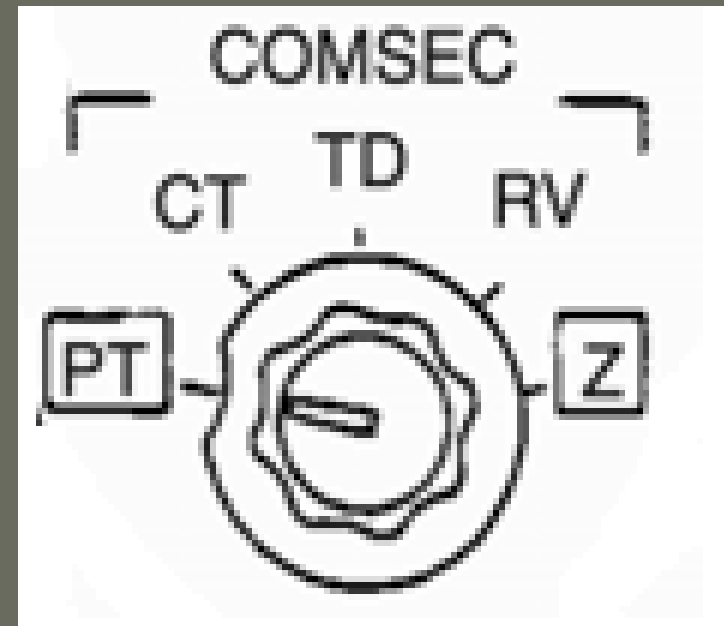
CONTROLS AND FEATURES



- COMSEC Switch

- Sets the RT for the Communicational Security

- PT (Plain Text)
- CT (Cipher Text)
- TD (Time Delay)
- RV (Receive Var)
- Z (Zero)





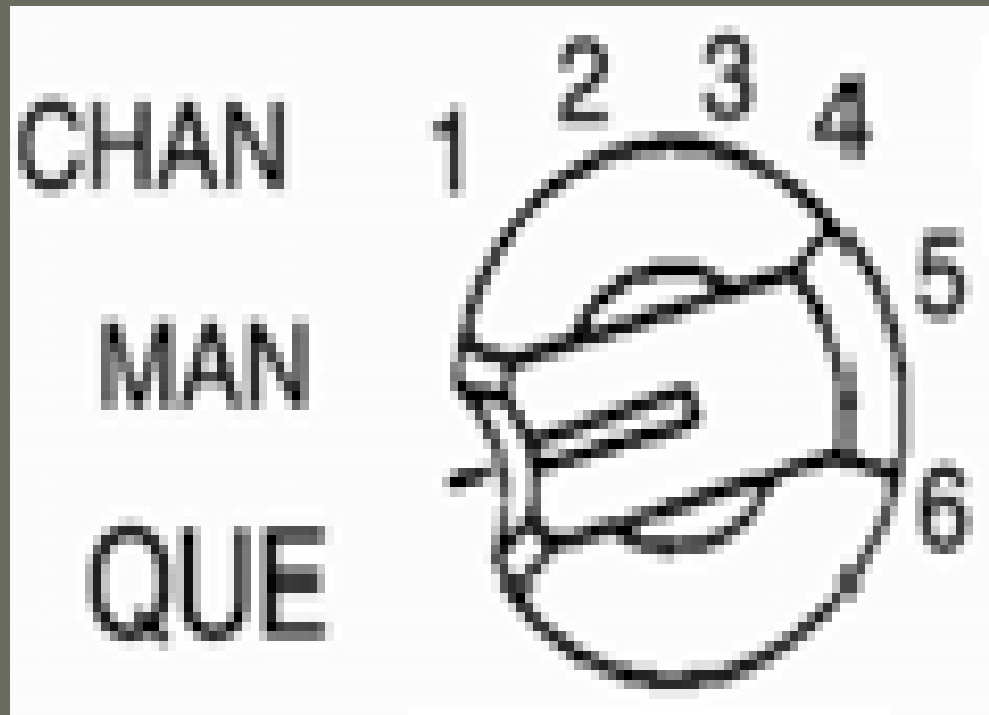
CONTROLS



- CHAN (channel) Switch
 - Selects manual, preset and cue frequencies
 - MAN (manual) - Selects the loaded manual frequency
 - CUE - Selects the loaded CUE frequency
 - 1 through 6 - Channels that may be loaded with operating frequencies



CHANNEL SWITCH





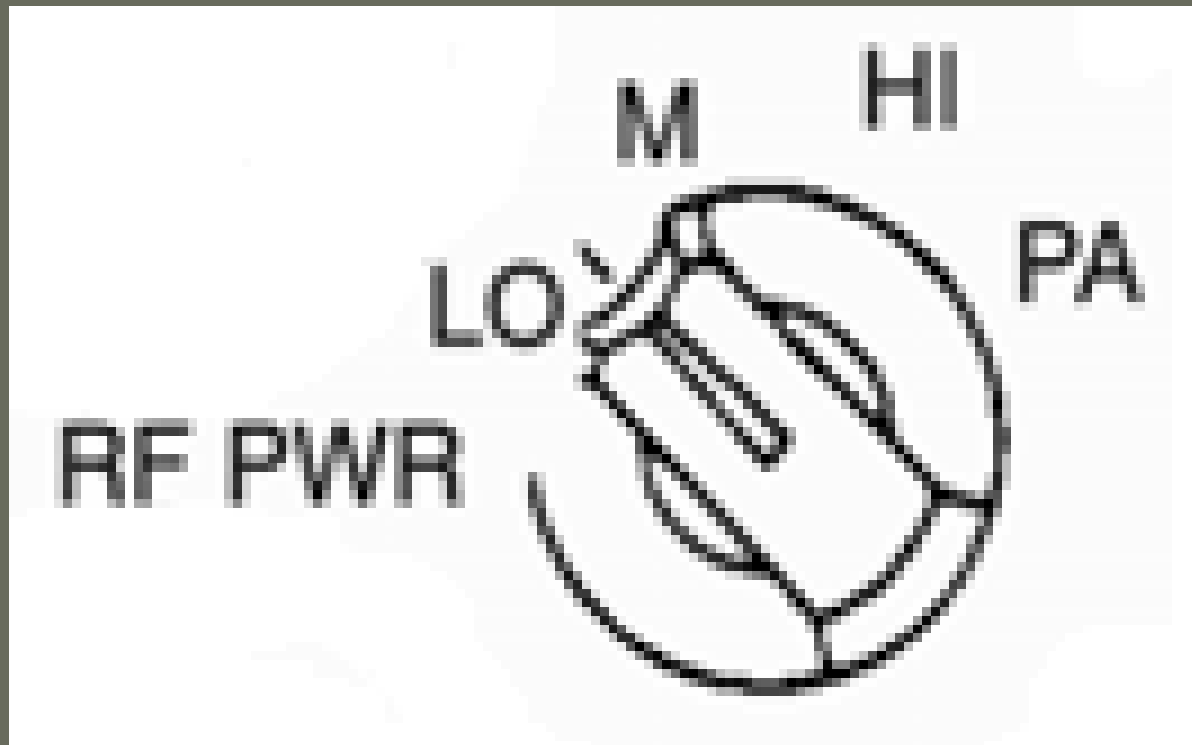
CONTROLS



- RF PWR Switch
 - Adjusts power level of transmissions
 - LO (Low) 200 - 400 meters
 - M (Medium) 400 - 5000 meters
 - HI (High) 5 - 10 kilometers
 - PA (Power Amplifier) 10 - 40 kilos
 - (Only Vehicle mounted Radios)



RF PWR SWITCH



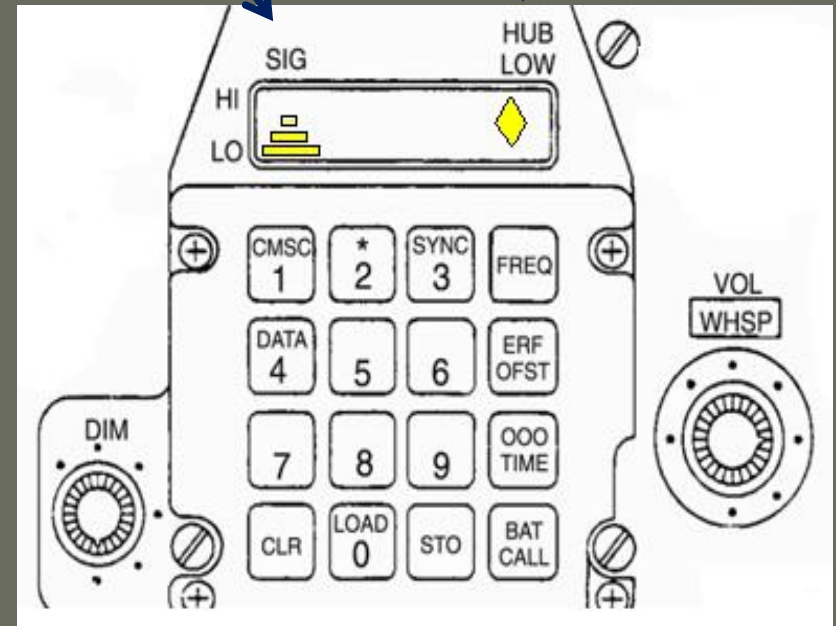


CONTROLS

- DIM Control
 - Adjusts display brightness
- VOL/WHSP (volume/whisper) control
 - Adjusts audio volume
- Keyboard Display
- Keyboard

SIG Display

HUB/LOW Display



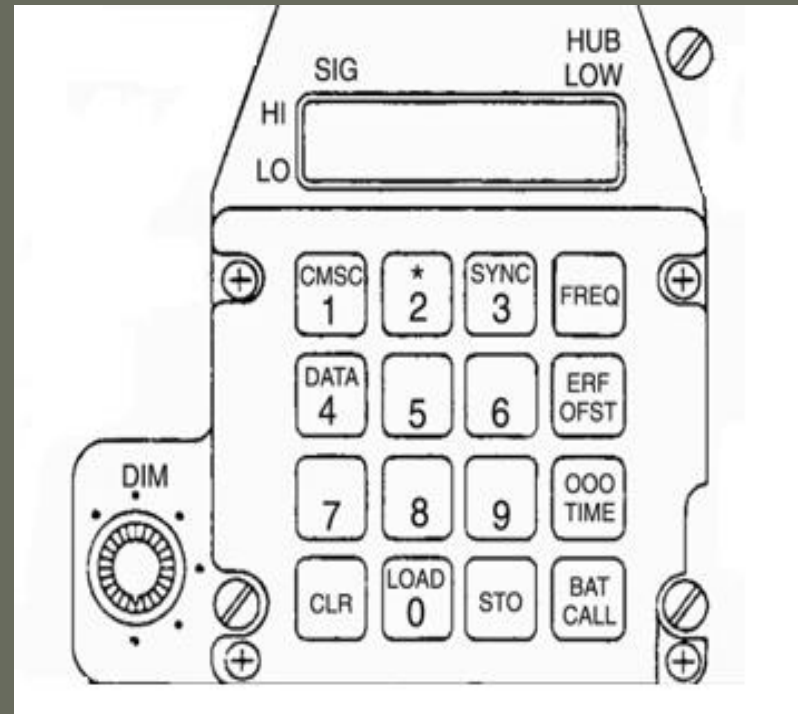


KEYPAD



- FREQ (frequency)
- ERF (electronic remote fill)
 - Used by net control station
- OFST (offset)
 - Used in SC to offset frequency
- TIME
 - Used by NCS to set time for all net stations

- Keyboard and Display



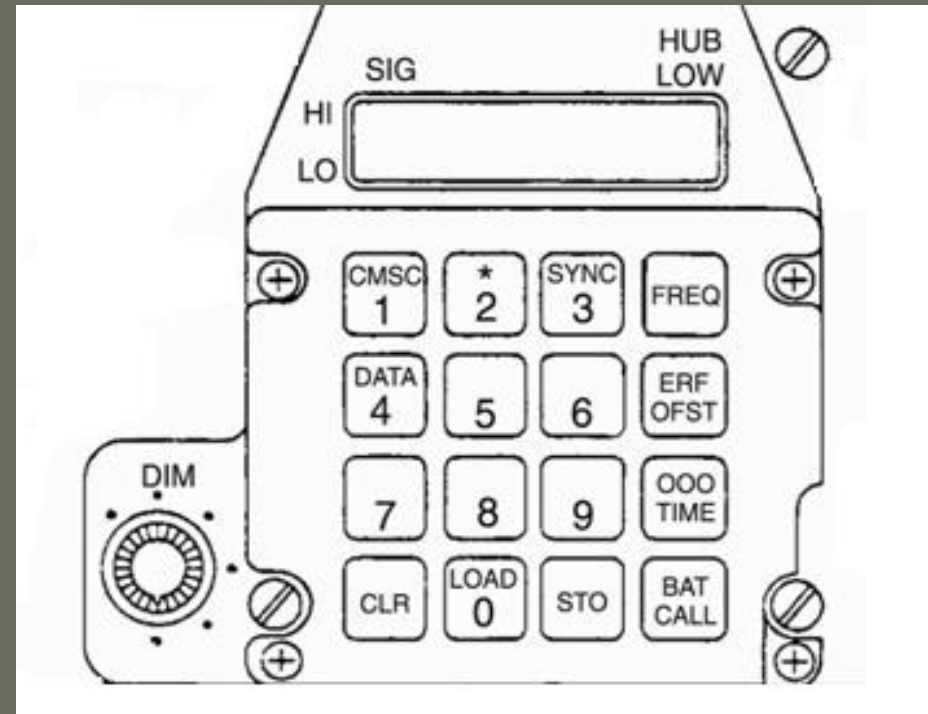


KEYPAD



- BATT (battery)
 - Used to check battery life
- CALL
 - Used to communicate with a remote
- STO (store)
 - Transfers data from temp. to permanent memory

- Keyboard and Display

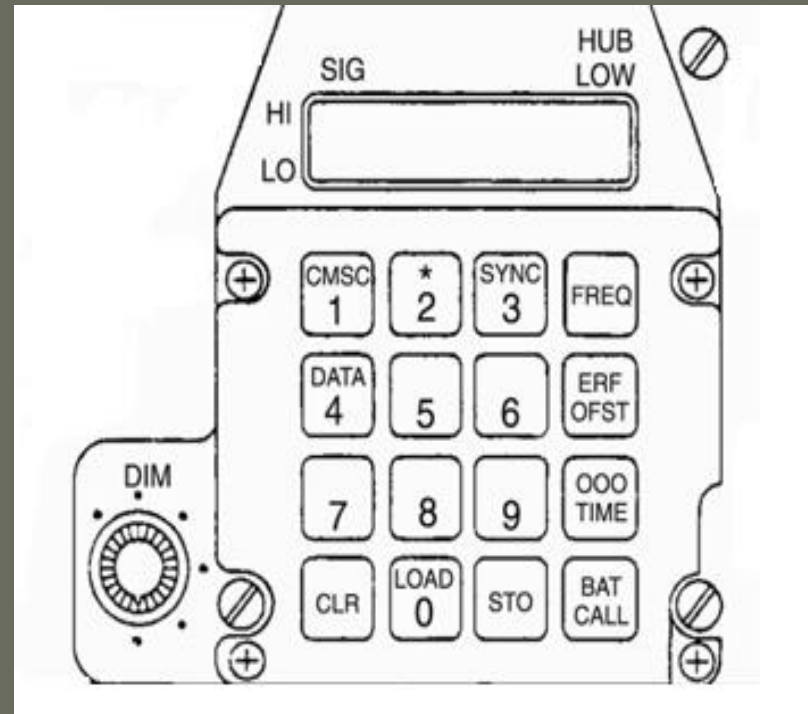




KEYPAD



- LOAD
 - This button will load information into the holding memory
- CLR (clear)
 - Clears data from the keyboard display if a mistake was made
- SYNC
 - Used for late entry procedures
- DATA
 - Used to operate in data mode

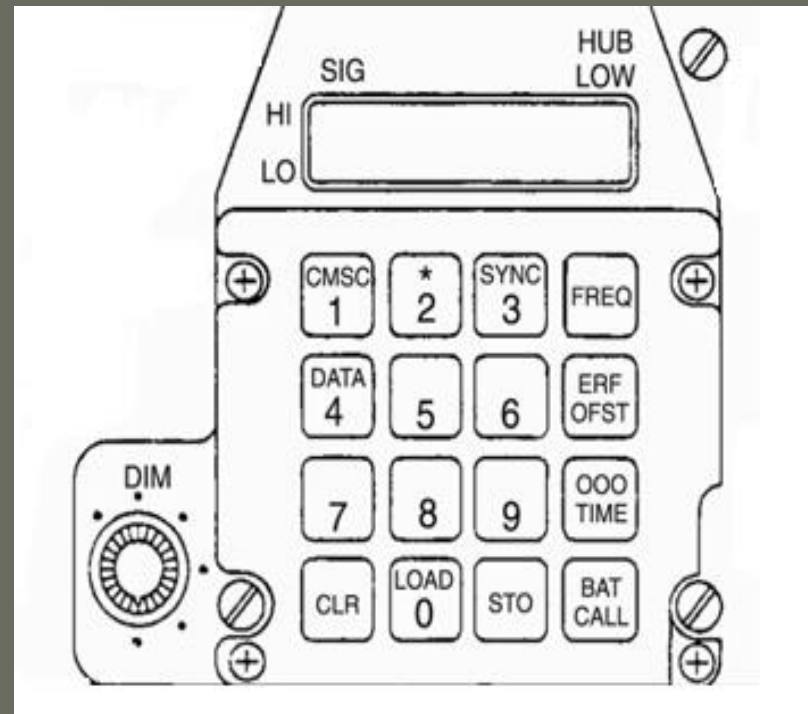




KEYPAD



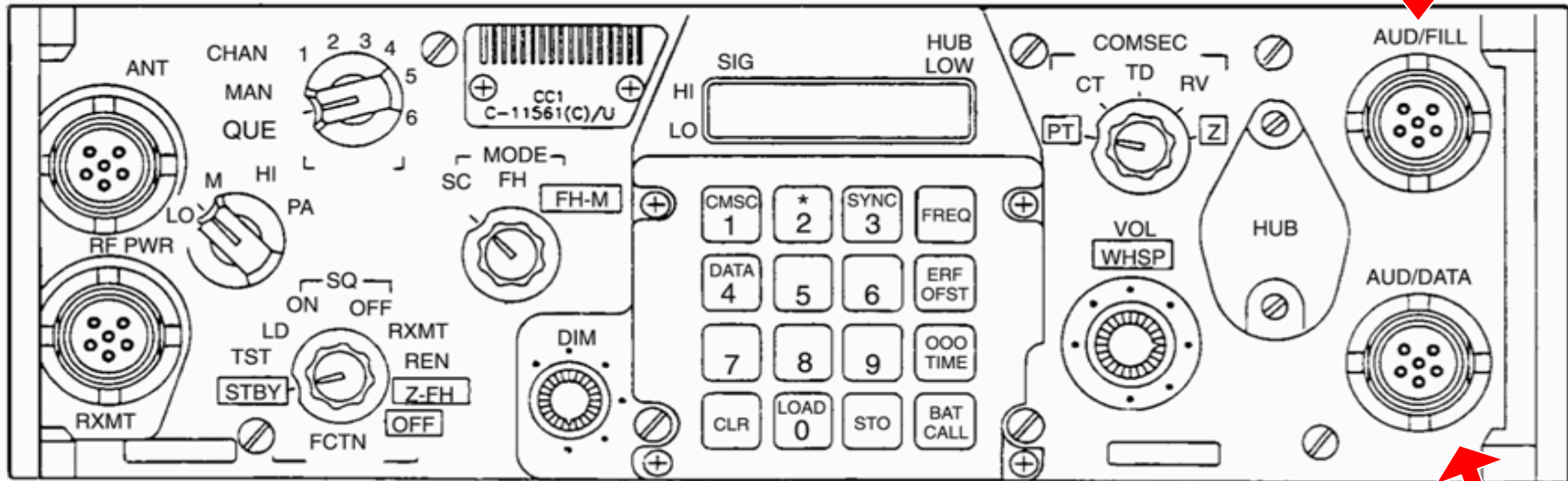
- CMCS (COMSEC)
 - Pressing this button allows COMSEC key to be displayed
- Numbers
 - Used to enter numerical data such as SC frequencies





CONNECTORS

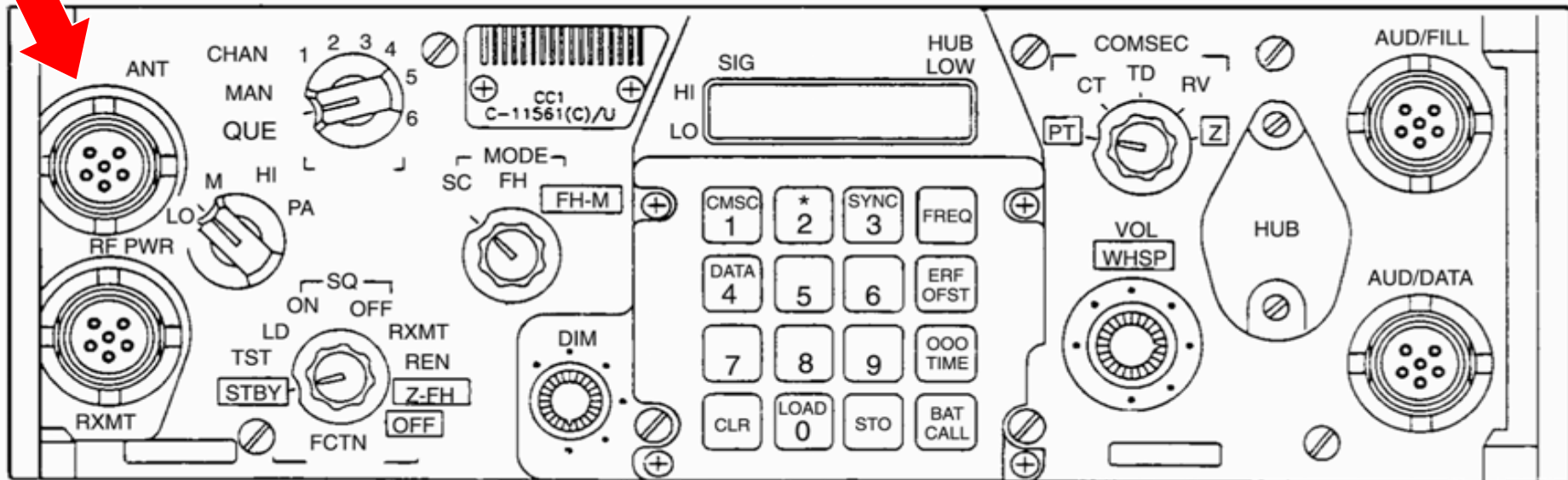
AUD/FILL (audio/fill) Connector
Connects to fill devices or handsets



AUD/DATA (audio/data) Connector Connects to external data devices during data operations and handsets during normal operations

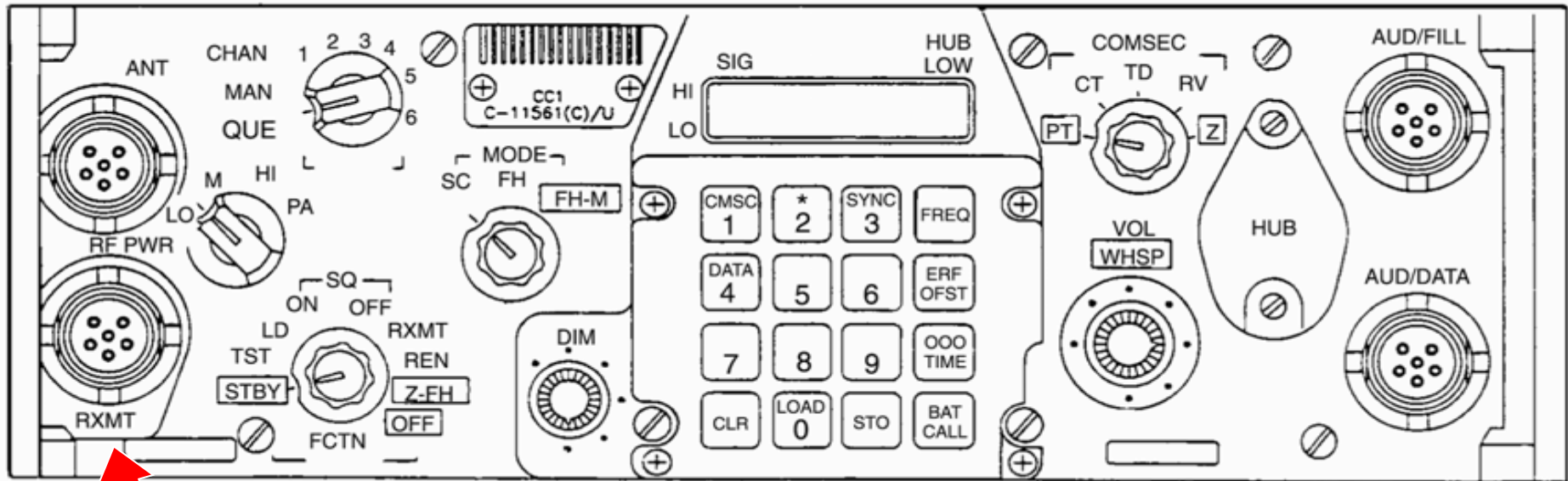


ANT (antenna) Connector- Connects to the manpack antenna or vehicle antenna cable





RXMT (retransmit) Connector- Connects to another RT during retransmit operations







LOADING A FREQUENCY

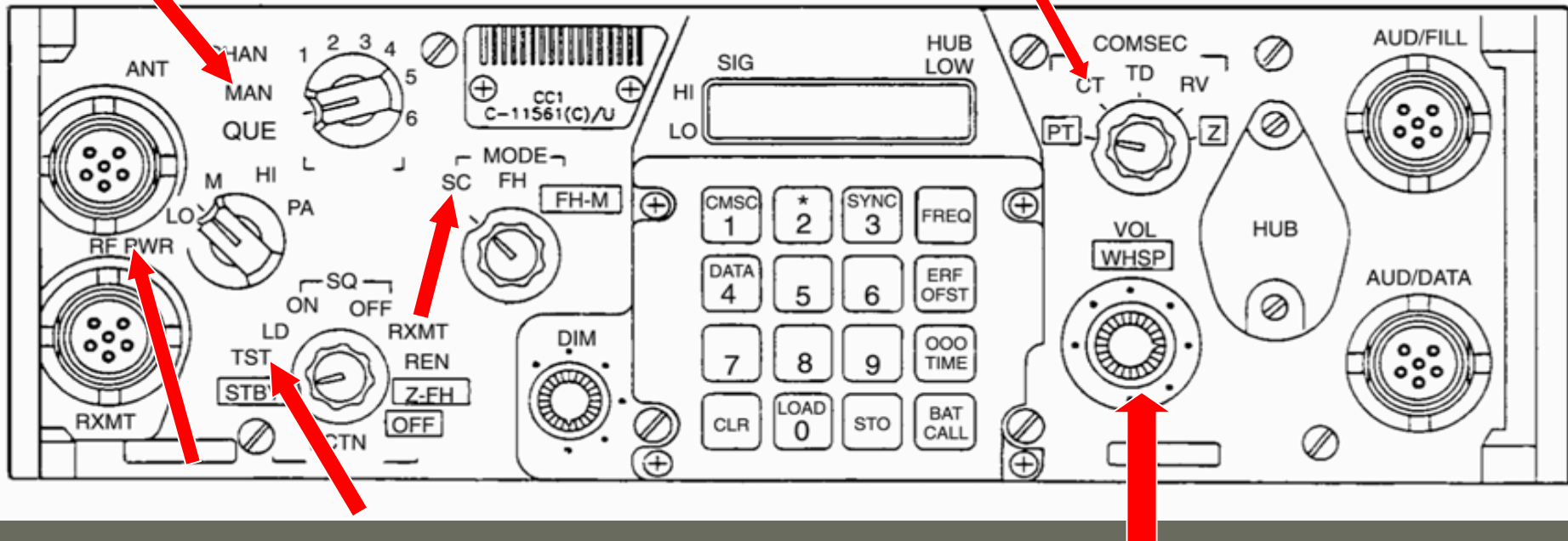




LOADING A FREQUENCY



Turn on the RT (cont.)



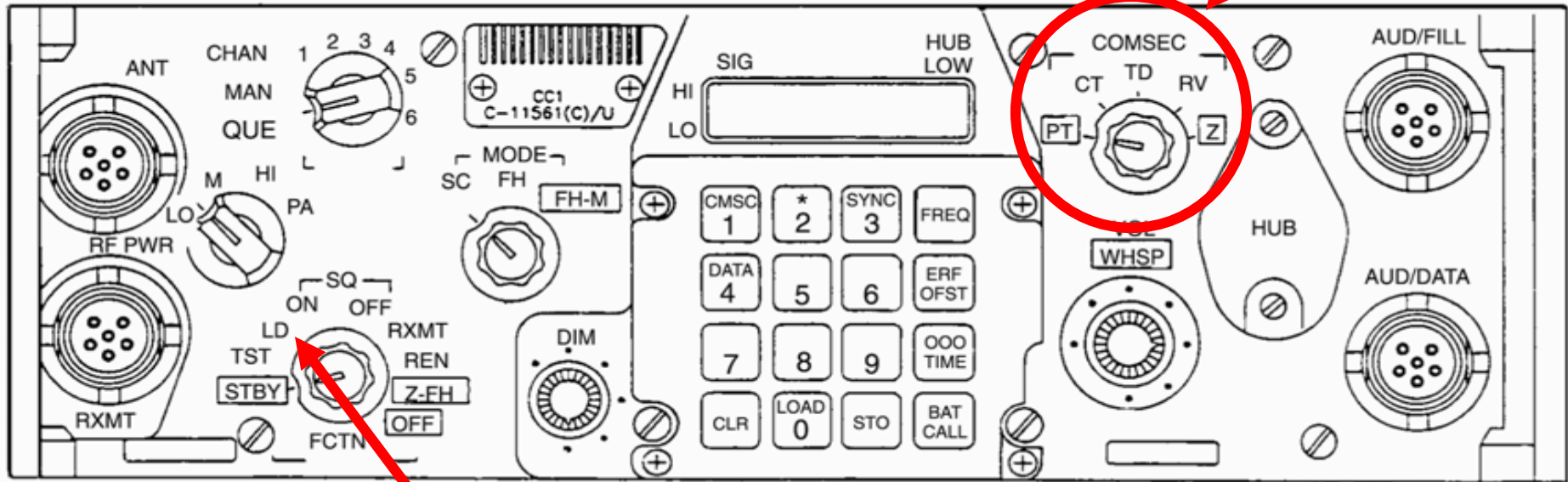
Turn FCTN switch to TST allow the test to run.



LOADING A FREQUENCY FIRST STEP



Set COMSEC to PT

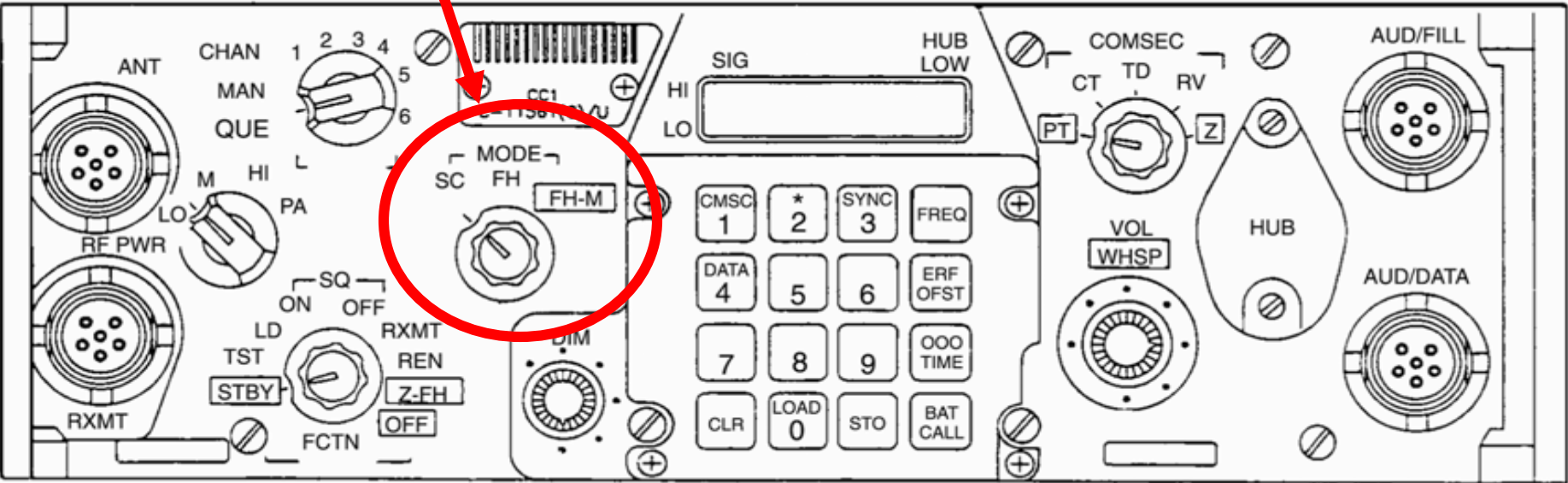


Set function switch to LD



NEXT STEP

Mode to SC

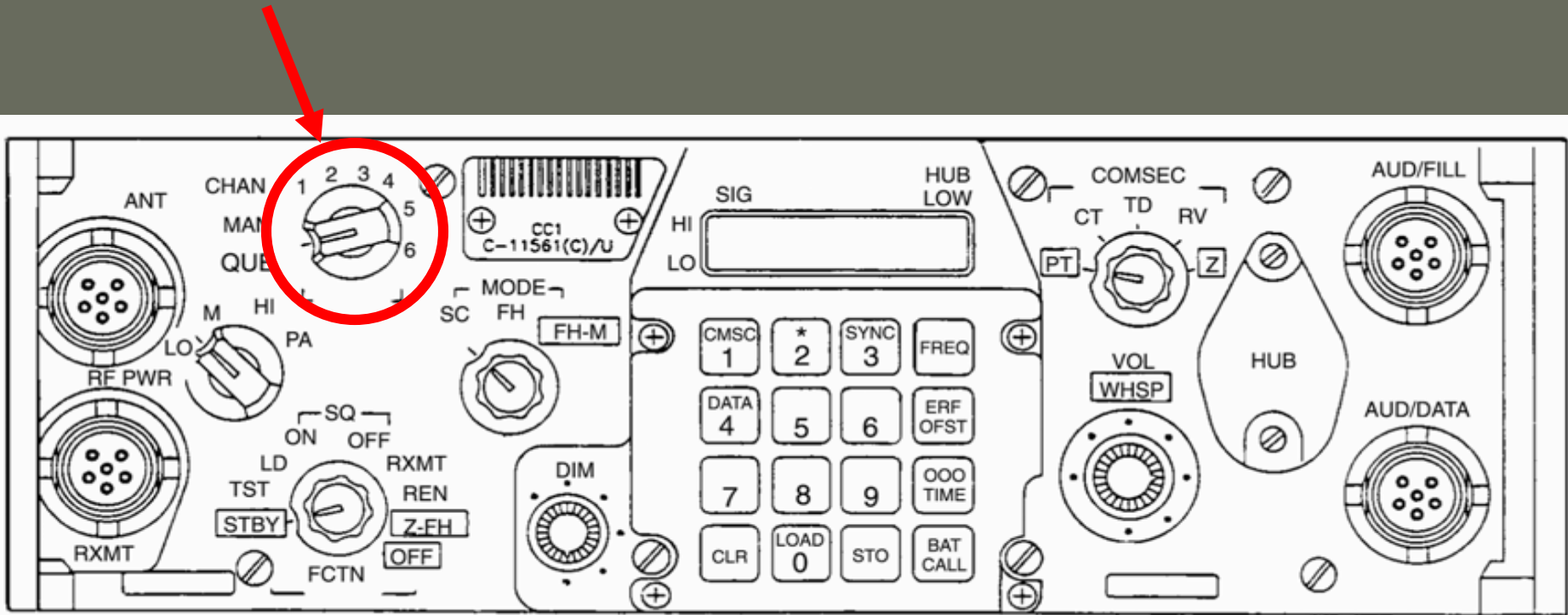




NEXT STEP



Chan to MAN

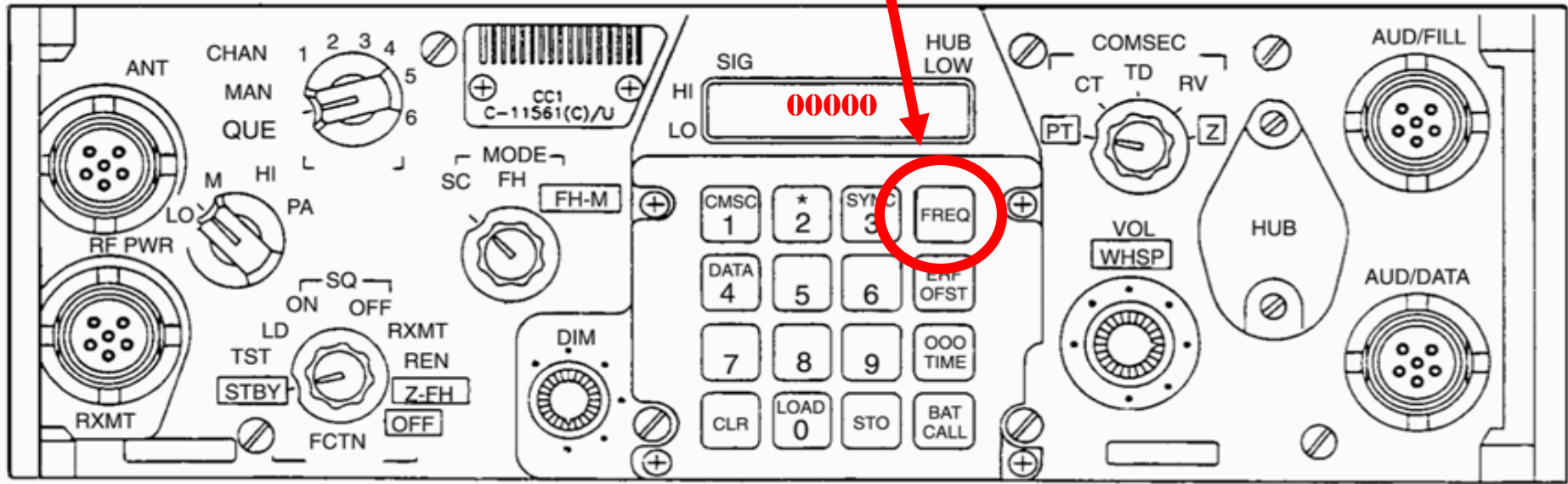




NEXT STEP

Press **FREQ** (frequency) button on keypad

The freq window will show 00000.





NEXT STEP

Press the CLR (clear) button

The freq window will show _____ (Five blank lines)

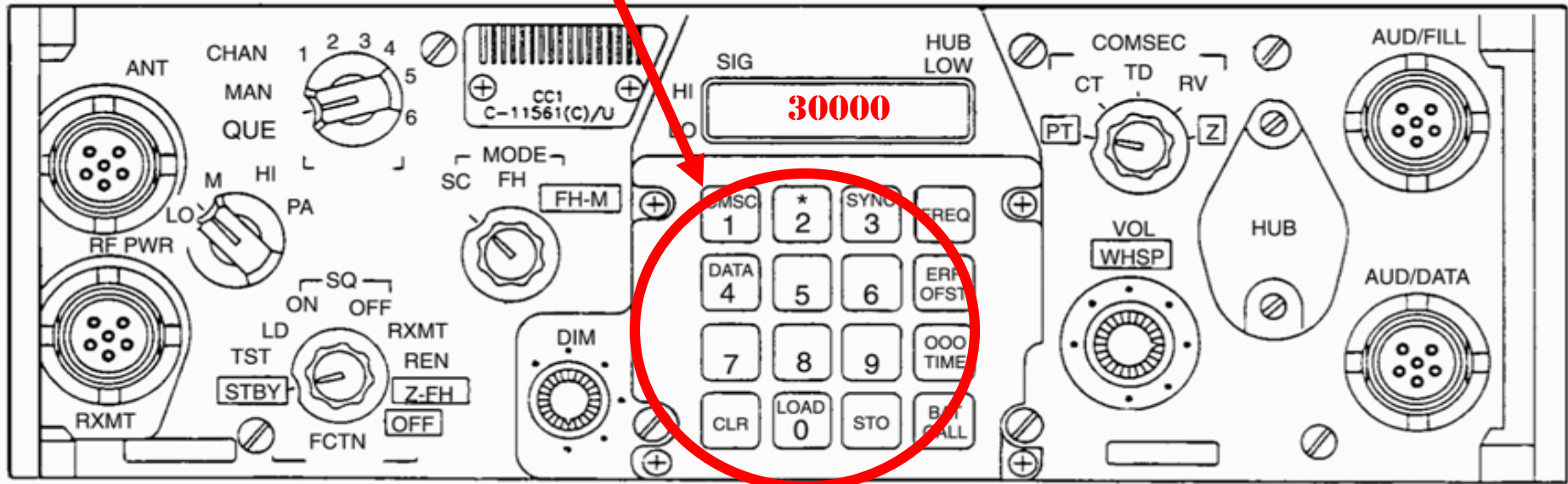




NEXT STEP



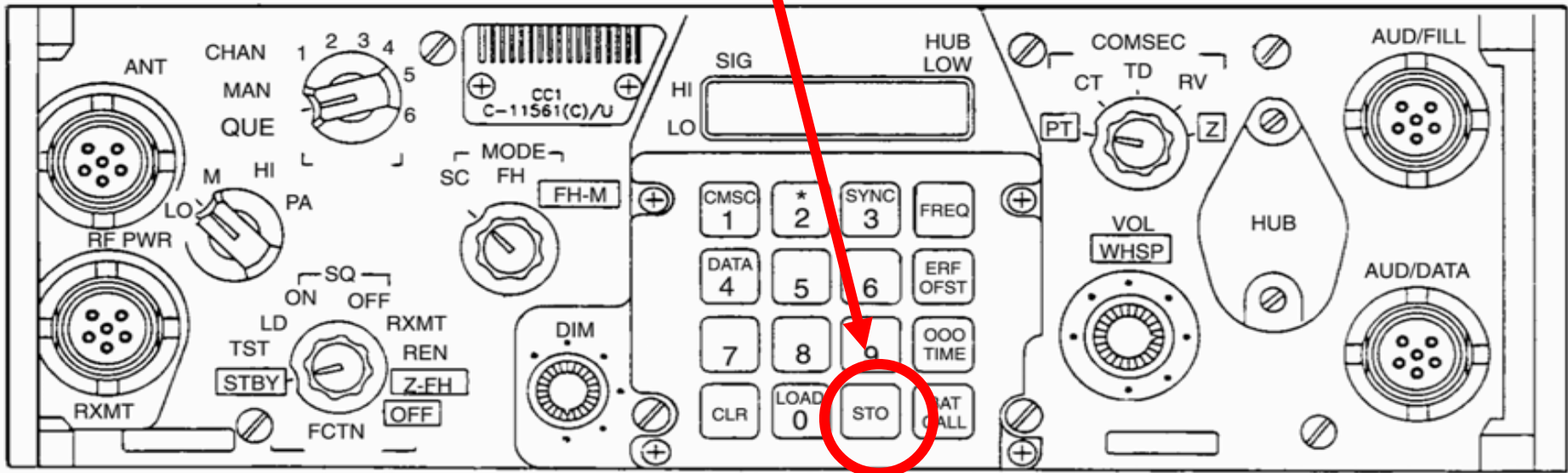
Enter the numbers of the new (desired) frequency





NEXT STEP

Press the STO (store) button

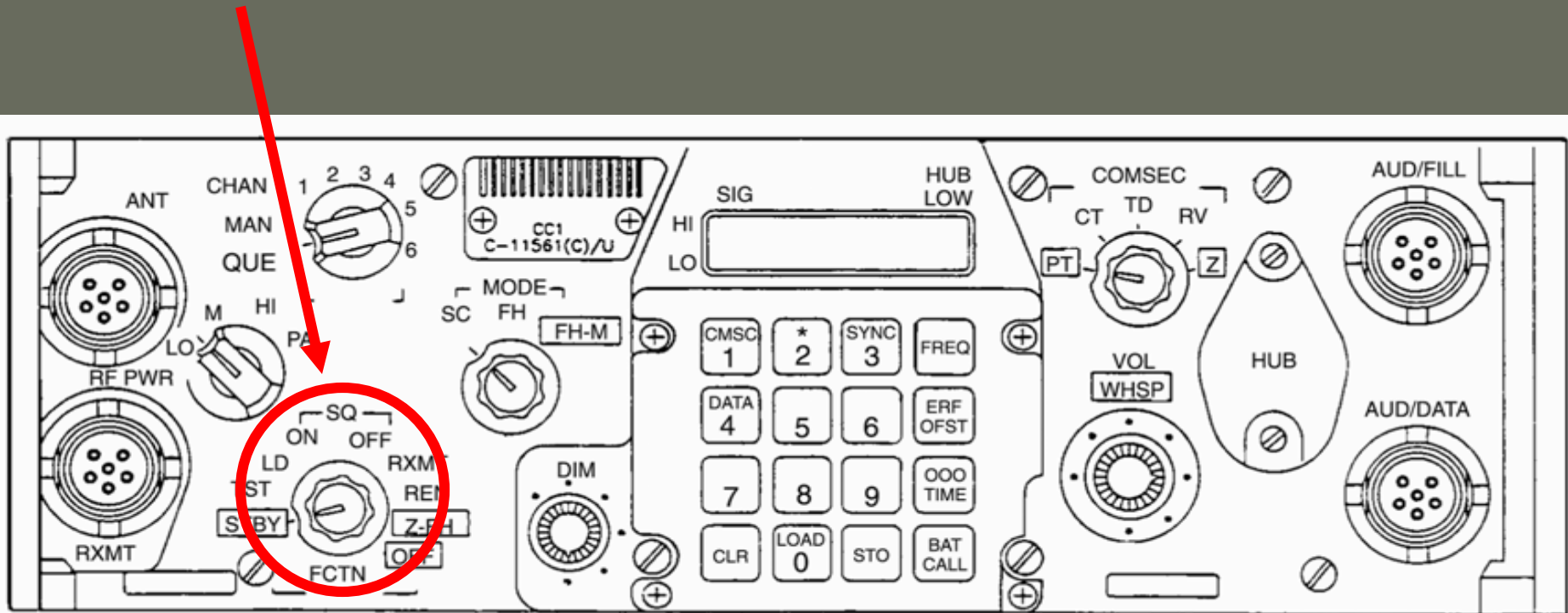




LAST STEP



Set function switch to SQ ON or OFF (squelch on)



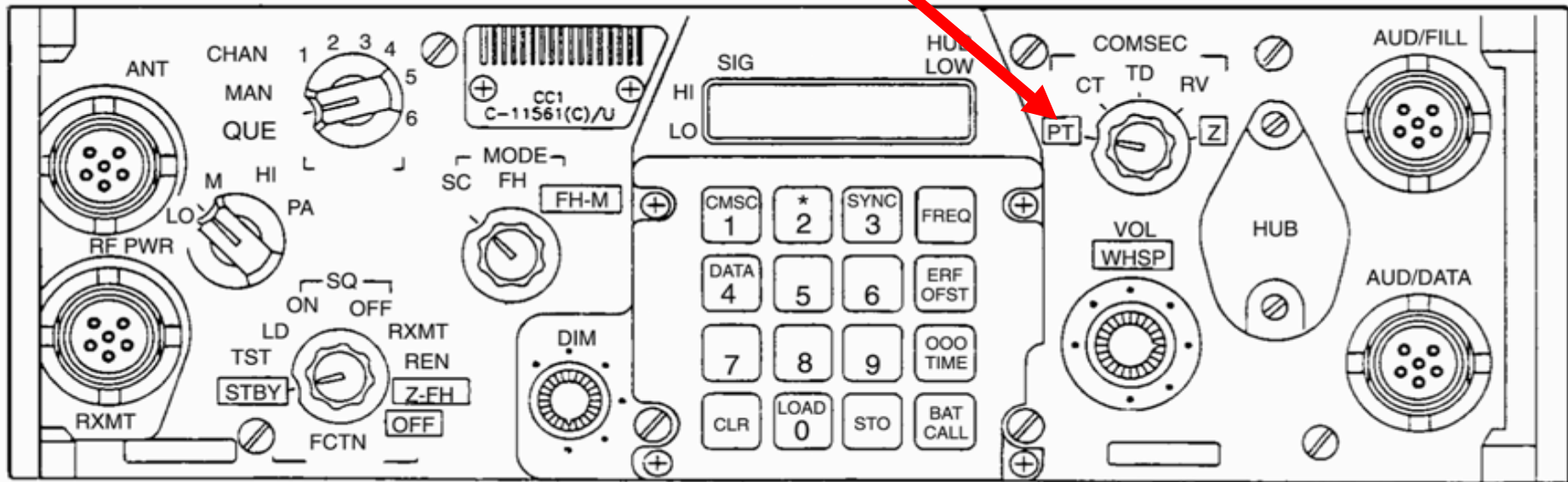


TRANSMITTING



- Push-to-Talk

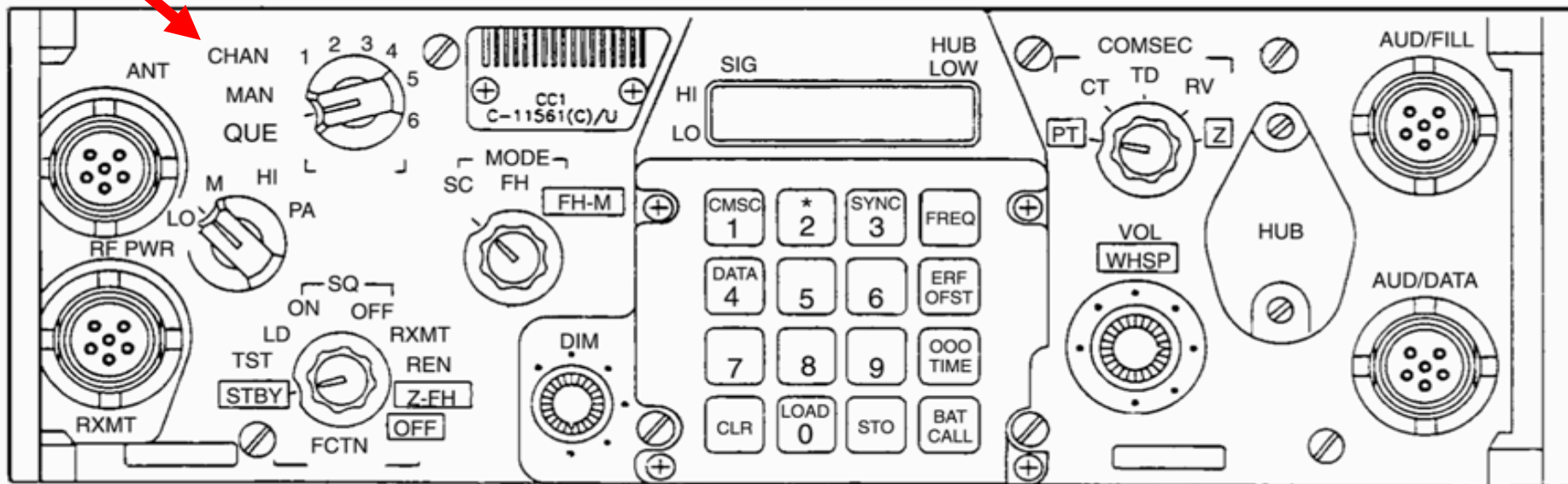
- When the push-to-talk mode is activated (handset or helmet), the operator talks, and the radio transmit in the voice mode.





TRANSMITTING

- Changing Channels.
 - To transmit on a different frequency, simply move the channel switch to the channel containing the desired frequency.





CLEARING SINGLE CHANNELS



- Set the
 - mode switch to SC (single channel)
 - switch to CHANNEL TO BE CLEARED
- Press
 - FREQ button
 - CLR button
 - 5 blank lines
 - STO



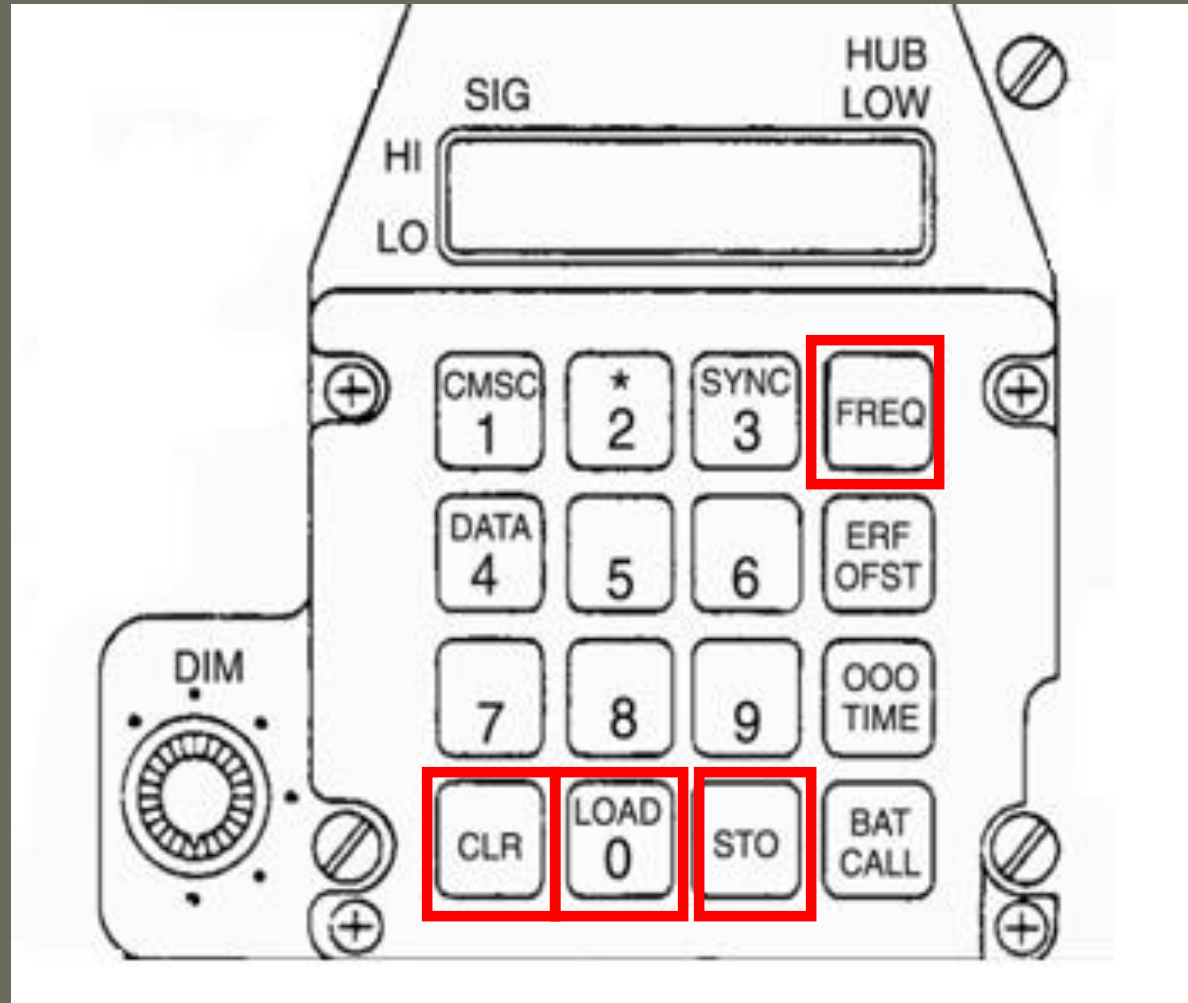


CLEARING SINGLE CHANNELS



KEYPAD SEQUENCE for single channel freq CLEARING

- FREQ
- CLR
- LOAD
- STO







TROUBLESHOOTING



The troubleshooting tables found in TM11-5820-890-10-6 Pg's. 58-74 allow you to check out common malfunctions of your equipment.

The table lists the common malfunctions which you may find during the operation or maintenance of the radio, or its components.

NOTE: If a malfunction is not listed, or is not corrected by listed corrective actions, notify your supervisor.



DEMONSTRATION



PRACTICAL APPLICATION



FIELD COMMUNICATION





FIVE PARAGRAPH ORDER





OVERVIEW



- Five Paragraph Order Format
- Warning Order
- Fragmentation Order



LEARNING OBJECTIVES

Please Read Your
Terminal Learning Objectives
And
Enabling Learning Objectives





COMBAT ORDER

- Instructions from leaders to subordinates
- Continuing process





BAMCIS



- Six troop leading steps
 - Plans
 - Executes mission
- A logical and orderly process
 - Time
 - Facilities
 - Personnel





BAMCIS



- **B**egin planning
- **A**rrange for Reconnaissance and Coordination
- **M**ake Reconnaissance
- **C**omplete plan
- **I**ssue Order
- **S**upervise





FIVE-PARAGRAPH ORDER FORMAT



PURPOSE

- To issue an order in a clear and concise manner
- To provide information and specific instructions
- To convert the leader's plan into action



SMEAC



- Purpose
 - Acronym used to describe the format in which all orders are generally issued





SMEAC



- **S**ituation
- **M**ission
- **E**xecution
- **A**dministration and Logistics
- **C**ommand and Signal





SMEAC



- Situation

- Status of friendly and enemy forces
- It is divided into 3 sub-paragraphs
 - Enemy Forces
 - Friendly Forces
 - Attachments and Detachments





SITUATION



- Enemy Forces
 - Includes information pertaining to the enemy's:
 - Composition, disposition and strength
 - **SALUTE** – acronym used to report enemy activity





SITUATION (SALUTE)



- Size
- Activity
- Location
- Unit
- Time
- Equipment





SALUTE EXERCISE



What would the SALUTE report say?





SITUATION



- Enemy Force

- **DRAW-D**: acronym used to report enemy's capabilities and limitations

- **D**efend
- **R**einforce
- **A**ttack
- **W**ithdraw
- **D**elay





SITUATION



- Friendly Forces

- **HAS**: acronym used to remember essential information concerning Friendly Forces
- Mission and location
 - Higher unit
 - Adjacent units
 - Supporting units





SITUATION



- Attachments and Detachments
 - General support
 - Direct support
 - Number of personnel
 - How long will these elements be your concern?





SMEAC



- Mission

- Clear and concise statement of the mission

- Should answer these 5 questions

- WHO ?
- WHAT ?
- WHEN ?
- WHERE ?
- WHY ?





SMEAC



- Execution

- Provides the HOW of the operation
- Gives the commanders intent
- Divided into 3 sub-paragraphs
 - Concept of Operations
 - Tasks
 - Coordinating Instructions





EXECUTION

- Concept of Operations
 - Explanation of the tactical plan, (formations, route, type of attack)
- Tasks
 - Mission statement
- Coordinating Instructions
 - Specific instructions





SMEAC



- Administration and Logistics

- Beans
 - Chow and water
- Bullets
 - Ammunition
- Band-aids
 - Medical considerations
- Bad guys
 - Handling of EPW's





SMEAC



- Command and Signal
 - Signals – gives instruction for the operation
 - Frequencies and call signs
 - Pyrotechnics and other signals
 - Challenge and password
 - Command – key element location
 - Chain of Command location
 - Corpsman
 - Other key elements





WARNING ORDERS



WARNING ORDER

- Purpose

- Notice of an order or action to follow
- Allows subordinates time to prepare for the operation
- Can be written or oral

- Information

- Situation
- Mission
- General Instructions
- Specific Instructions







FRAGMENTATION ORDER



FRAGMENTATION ORDER



- Purpose

- Used when an uncontrollable circumstance or time doesn't allow full order
- Vital Information changes
 - Enemy situation

- Information

- 2 paragraphs from the BAMCIS format
 - Mission Statement (Who, What, Where, When, Why)
 - Execution Statement (How)





FIVE PARAGRAPH ORDER





INDIVIDUAL MOVEMENT TECHNIQUES





OVERVIEW



- Fire and Movement
- Negotiating Obstacles
- Types of Cover, Concealment, and Camouflage



LEARNING OBJECTIVES



Please Read Your

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And

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METHODS OF MOVEMENT



LOW SILHOUETTE MOVEMENT



- Three types of crawls
 - High
 - Low
 - Back



HIGH CRAWL



- Permits faster movement
- Use when there is good concealment but enemy fire prevents you from getting up
 - Keep body off ground
 - Rest weight on forearms and knees
 - Cradle weapon on forearms
 - Use knees and elbows to move self forward

HIGH CRAWL

**KEEP YOUR UPPER BODY
OFF THE DECK**



**REST YOUR WEIGHT ON YOUR
FOREARMS AND LOWER LEGS**

HIGH CRAWL



**KEEP THE MAGAZINE WELL FACING OUTBOARD
THE EJECTION PORT COVER UP AND THE MUZZLE**

HIGH CRAWL



MOVE FORWARD BY ALTERNATELY ADVANCING YOUR RIGHT FOREARM AND YOUR LEFT KNEE THEN LEFT FOREARM AND RIGHT KNEE

Individual Movement



LOW CRAWL



- Affords lowest possible silhouette
- Use when concealment is low and enemy fire prevents you getting up
 - Entire body is kept flat on ground
 - Hold weapon by the sling swivel and rest on back of arm
 - Pull with arms and push with legs to move forward

LOW CRAWL

**USE YOUR FREE
HAND TO FEEL
AHEAD OF YOU
FOR TRIP WIRES
AND BOOBY TRAPS**



**KEEP YOUR BODY AS FLAT
AGAINST THE GROUND AS
POSSIBLE**

**KEEP YOUR HEAD
FLAT AGAINST THE
GROUND FACING
AWAY FROM THE
MUZZLE**

LOW CRAWL

KEEP THE MUZZLE OF THE WEAPON OUT OF THE DIRT AT ALL TIMES



LET THE BALANCE OF THE RIFLE REST ON YOUR FOREARM AND LET THE BUTTSTOCK DRAG ON THE DECK

GRASP THE RIFLE SLING AT THE UPPER SLING LOOP

LOW CRAWL



**TO START, PULL WITH BOTH ARMS
AND PUSH WITH ONE LEG
CHANGE YOUR PUSHING LEG
FREQUENTLY TO AVOID FATIGUE**



BACK CRAWL



- Used to crawl under wire obstacles that the enemy sets up

BACK CRAWL



**LAY YOUR WEAPON ON YOUR CHEST
PARALLEL TO THE DIRECTION OF
MOVEMENT PLACING THE BARREL
ON TOP OF YOUR HELMET**

BACK CRAWL

GRASP THE WEAPON ON THE HAND GUARDS, PALM UP

USE THE WEAPON TO PUSH THE WIRE AWAY FROM THE BODY

USE YOUR FREE HAND TO FEEL ABOVE YOUR HEAD FOR TRIPWIRES OR BOOBY TRAPS



BACK CRAWL

SLIDE FORWARD, KEEP YOUR KNEES LOW, PUSH WITH YOUR HEELS AND PULL WITH YOUR SHOULDERS, ALLOWING THE WIRE TO SLIDE DOWN YOUR WEAPON





RUSHING



INDIVIDUAL RUSH



- Fastest way to move from one position to another
- Should last 3 to 5 seconds
 - Use 'I'm up, he sees me, I'm down'
- Try to drop behind cover
- If you can't roll over to the nearest covered position

INDIVIDUAL RUSHES

**STARTING FROM THE
PRONE POSITION,
REMAIN MOTIONLESS
PRIOR TO MOVING**



INDIVIDUAL RUSHES


**DRAW YOUR ARMS INWARD
COCK YOUR RIGHT LEG FORWARD
FIRMLY GRASP THE PISTOL GRIP**

**LOOK OVER YOUR
SIGHTS TO FIND YOUR
NEXT COVERED
POSITION**

DITTY: "PISTOL GRIP, HAND COCK, PEEK!"

INDIVIDUAL RUSHES

**ENSURE THAT YOUR
MUZZLE ALWAYS
STAYS POINTED
STRAIGHT AHEAD
OF YOU DOWN
RANGE**



**WITH ONE MOVEMENT, RAISE YOUR BODY
BY STRAIGHTENING BOTH ARMS AND
SPRING UP TO YOUR FEET**

F.M.S. 1303

Individual Movement

INDIVIDUAL RUSHES



DITTY: "I'M UP, THEY SEE ME, I'M DOWN!"
FMST 303
Individual Movement

INDIVIDUAL RUSHES

A soldier in desert camouflage uniform and helmet is running through a forest of tall, thin trees. He is holding an M4-style rifle and is captured in mid-stride, moving from left to right. The ground is sandy and covered with pine needles. The background shows a dense line of trees under a bright sky.

SLIGHTLY ZIG ZAG FROM YOUR
PRESENT LOCATION TO THE
NEXT COVERED OR CONCEALED
POSITION. YOU SHOULD BE UP
FOR **NO MORE THAN 3 TO 5
SECONDS**

INDIVIDUAL RUSHES

LEAN FORWARD AND
BREAK YOUR FALL
WITH WEAK HAND OFF
TO THE SIDE



STOP BY PLANTING
BOTH FEET AND
DROP QUICKLY TO

FMST 203
Individual Movement
YOUR KNEES

INDIVIDUAL RUSHES

DITTY: “KNEES, WEAKHAND, PRONE”

1. “KNEES”

2. “WEAKHAND”

3. “PRONE”

INDIVIDUAL RUSHES

A photograph of three soldiers in a forest. They are wearing camouflage uniforms and helmets. The soldier in the foreground is lying prone, aiming a rifle with a scope. The other two soldiers are behind him, also in a prone position. The forest has many tall, thin trees and some brush.

IF YOU DON'T MAKE IT TO YOUR NEXT COVERED POSITION, HIGH CRAWL TO YOUR NEXT COVERED POSITION AND ASSUME A GOOD PRONE POSTURE SIGHTING IN DOWN RANGE.

FMST 303

Individual Movement



TEAM RUSH



- Used to move fire teams together
- Each member works with another team member to move forward
 - Can be “on my command”
or
 - Without verbal commands



FMST 303
Individual Movement



FIRE AND MOVEMENT



- Fire teams or squads providing cover fire while other individuals advance toward the enemy.



FMST 303
Individual Movement



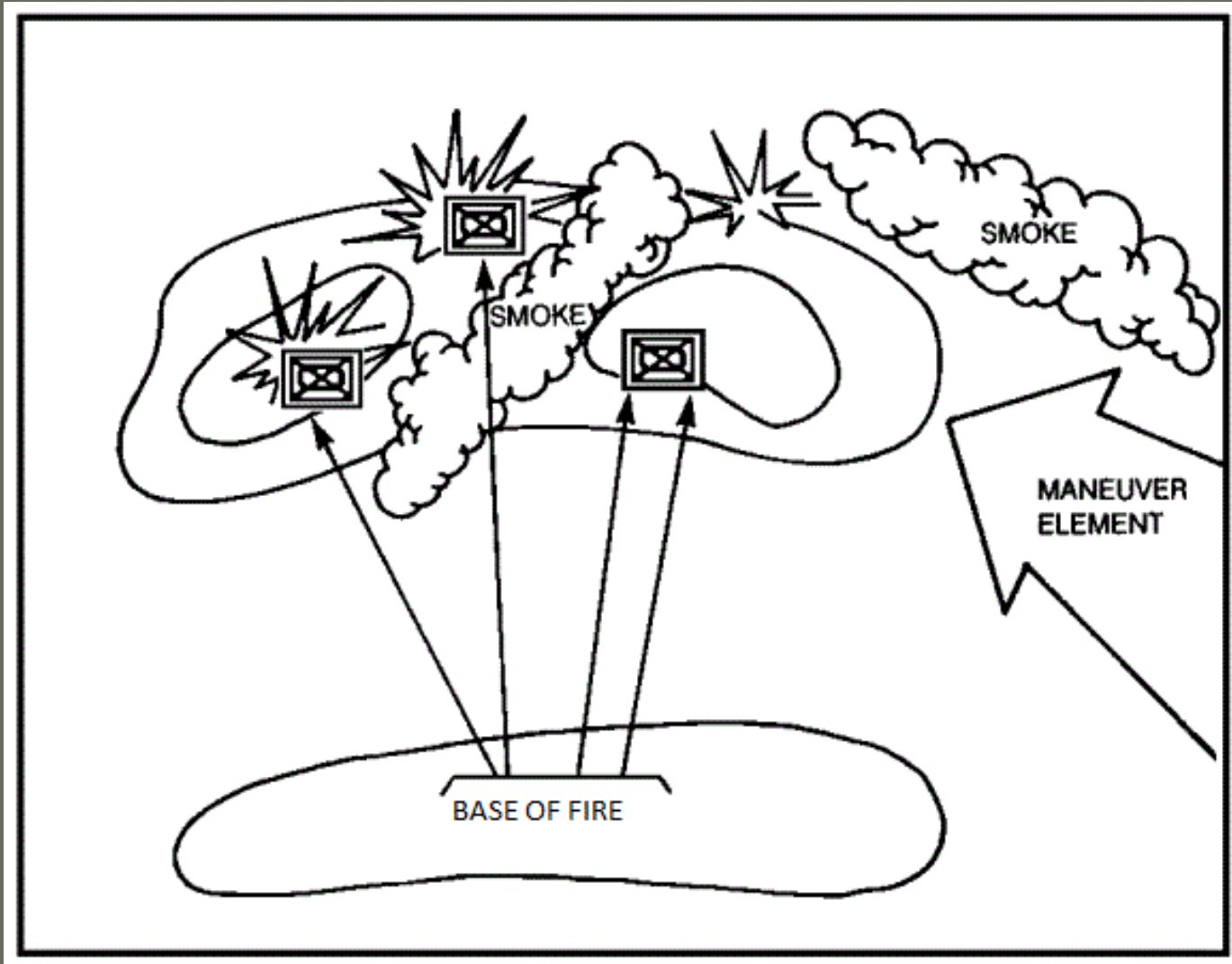
FIRE AND MANEUVER



- Base of fire unit
- Secondary unit maneuvers to a position under COVER to attack the enemy



FIRE AND MANEUVER







NEGOTIATING OBSTACLES





CLEARING SMALL WALL



Used When:

- Encountering short wall-like obstructions in your direction of movement

CLEARING SMALL BULKHEADS

**APPROACH THE
WALL IN THE
ALERT CARRY**

**BRACE YOUR
LEAD FOOT AGAINST THE
BULKHEAD AND SEARCH THE
OTHER SIDE KEEPING YOUR
MUZZLE ABOVE THE BULKHEAD**



CLEARING SMALL BULKHEADS



SHORT-STOCK

THE WEAPON BY PLACING THE BUTTSTOCK HIGH ON YOUR SHOULDER TO KEEP THE MUZZLE ABOVE THE BULKHEAD

CLEARING SMALL BULKHEADS



**AFTER TAKING A STEP BACK,
STEP OVER WITH THE **LEAD FOOT FIRST**
AND THEN BRING YOUR WEAK FOOT OVER**

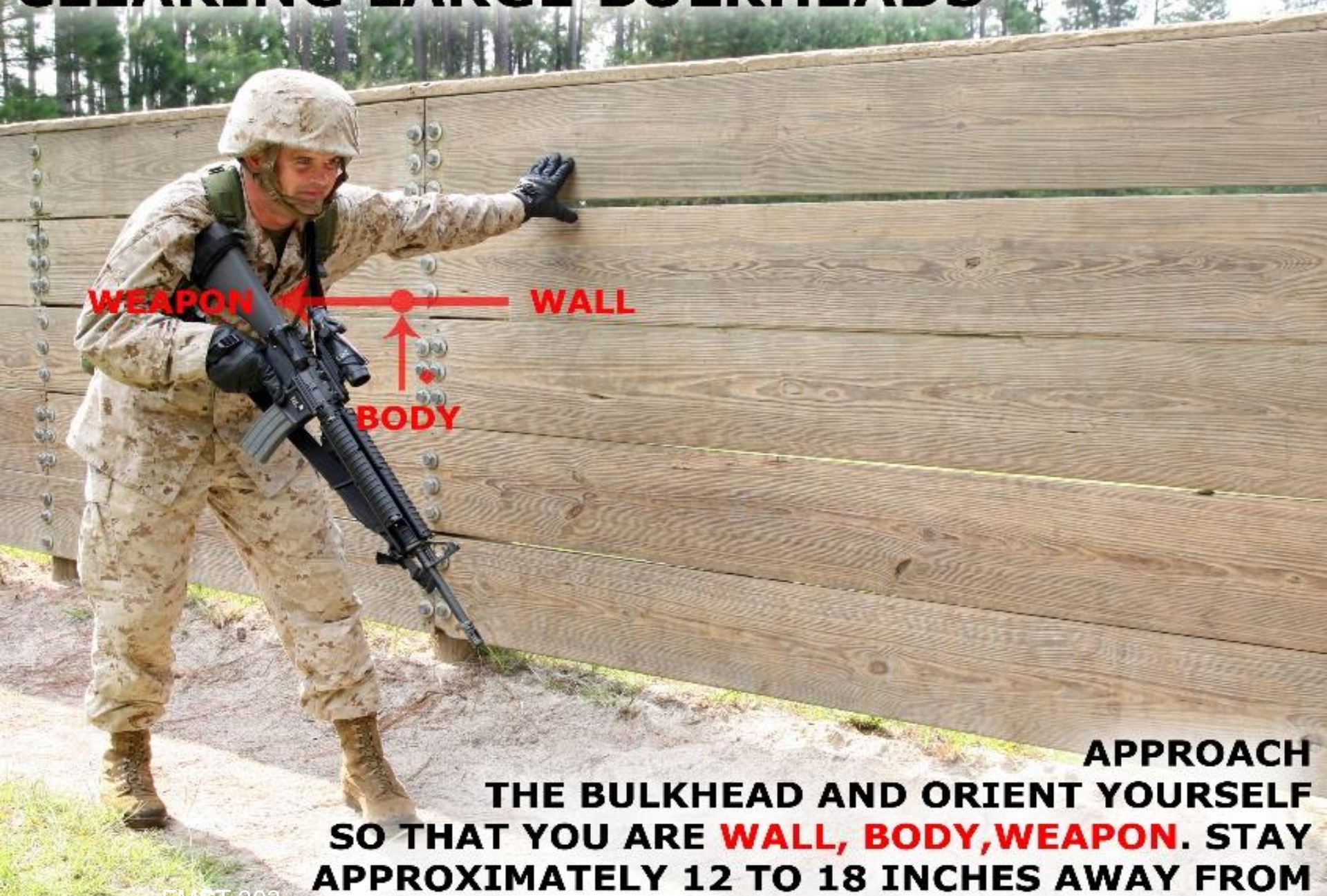


CLEARING LARGE WALL



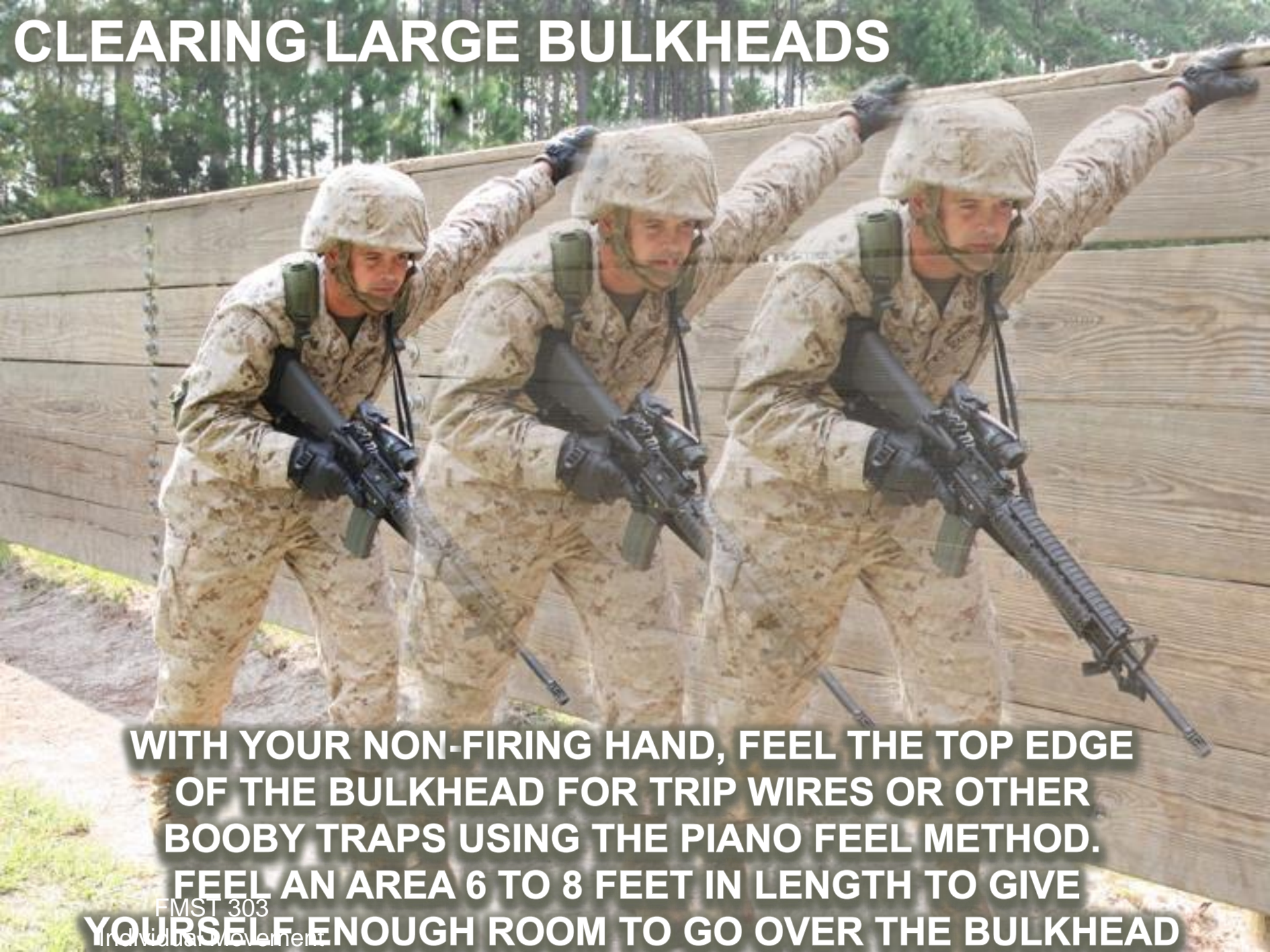
- Used When:
- There is no other way around the bulkhead

CLEARING LARGE BULKHEADS



APPROACH THE BULKHEAD AND ORIENT YOURSELF SO THAT YOU ARE **WALL, BODY, WEAPON. STAY APPROXIMATELY 12 TO 18 INCHES AWAY FROM THE BULKHEAD TO AVOID BULLET RICCOCHETS**

CLEARING LARGE BULKHEADS



WITH YOUR NON-FIRING HAND, FEEL THE TOP EDGE OF THE BULKHEAD FOR TRIP WIRES OR OTHER BOOBY TRAPS USING THE PIANO FEEL METHOD. FEEL AN AREA 6 TO 8 FEET IN LENGTH TO GIVE YOURSELF ENOUGH ROOM TO GO OVER THE BULKHEAD

FMST 303

Individual Movement

CLEARING LARGE BULKHEADS



**VERY QUICKLY, TAKE A STEP
BACK FROM THE BULKHEAD AND **TURKEY
PEEK** THE OTHER SIDE OF THE BULKHEAD TO
SEE IF IT IS CLEAR OF OBSTACLES AND ENEMIES**

CLEARING LARGE BULKHEADS



MOVE 2 TO 3 FEET TO THE RIGHT OR LEFT OF THE SPOT WHERE YOU TURKEY PEEKED WITH YOUR WEAPON IN YOUR FIRING HAND, REACH UP AND GRAB THE TOP OF THE BULKHEAD PLACE THE WEAPON ON TOP OF THE BULKHEAD WHILE SIMULTANEOUSLY SWINGING YOUR LEGS ON TOP OF THE BULKHEAD

CLEARING LARGE BULKHEADS



KEEP A LOW PROFILE, ROLL OVER AND QUICKLY SEEK
COVER ON THE OTHER SIDE OF THE BULKHEAD



TANGLE FOOT



Used When:

- Encountering ankle level wire in your direction of movement

TANGLE FOOT



**DAY WALK THROUGH THE
TANGLE FOOT AT THE READY CARRY,
MAINTAINING EYE, MUZZLE, TARGET**

TANGLE FOOT

A close-up photograph of a person's lower legs and feet. They are wearing camouflage-patterned pants and brown suede boots. The person is walking through tall green grass. Several strands of barbed wire are visible, some of which are being stepped over. The person's right foot is lifted high, with the toe of the boot touching the top of the wire. The background is a field of green grass under bright light.

**WHEN DAY WALKING THROUGH TANGLE
FOOT, LIFT YOUR FEET BOOT TOP HIGH TO
AVOID TRIPPING OVER WIRES**



CLEARING CULVERTS



Used When:

- Encountering culverts or similar tunnel-like opening

CLEARING CULVERTS

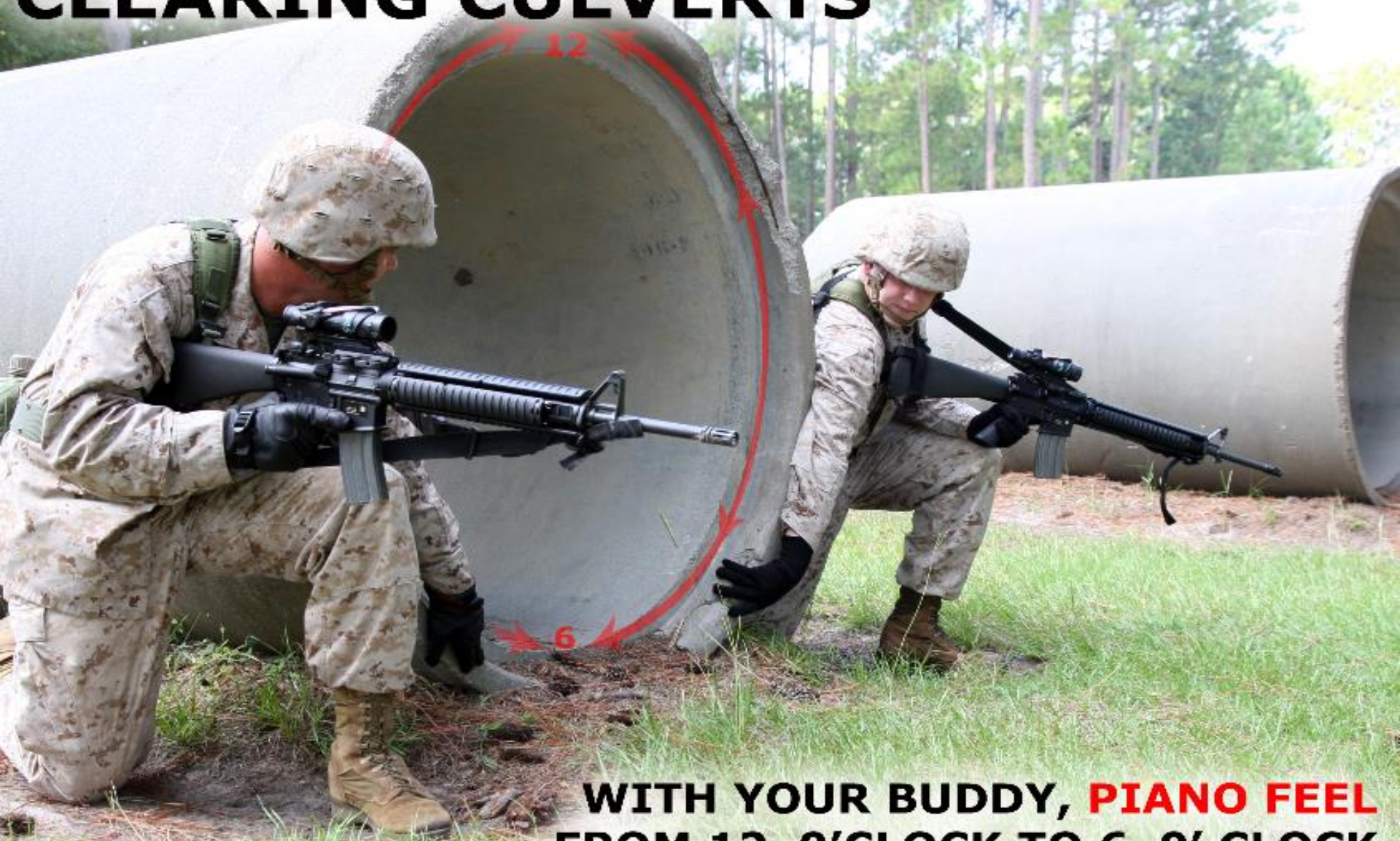
**BOTH RECRUITS WILL SIGHT
IN ON THE ENTRANCE TO THE
CULVERT THEN PIE OFF TO
THE SIDES OF THE ENTRANCE**

**KEEP YOUR MUZZLE OUT OF
THE CULVERT OPENING**

FMST 303

Individual Movement

CLEARING CULVERTS



**WITH YOUR BUDDY, PIANO FEEL
FROM 12 O'CLOCK TO 6 O' CLOCK
AND BACK AROUND THE ENTRANCE
TO THE CHECK FOR BOOBY TRAPS**

CLEARING CULVERTS



"I GO, YOU STAY!"

**ONE RECRUIT WILL COMMUNICATE
WITH THE OTHER RECRUIT THAT THEY
ARE ENTERING THE CULVERT**

CLEARING CULVERTS



**THE OTHER RECRUIT
WILL REMAIN OUTSIDE THE
CULVERT AND PROVIDE REARWARD SECURITY**

CLEARING CULVERTS



THE RECRUIT INSIDE THE CULVERT WILL DUCK
WALK TO THE END AT WHICH POINT THEY WILL
PIANO FEEL AROUND THE ENTIRE OUTSIDE OPENING
FROM 12 0' CLOCK TO 6 0' CLOCK AND BACK

CLEARING CULVERTS

**"CLEAR!
RCT. REED
EXITING
RIGHT"**

**ONCE THE OPENING HAS BEEN
CLEARED THE RECRUIT WILL YELL "CLEAR,
(RCT.REED) EXITING LEFT OR RIGHT" AND
EXIT THE CULVERT AND PROVIDE COVER**

FMST 303

Individual Movement

CLEARING CULVERTS

**"CLEAR!
RCT. BROWN
EXITING
LEFT"**



**ONLY THEN WILL THE
SECOND RECRUIT MAKE THEIR WAY
THROUGH THE CULVERT, SOUNDING
OFF "RCT MEEKING EXITING RIGHT"**



WIRE



- **Three ways to negotiate:**
- **Back Crawl:** Used when speed is not essential, but surprise is.
- **Breeching:** Used for rapid access through wire obstacles.
- **Bridging:** This method can be used for rapid access across an obstacle.



DANGER AREAS



- Any place where you are exposed to enemy observation or fire
- To include open fields, trails, and enemy positions
- Go around if possible



BOOBY TRAPS



- Always assume an obstacle or danger area is booby trapped
- Visually check for trip wires or something attached to obstacle that shouldn't be there
- Then physically check the obstacle by feeling for wire, glass, or anything unusual



FMST 303

Individual Movement



COVER, CONCEALMENT, CAMOUFLAGE



COVER



- Protection from enemy fire
- Natural or man made
- Man made includes fighting holes, trenches, walls, rubble, abandoned equipment



CONCEALMENT



- Anything that will hide you from enemy observation
- Will not protect you from enemy fire



CAMOUFLAGE



- Anything that keeps you, your equipment, and position from looking like what they are
- Pay attention to shapes (sharp edges), colors, shadows, shiny objects
- Fighting positions shouldn't be where the enemy would expect them to be





INDIVIDUAL MOVEMENT TECHNIQUES





PATROLLING





OVERVIEW



- Definition of a Patrol
- Squad Formations
- Types of Patrols
- Three Types of Special Signals
- Elements of a Patrol
- Purpose of Hand and Arm Signals
- Fire Team Formations



LEARNING OBJECTIVES



Please Read Your

Terminal Learning Objectives

And

Enabling Learning Objectives





WHAT IS A PATROL?



- Definition

A patrol is a detachment of ground forces sent out by a larger unit for the purpose of gathering information or carrying out a destructive, harassing, or security mission.





TWO TYPES OF PATROLS



TYPES OF PATROLS



- Combat Patrols
- Reconnaissance Patrols



COMBAT PATROLS



- Assigned missions to engage in combat.
- They gather information as a secondary missions.
- R.A.C.E.S.



COMBAT PATROLS



- RAID – destroy or capture enemy personnel or equipment, destroy installations, or free friendly personnel who have been captured by the enemy.
- AMBUSH – conducts ambushes of enemy patrols, carrying parties, foot columns, and convoys.



COMBAT PATROLS



- **CONTACT** – establish and/or maintain contact with friendly or enemy forces.
- **ECONOMY OF FORCE** – perform limited objective missions such as seizing and holding key terrain to allow maximum force to be used elsewhere.



COMBAT PATROLS



- SECURITY – detect infiltration by the enemy, kill or capture infiltrators, and protect against surprise or ambush.



RECONNAISSANCE PATROLS



- Missions include:
 - Gaining information about the location and characteristics of hostile positions
 - Routes
 - River crossings
 - Identification of enemy units
 - Enemy strength and disposition



RECONNAISSANCE PATROLS



- AREA RECONNAISSANCE

- Used to obtain detailed information on specific terrain or enemy activity
- May be used to obtain timely information on a particular objective
- Emphasis is placed on not being detected



RECONNAISSANCE PATROLS



- ZONE RECONNAISSANCE
 - Directed effort to obtain information on all routes, obstacles, terrain, and enemy forces
 - It is defined by specific boundaries



RECONNAISSANCE PATROLS



- ROUTE RECONNAISSANCE
 - Gains information along specific lines of communications to provide information on route conditions and activities
 - To include roads, railways, or waterways





ORGANIZATIONAL ELEMENTS OF PATROL



- Platoon Commander
 - Designates a patrol leader (Squad Leader) and assigns him/her a mission
 - Patrol leader establishes the patrol units required to accomplish the mission
- Patrol Units
 - Subdivisions of patrols
 - Personnel are assigned based on the mission, and the individuals



ELEMENTS OF PATROL ORGANIZATION



- Special Organization
 - Patrol units are further subdivided into teams with designated tasks.
 - Litter team
 - EPW team
 - Search team



ELEMENTS OF PATROL ORGANIZATION



- Elements of Combat Patrols
 - Patrol Headquarters
 - Command group and Support personnel
 - Assault Element
 - Engages the enemy at objective
 - Security Elements
 - Secures rally point
 - Support Elements
 - Assault and covering



ELEMENTS OF PATROL ORGANIZATION



- Elements of Reconnaissance Patrols
 - Patrol Headquarters
 - Consist of same personnel as a Combat Patrol
 - Reconnaissance Element
 - Surveillance
 - Security Element
 - Provides security, protects and serves as early warning for patrol





FIRE TEAM FORMATIONS

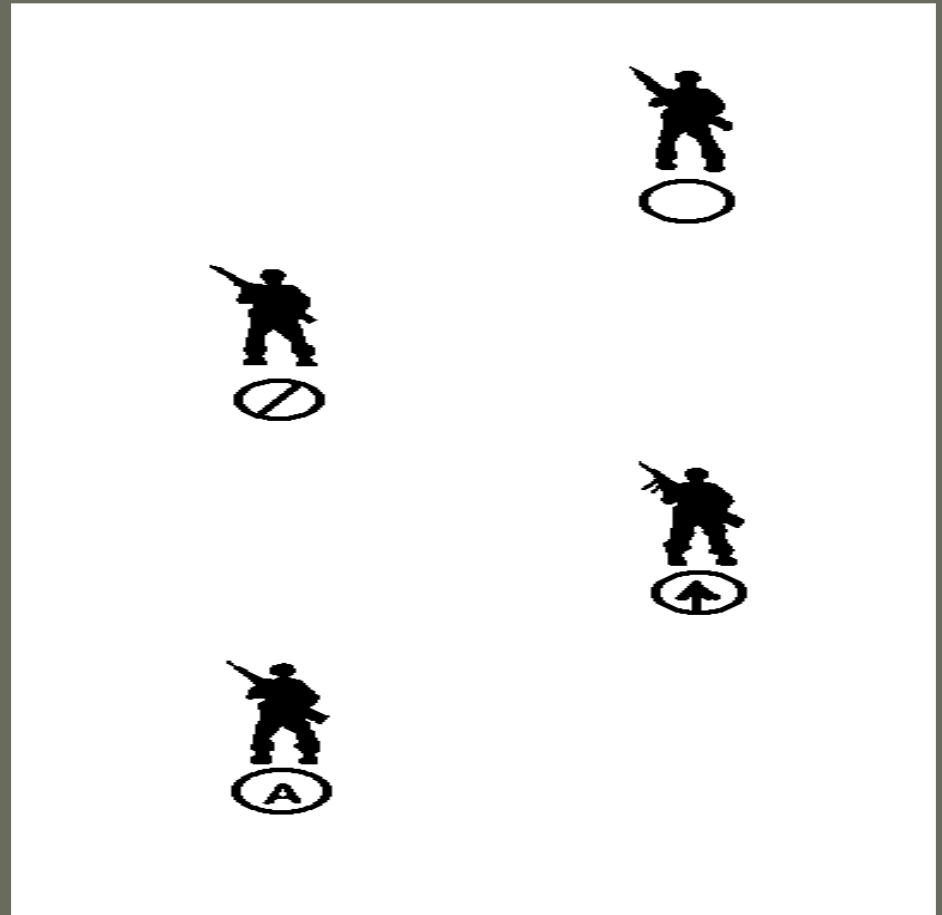




FIRE TEAM COLUMN



- Advantages
 - Speed and Control
 - Fire and maneuver to the flanks
- Disadvantages
 - Vulnerable to fire from the front
 - Ability to fire to front is limited

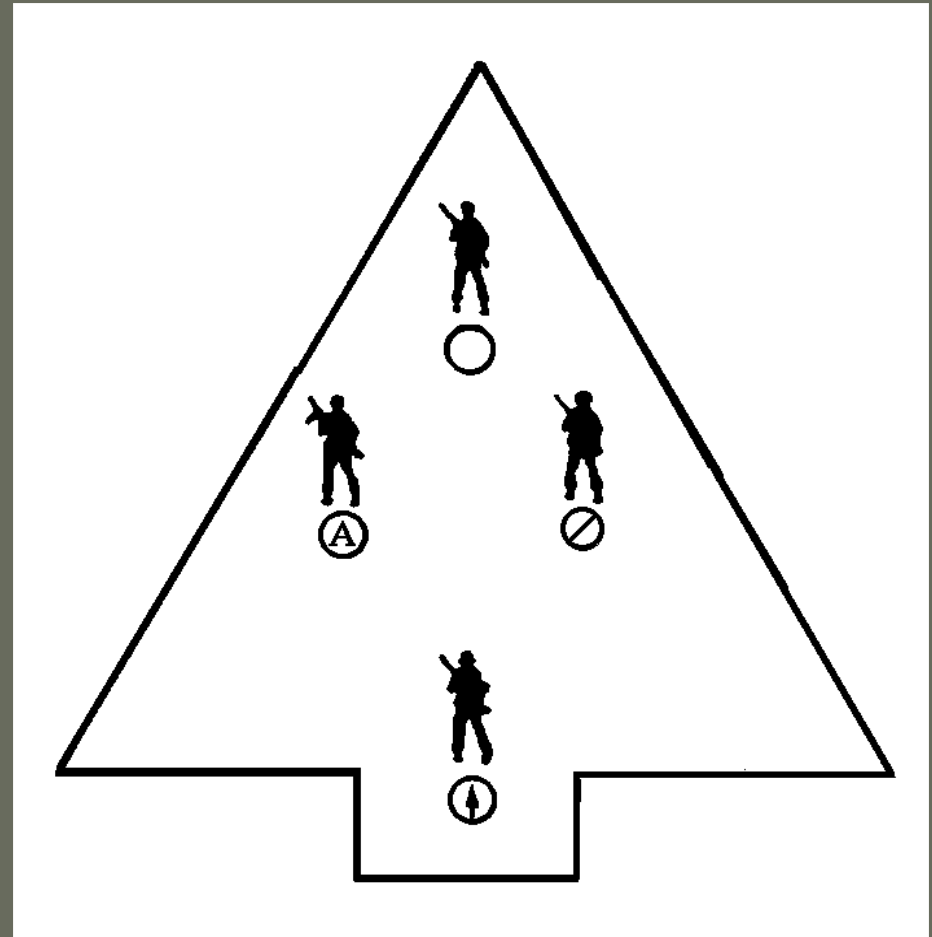




FIRE TEAM WEDGE



- Advantages
 - Easily controlled
 - All around security
 - Flexibility
 - Fire is adequate in all direction
- Disadvantages
 - Can not move as fast as a column

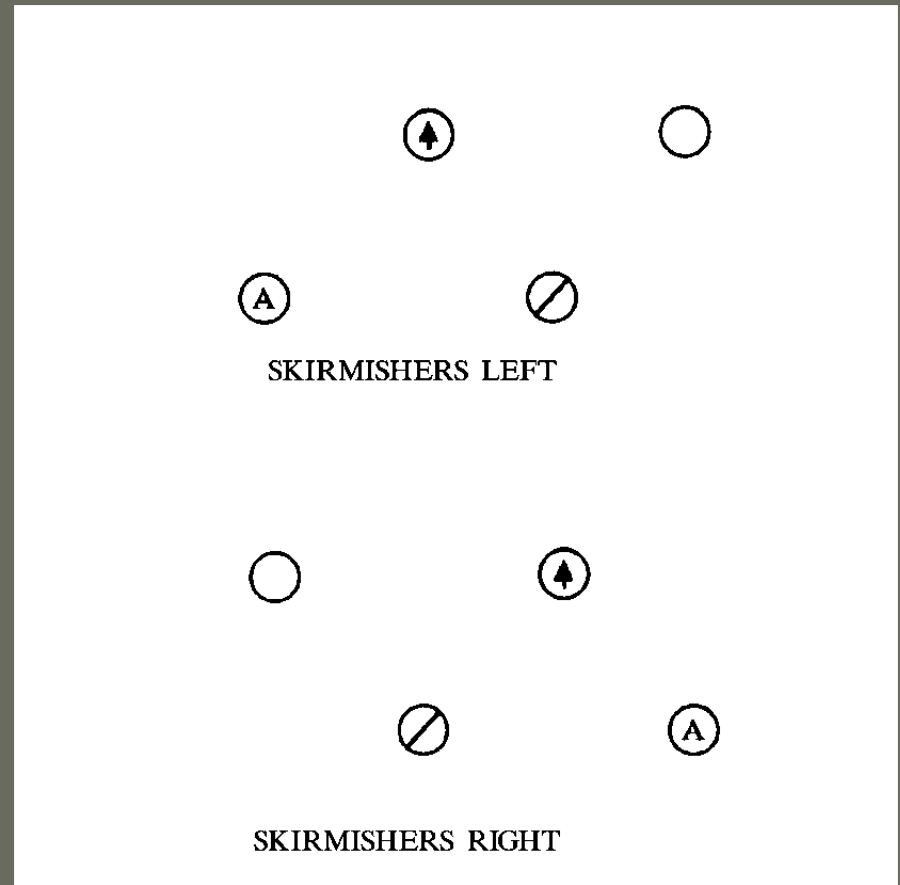




FIRE TEAM SKIRMISHERS



- Advantages
 - Maximum firepower to front
 - Enemy Location and strength known
- Disadvantages
 - Difficult to control
 - Movement is slow
 - Fire to flanks is limited

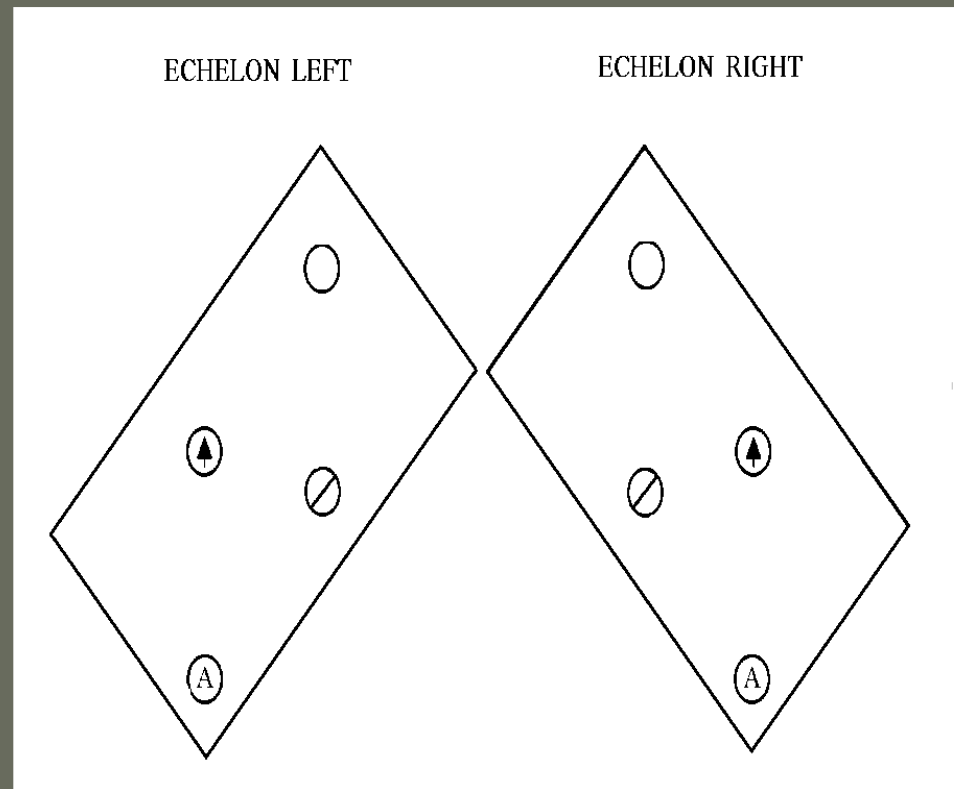




FIRE TEAM ECHELON



- Advantages
 - Fire to the front and one flank
 - Protect exposed flanks
- Disadvantages
 - Extremely difficult to control
 - Movement is slow







SQUAD FORMATIONS

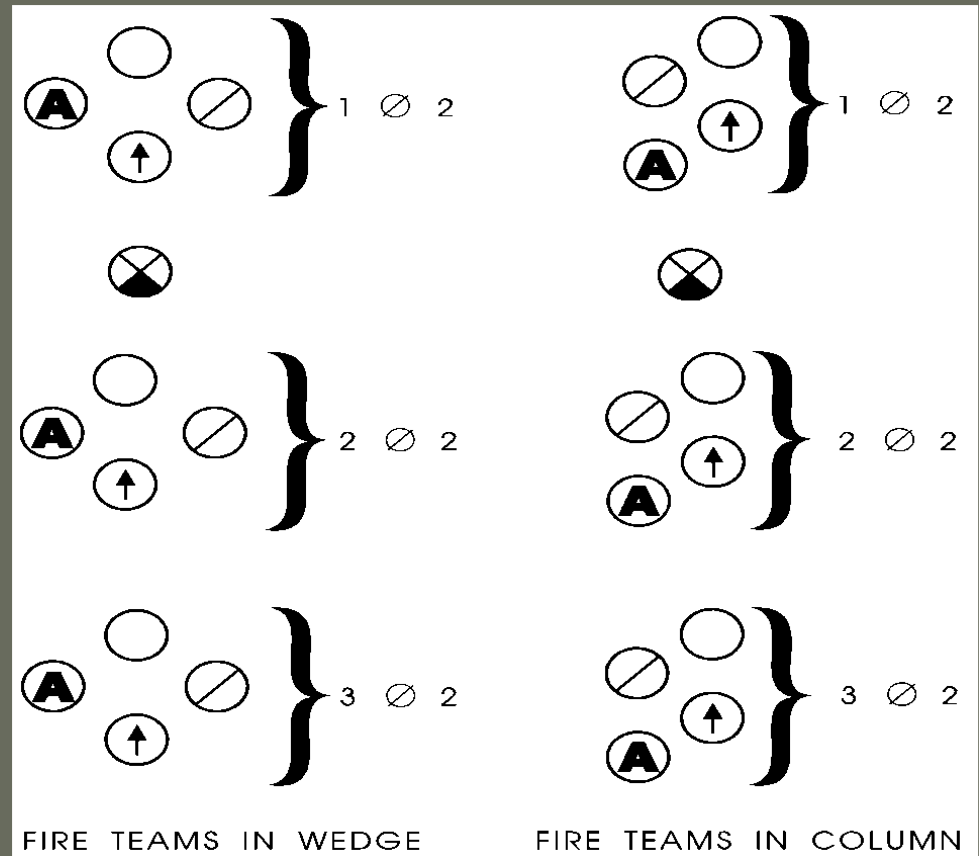




SQUAD COLUMN



- Advantages
 - Rapid and easily controlled movement
 - Fire and maneuver to the flanks
- Disadvantages
 - Vulnerable to fire from the front
 - Ability to fire to front is limited

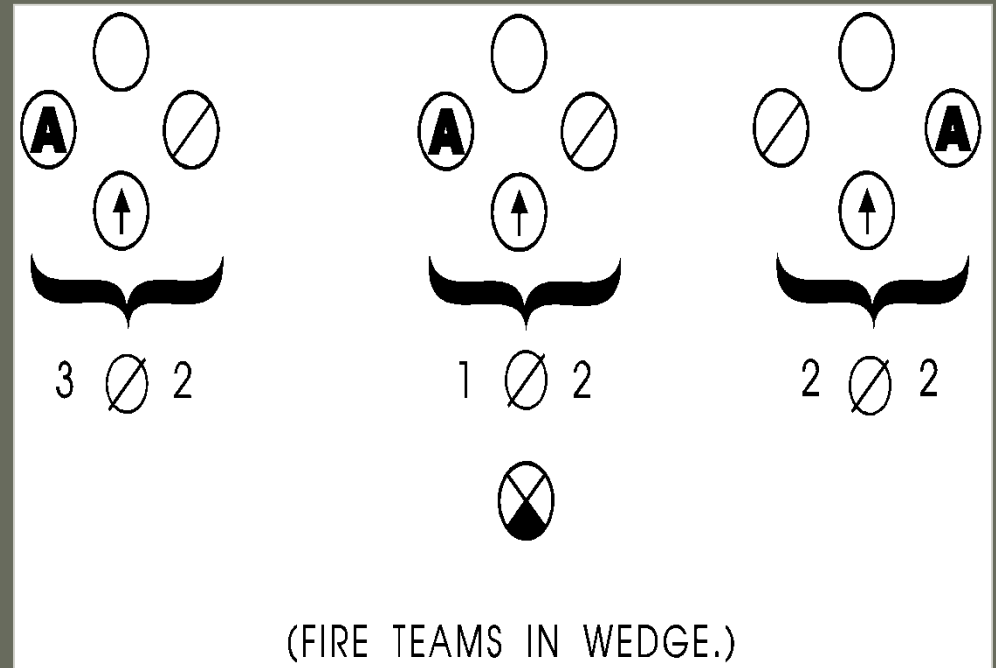




SQUAD LINE



- Advantages
 - Front firepower
- Disadvantages
 - Ability to return fire to flanks is limited
 - Slow Movement

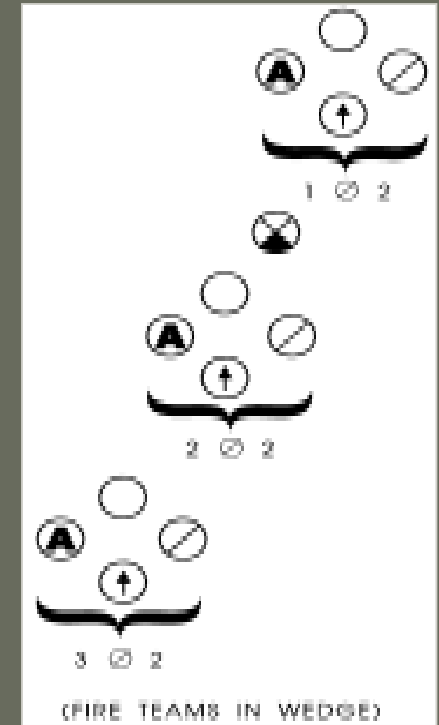
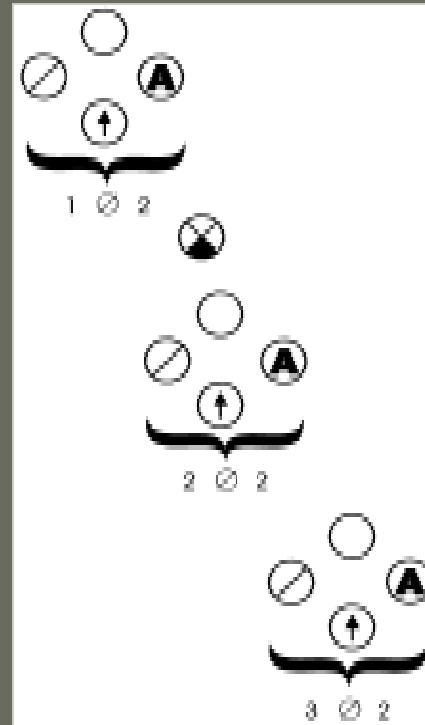




SQUAD ECHELON (LEFT AND RIGHT)



- Advantages
 - Fire to the front and one flank
 - Used mainly to protect exposed flanks
- Disadvantages
 - Difficult to control
 - Movement is slow

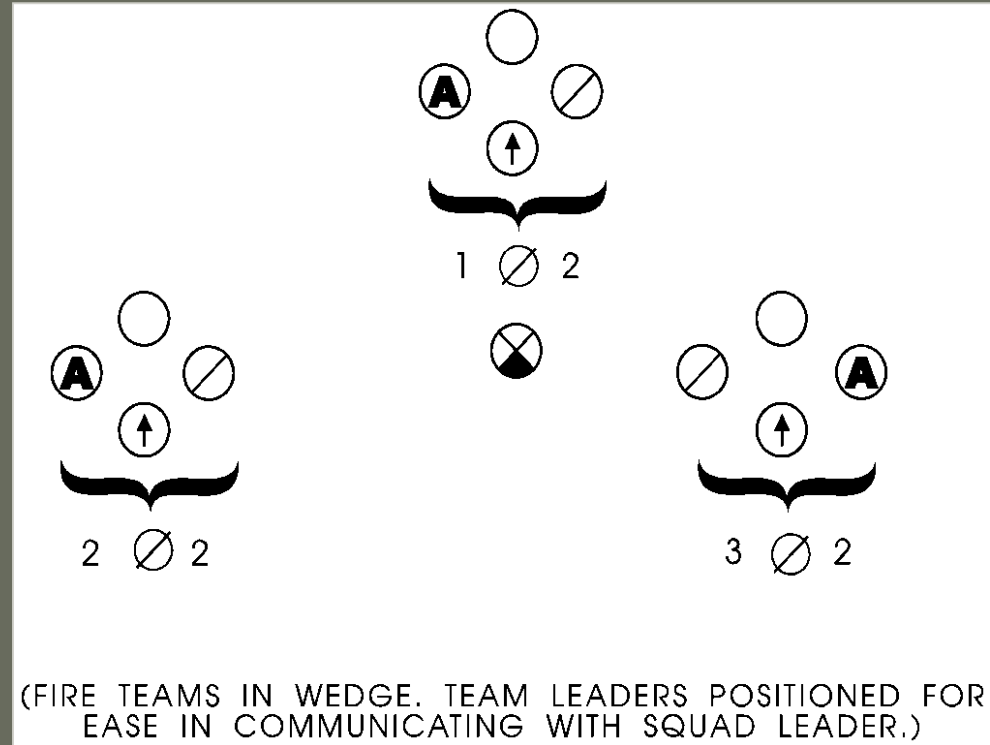




SQUAD WEDGE



- Advantages
 - Easily controlled
 - All around security
 - Flexible
 - Fire in all direction
- Disadvantages
 - Can not move as fast as a column

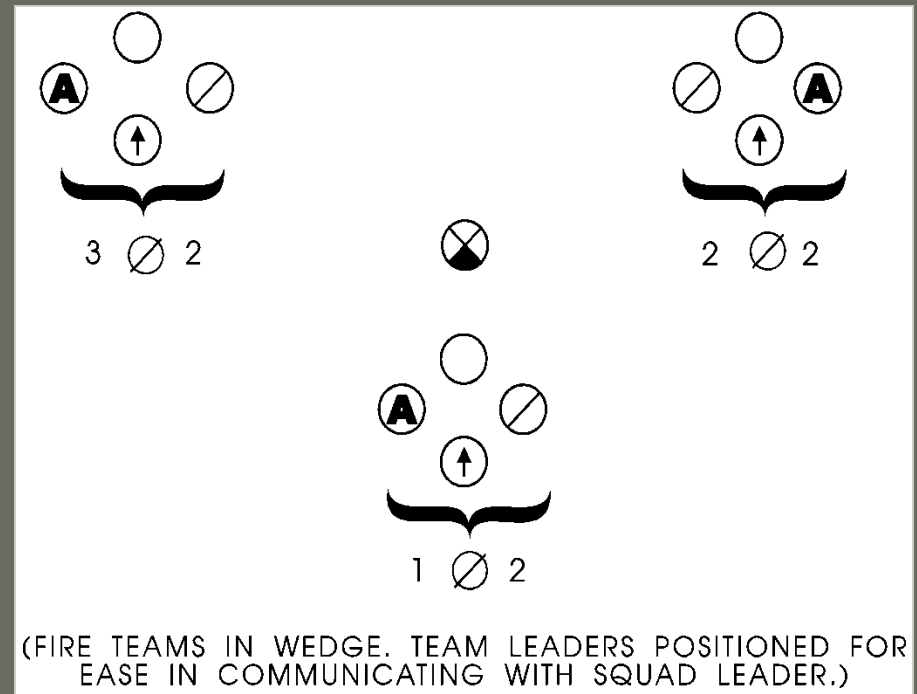




SQUAD VEE



- Advantages
 - Movement into squad line
 - Excellent fire to front and flanks
 - Enemy to front, strengths and location known
- Disadvantages
 - Slow







3 TYPES OF SPECIAL SIGNALS



WHISTLE



- Advantages/Uses
 - Quick way to transmit a message
 - Fast means of transmitting message to large group
- Disadvantages
 - Must be prearranged and understood
 - Misinterpretation
 - Battlefield noise



PYROTECHNICS



- Devices used to transmit commands or information
- Types of Pyrotechnics
 - Flares
 - Used as signaling device
 - Used to identify units
 - Smoke Grenade
 - Ground to ground or ground to air signaling device
 - Screen movement of troops



M18 SMOKE GRENADE



- **Body** - Sheet metal
- **Color** - Olive drab with yellow markings
- **Filler** - Red, Green, Yellow, White and Violet Smoke
- **Top** - Color of smoke



SMOKE GRENADES



- Advantages
 - Mark enemy positions
 - Signal attack, withdraw, shift fire or cease fire
 - Mark landing zone
- Disadvantages
 - Only one unit at a time
 - Other set of meanings
 - Compromise units position



HAND AND ARM SIGNALS



The most commonly used form of signaling is the hand and arm signal method.

- Advantages

- Noise does not hinder it's use
- When silence must be maintained

- Disadvantages

- The signal must be seen, the leader must be aware of units location





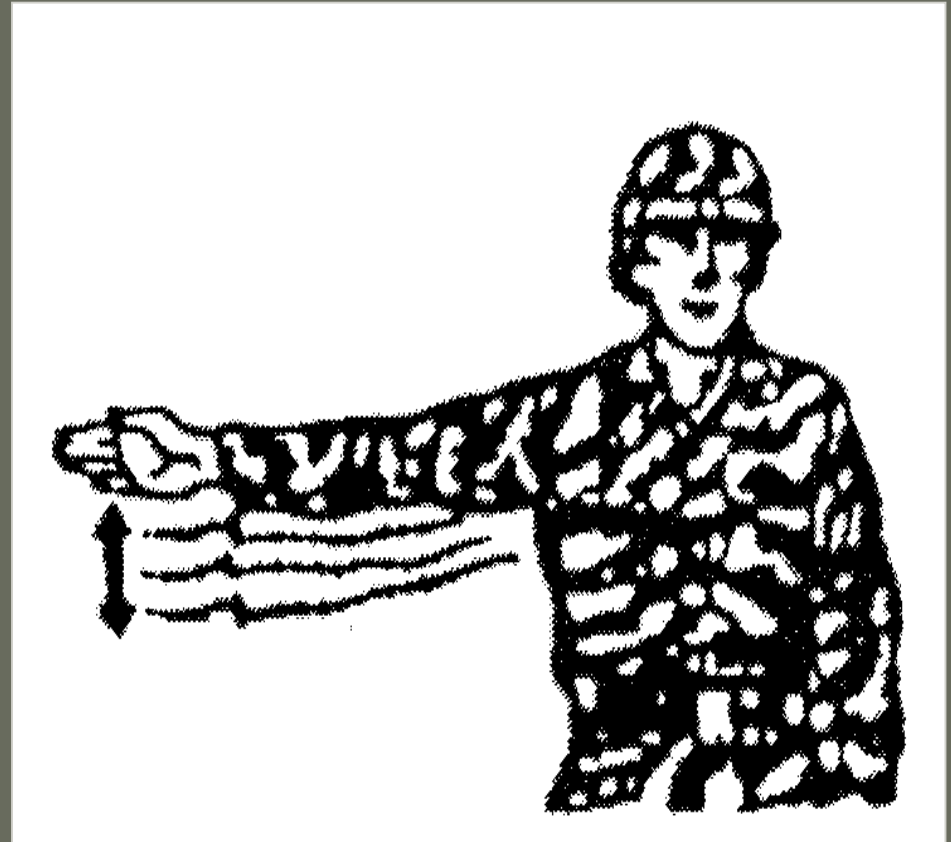
HAND AND ARM SIGNALS



DECREASE SPEED



- Extend arm horizontally
- Palm to the front
- Wave arm downward several times
- Keep arm straight
- Arm does not break horizontal plane

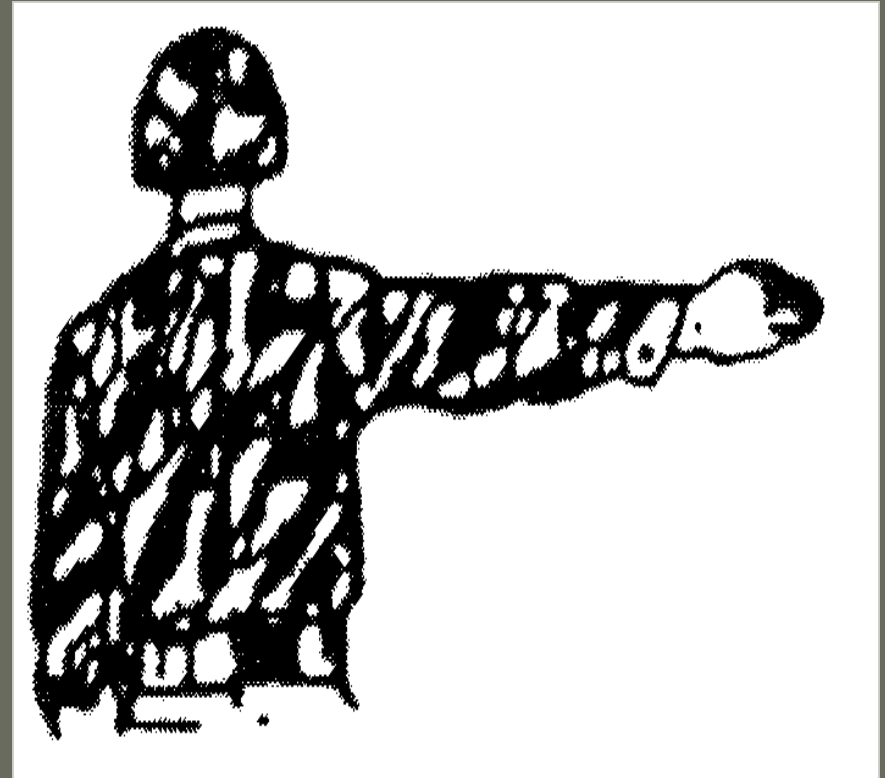




CHANGE DIRECTION



- Extend arm horizontally out in the direction of movement
- Palm to the front

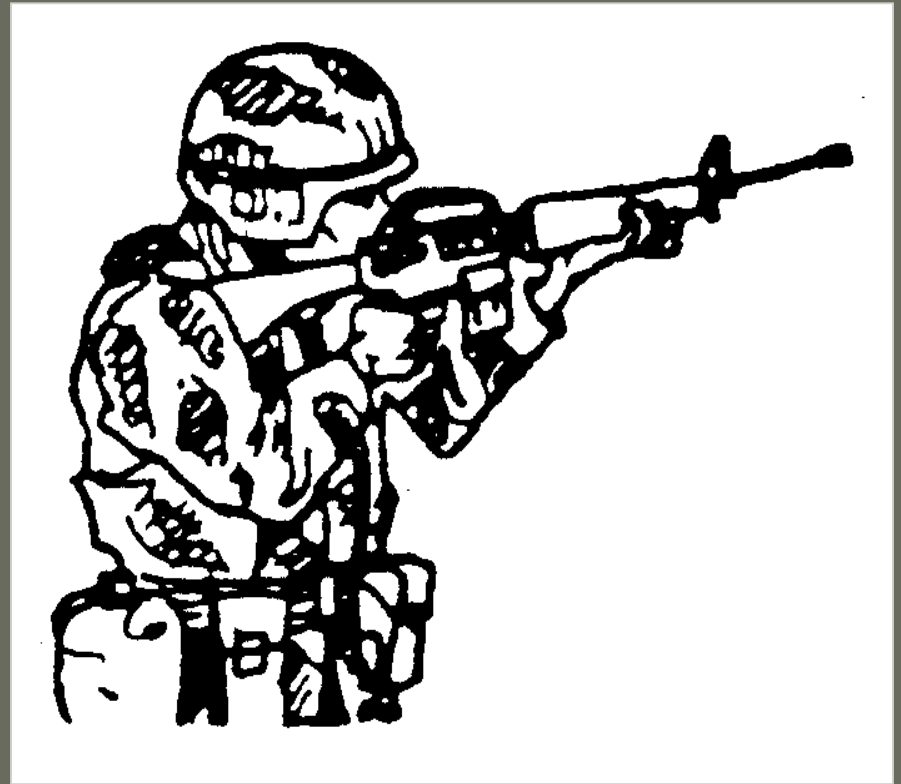




ENEMY IN SIGHT



- Hold the rifle horizontally
- Stock of weapon in shoulder
- Muzzle pointing in direction of the enemy





RANGE



- Extend arm fully towards receiving person with fist closed
- Open the fist
 - Exposing a finger for each 100 meters of range

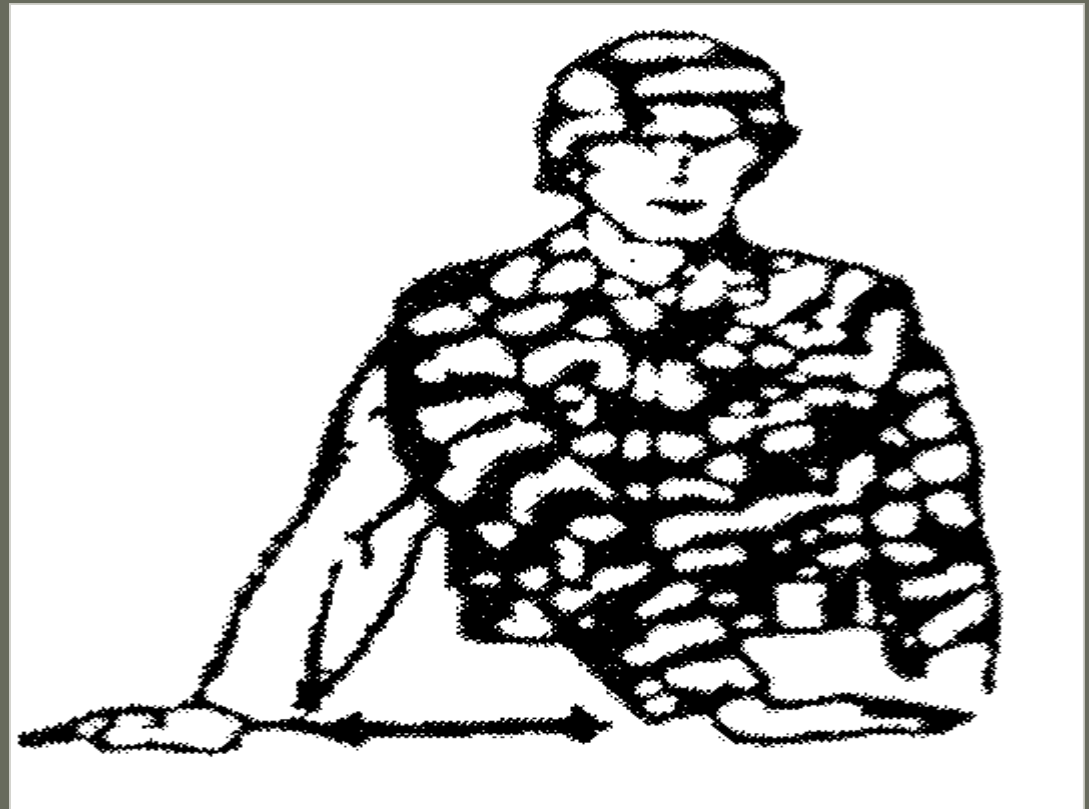




COMMENCE FIRE



- Extend arm in front of body
- Hip level
- Palm Down
- Move in wide horizontal arc
- To Fire Faster
 - Execute rapidly
- To Fire Slower
 - Execute Slowly





CEASE FIRE



- Raise the hand in front of forehead
 - Palm to the front
 - Swing the forearm up and down several times in front of face





ASSEMBLE



- Raise arm vertically
 - Fingers extended and joined
 - Palm to the front
 - Wave the whole arm in large horizontal circles

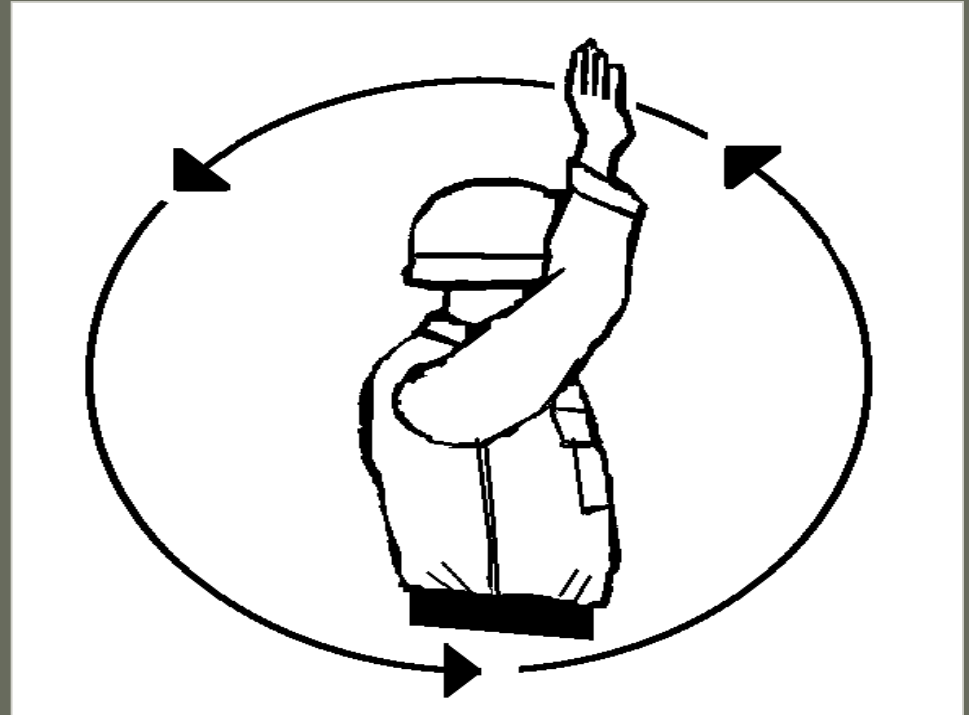




FORM COLUMN



- Raise arm to vertical position
 - Drop arm to the rear in a complete circle, vertical plane parallel to the body

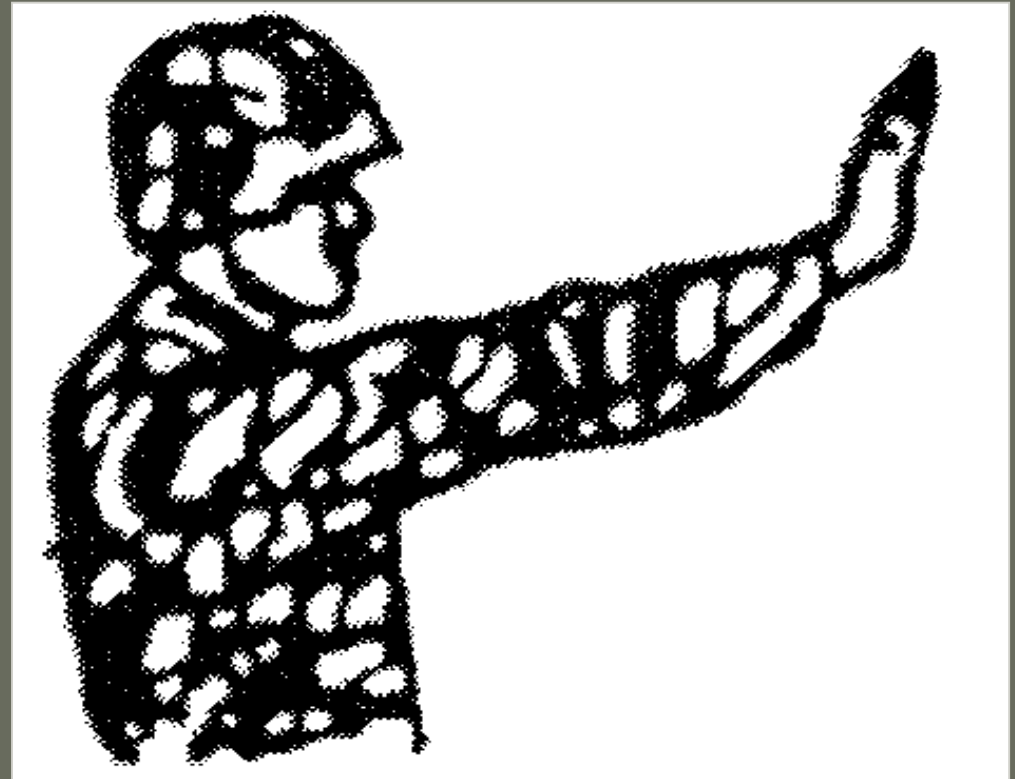




ARE YOU READY, I AM READY



- Are You Ready
 - Extend arm toward receiver with palm facing outward and fingers together
- I Am Ready
 - Same as above

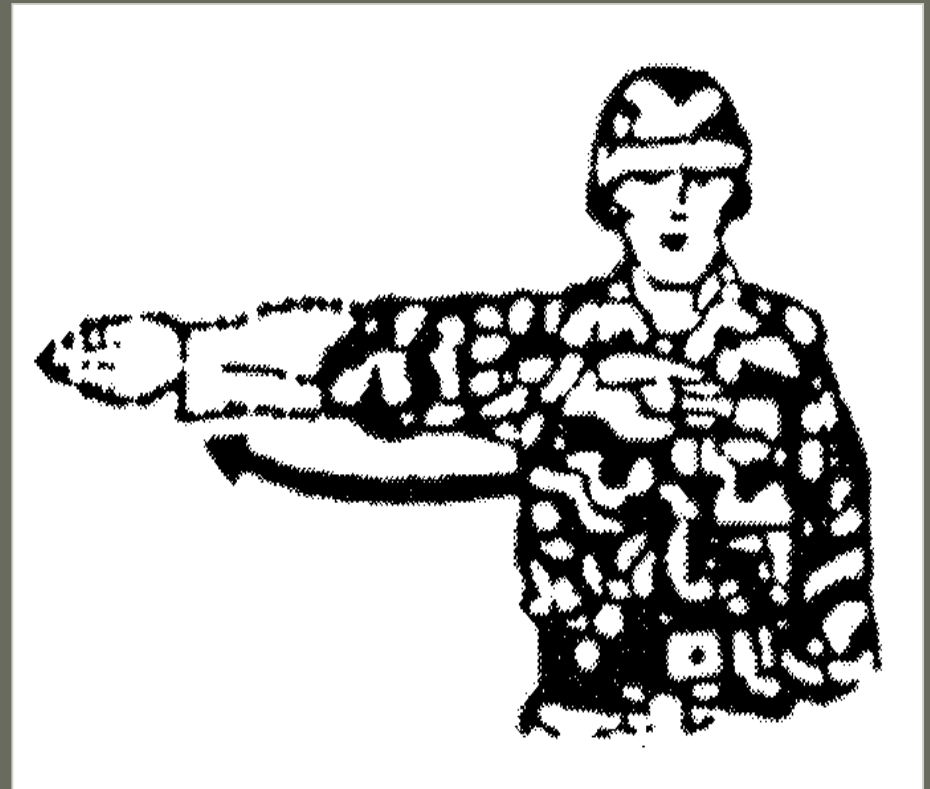




SHIFT



- Raise hand towards new direction across the body, palm to the front
- Swing the arm in a horizontal arc
 - Extending arm in the new direction





ECHELON



- Face the unit being signaled
- Extend one arm at 45 degrees above and one arm 45 degrees below the horizontal plane
- Palms to the front
- Lower arm indicates direction of movement





SKIRMISHER



- Raise both arms laterally until horizontal
 - Arms and hands extended
 - Palms down
- Move in the desired direction





WEDGE



- Extend both arms downward and to the side
- Arms at a 45 degrees
- Below horizontal plane
- Palms to the front





VEE



- Extend both arms upward above head
- Arms at a 45 degrees
- Above horizontal plane
- Form 'V' with arms and torso





FIRE TEAM / SQUAD



- Fire team
 - Right arm diagonally across the chest
- Squad
 - Arm extended forward, palm down, wave hand up and down from the wrist

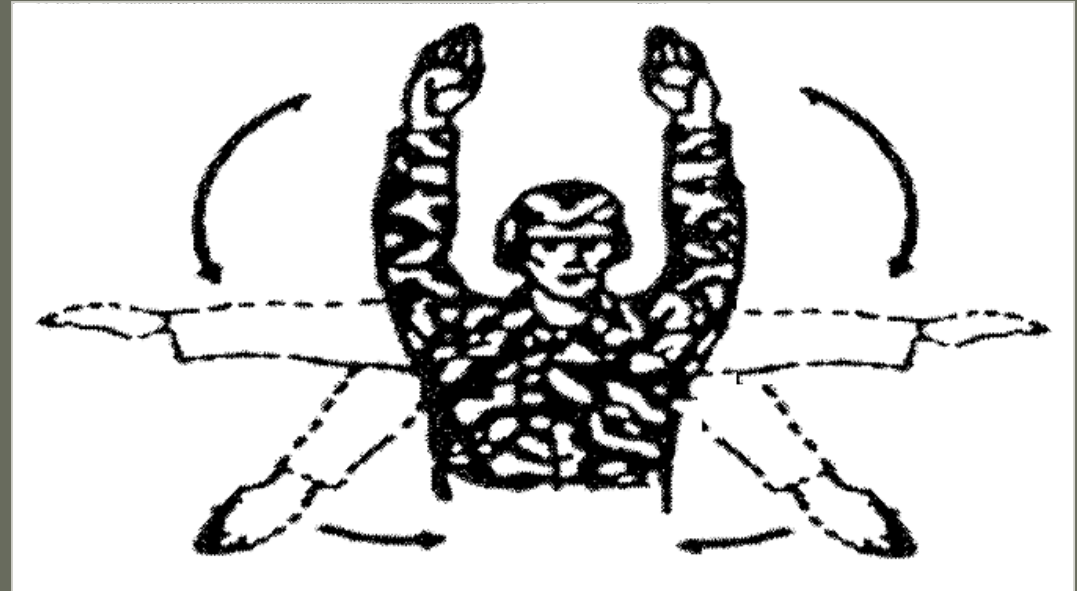




PLATOON



- Extend both arms forward, palms down, complete large vertical circles





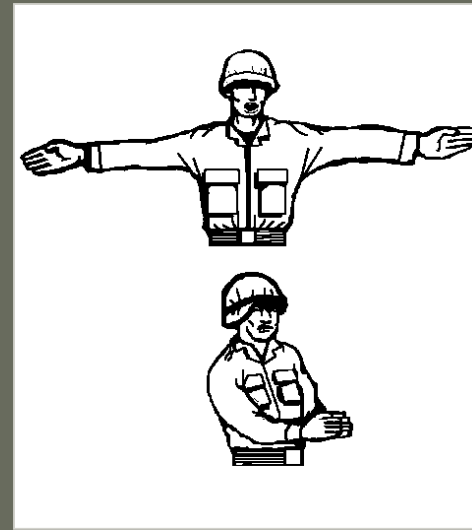
CLOSE UP/OPEN UP OR EXTEND



- Close up

Both arms extended laterally

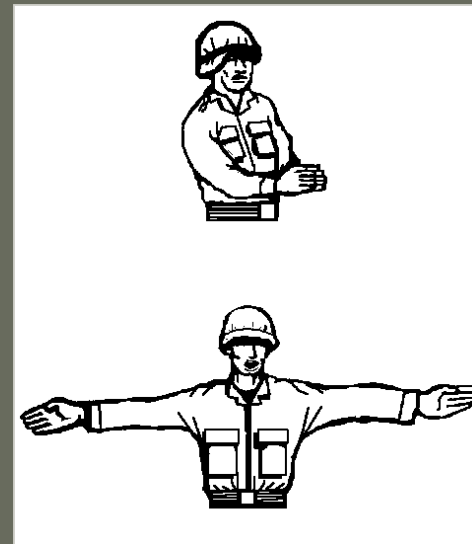
- Palm forward
- Brings hands towards midline



- Open up or extend

Reverse order of Close up

- Hands together at midline
- Extend laterally
- Palms forward

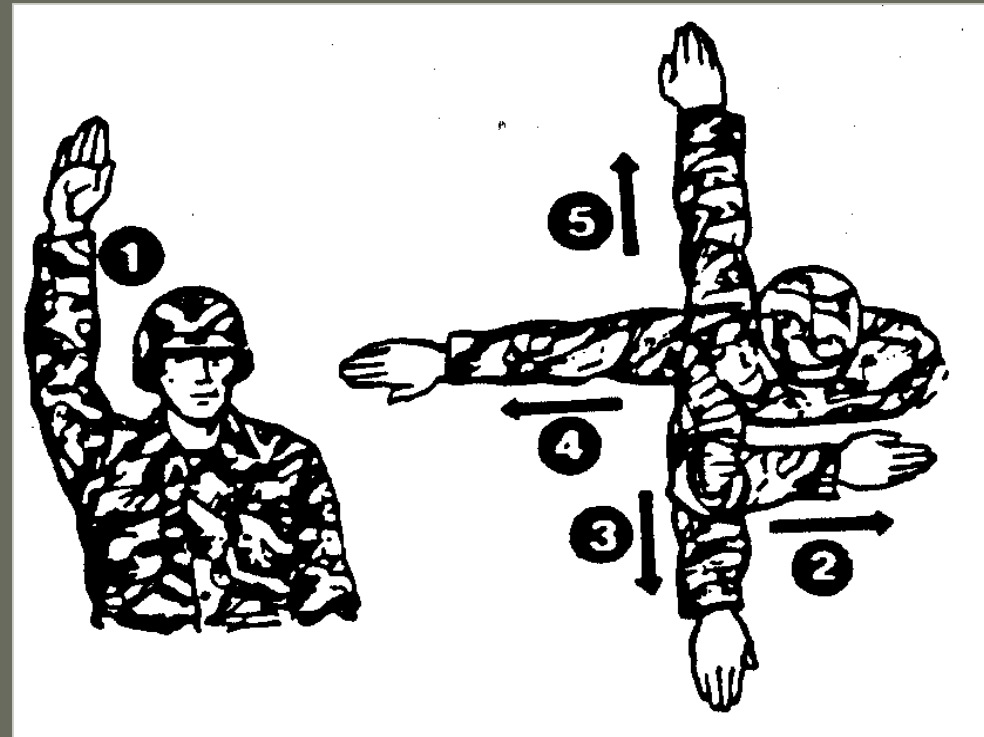




DISPERSE



- Extend one arm vertically overhead
 - Wave hand and arm to the front
 - Left
 - Right
 - Rear
 - Palm toward the direction on each movement

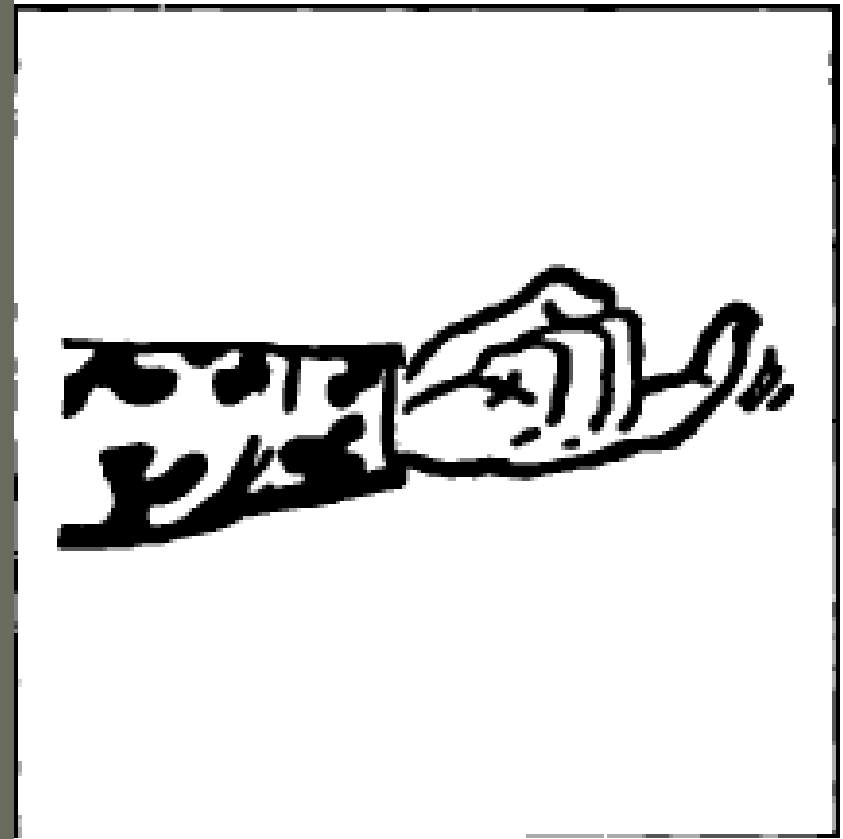




LEADERS JOIN ME



- Extend arm toward the leaders and beckon leaders with finger

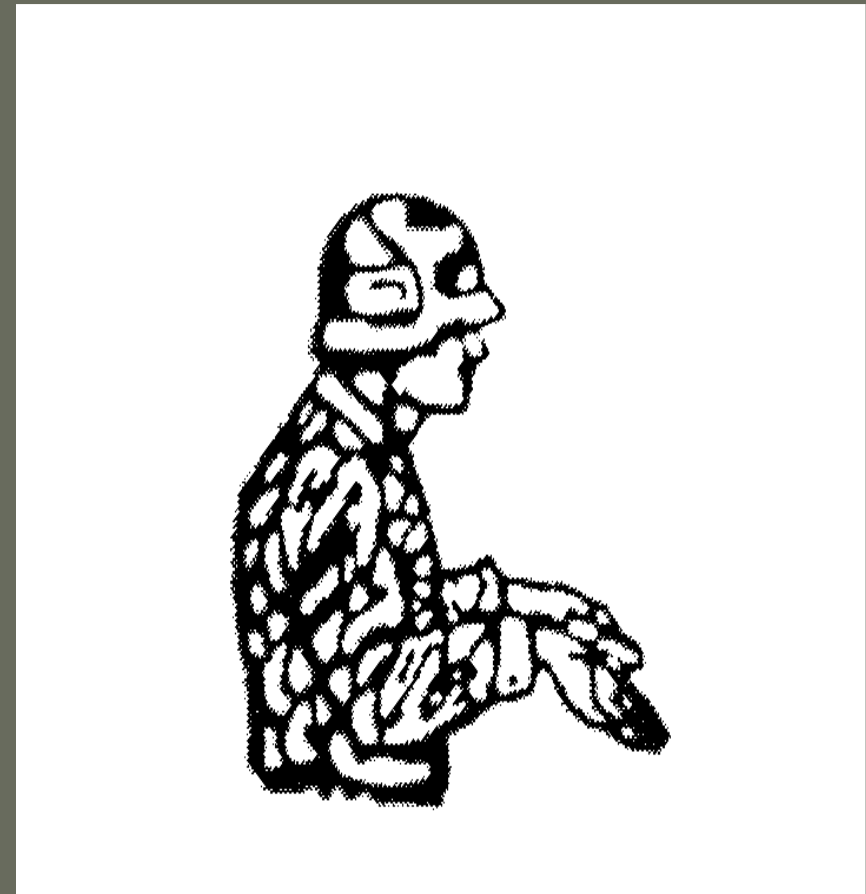




I DO NOT UNDERSTAND



- Raise both hands to hip level
 - Elbows bent
 - Palms up
 - Shrug shoulder





FORWARD



- Move to the desired direction
 - Extend arm horizontally to the rear
 - Swing arm overhead and forward
 - Palm down





HALT



- Carry the hand to the shoulder
- Palm to the front
- Thrust hand upward
- Extend arm and hold in position till signal is understood





FREEZE



- Make the signal for halt
- Make a fist with the hand
- Do Not Move!





DISMOUNT, DOWN, TAKE COVER



- Extend arm sideward at a 45 degree angle above horizontal
- Palm down
- Lower arm to the side

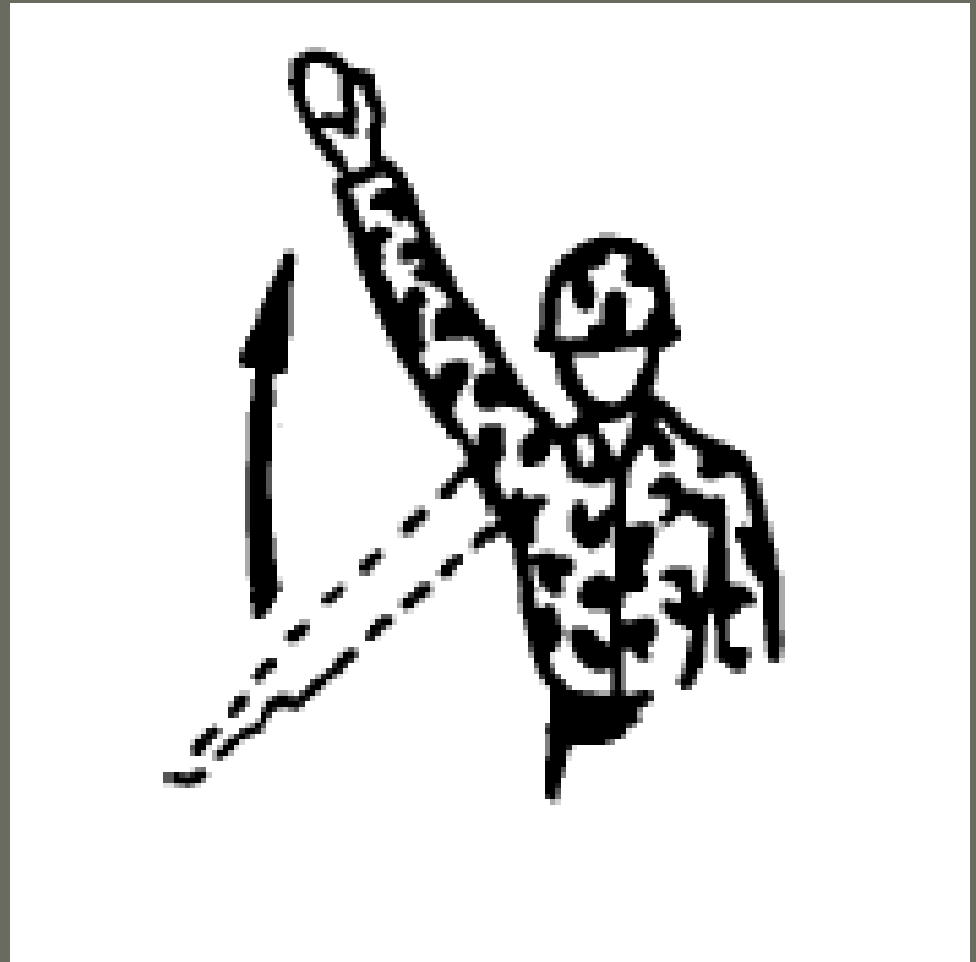




MOUNT



- Extend arm sideward at a 45 degree angle below horizontal
- Palm down
- Raise arm above head





DISREGARD PREVIOUS COMMAND



- Face the unit or individual being signaled, then raise both arms and cross them over the head, palms to the front

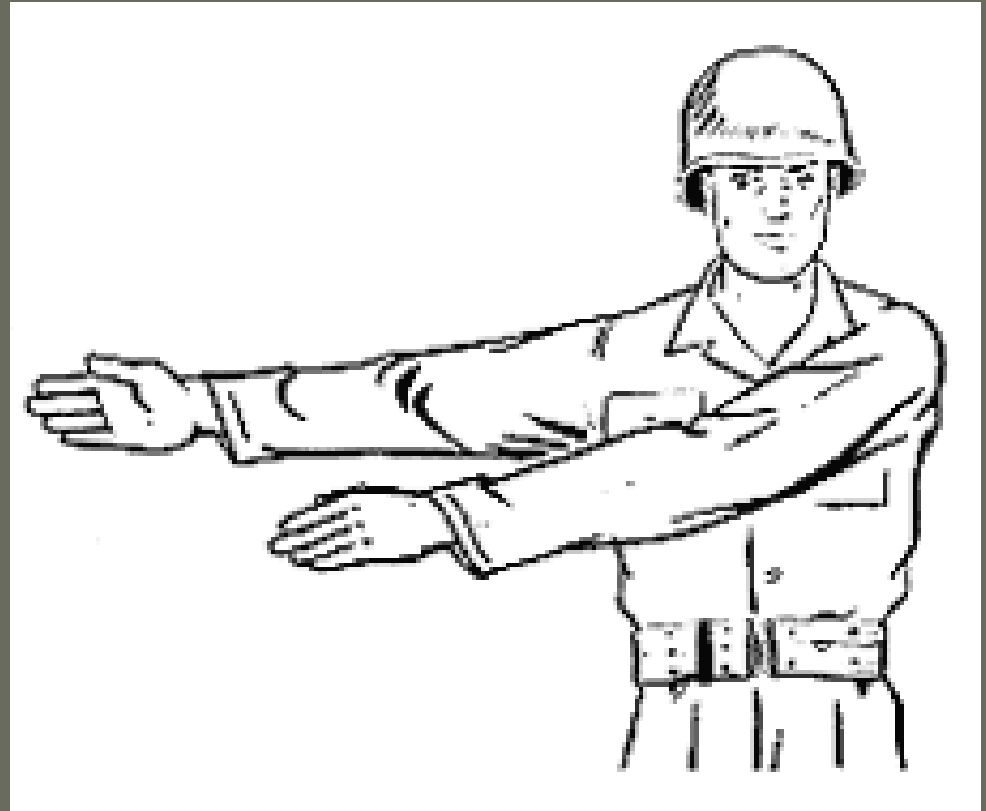




RIGHT (LEFT) FLANK



- Extend both arms in direction of desired movement





DOUBLE TIME



- Closed fist to shoulder level
- Rapidly thrust upward
- Arm fully extended
- Move up and down several times

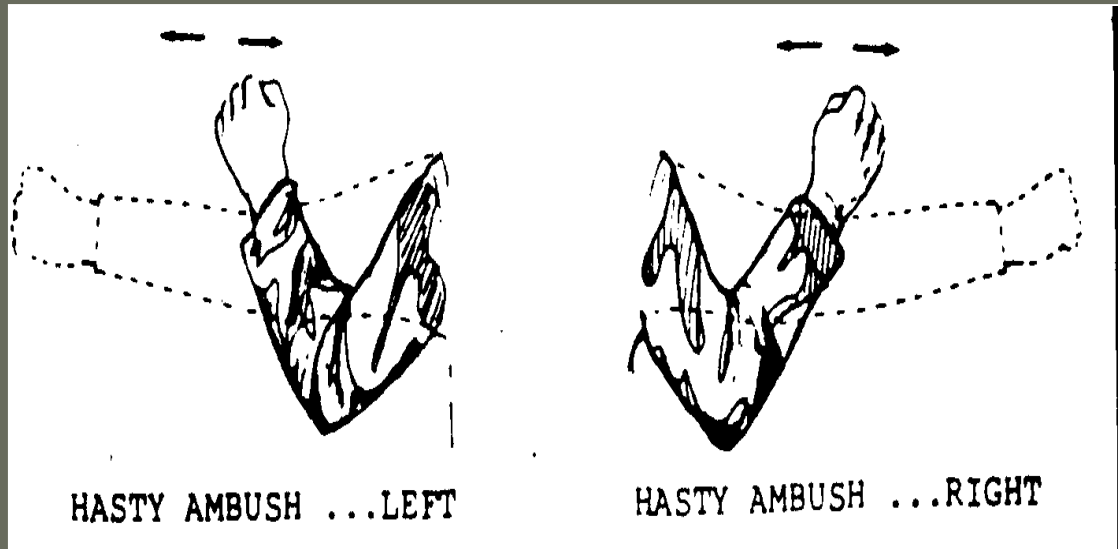




HASTY AMBUSH



- Raise fist to shoulder
- Thrust in desire direction several times

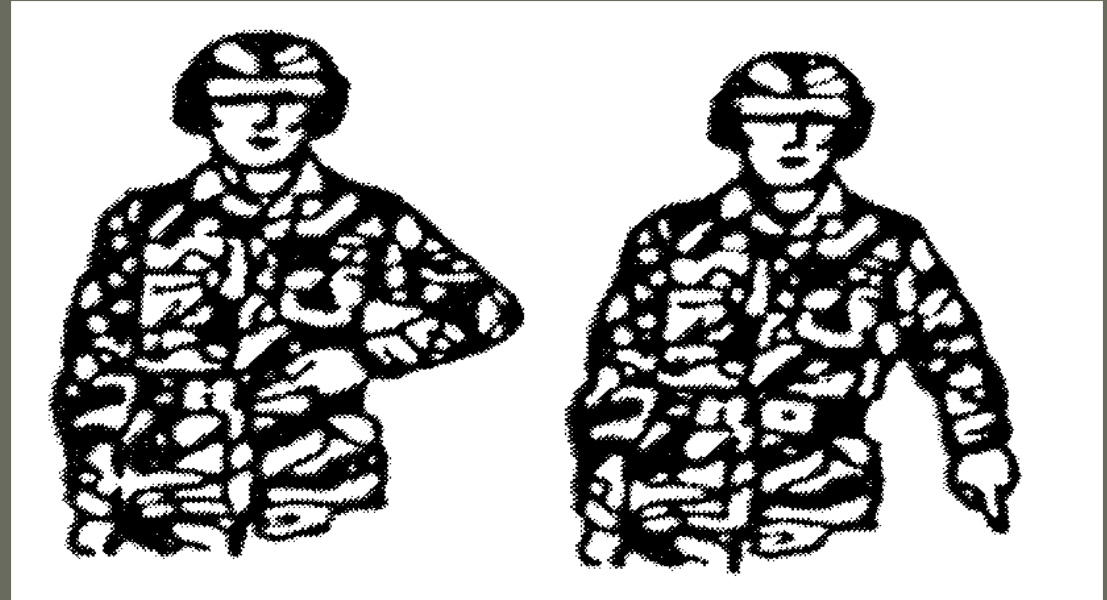




RALLY POINT



- Touch belt buckle with hand
- Point to the ground

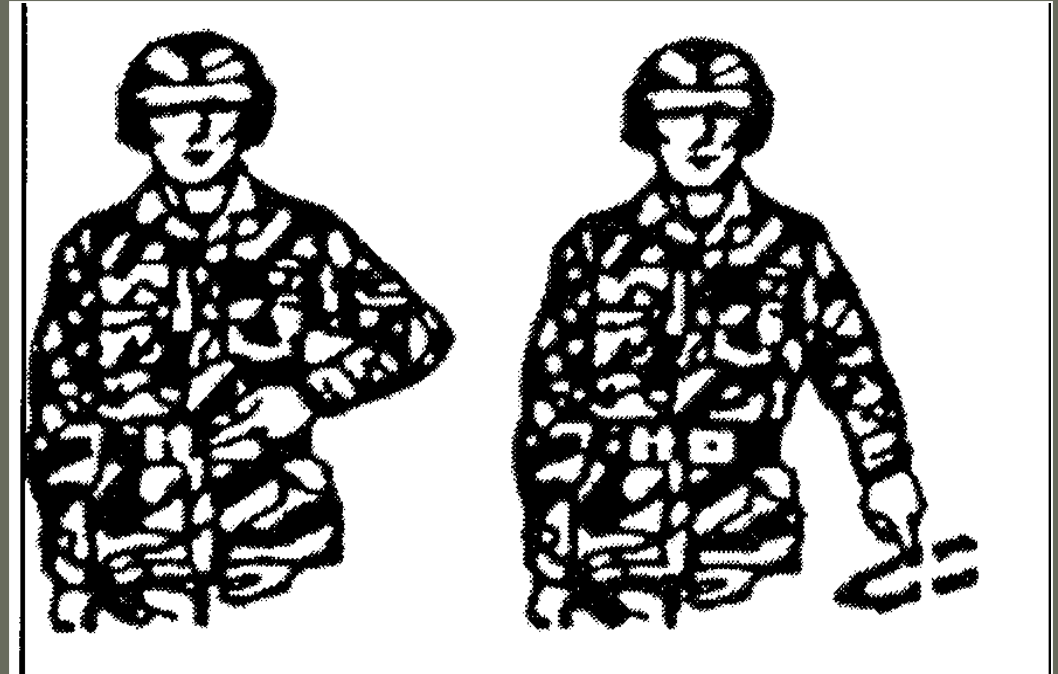




OBJECTIVE RALLY POINT



- Touch belt buckle with hand
- Point to ground
- Make circular motion

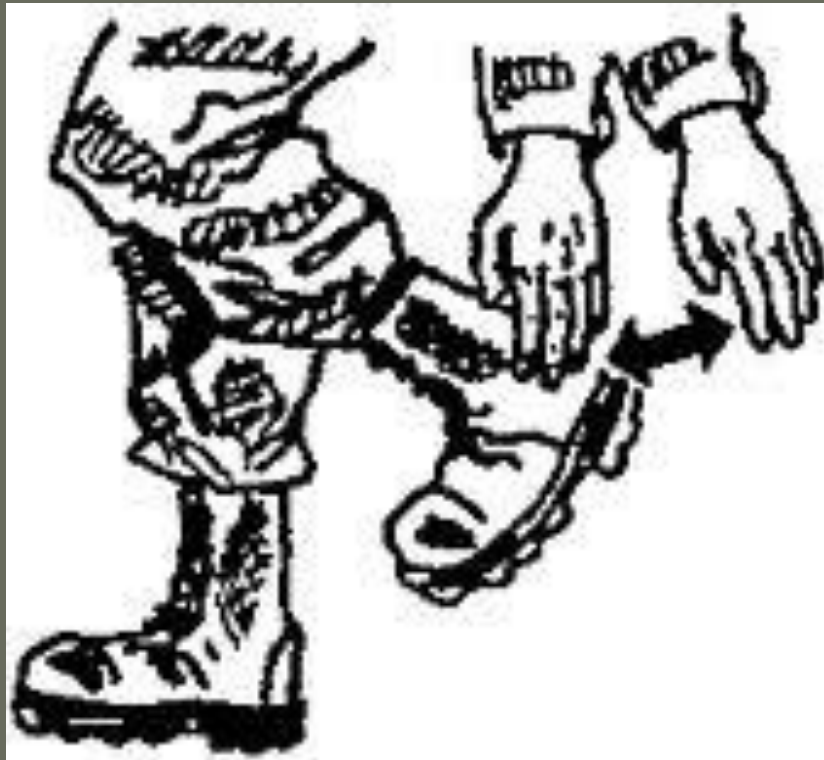




PACE COUNT



- Tap the heel of the boot repeatedly with open hand





HEAD COUNT



- Tap the back of the helmet repeatedly with open hand





DANGER AREA

- Draw the right hand, palm down, across the neck in a throat-cutting motion from left to right







PATROLLING





LAND NAVIGATION





OVERVIEW



- Information Contained on a Map
- Map Colors
- Contour Lines
- Measuring Distance
- Locate Position
- Lensatic Compass
- Orientation of the Map



LEARNING OBJECTIVES



Please Read Your

Terminal Learning Objectives

And

Enabling Learning Objectives





INFORMATION ON THE MAP





PURPOSE OF A MAP



- Provides information on the existence, the location, and the distance between ground features





DEFINITION OF A MAP



- A geographic representation of the earth's surface drawn to scale as seen from above





CHARACTERISTICS OF A MAP



- Designed to show common info
- Location of ground objects
- Populated areas
- Routes of travel
- Communications Lines
- Extent of vegetation cover
- Elevation and relief of the earth's surface





CARE AND IMPORTANCE





CARE AND IMPORTANCE



- Maps are printed on paper and require protection from:
 - Water
 - Mud
 - Tearing





CARE AND IMPORTANCE



- When marking:
 - Use lighter lines which are easily erased without smearing
- If trimming the map:
 - Be careful not to cut any of the marginal information

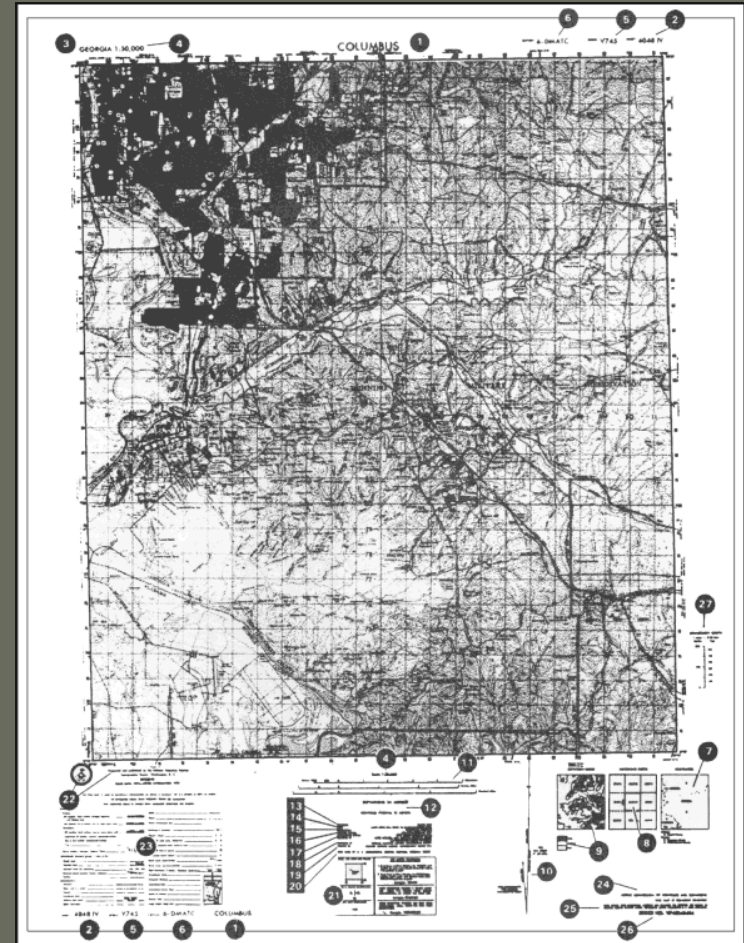




CARE AND IMPORTANCE



- Maps must be protected because they can hold tactical information:
 - Friendly Positions
 - Supply Points

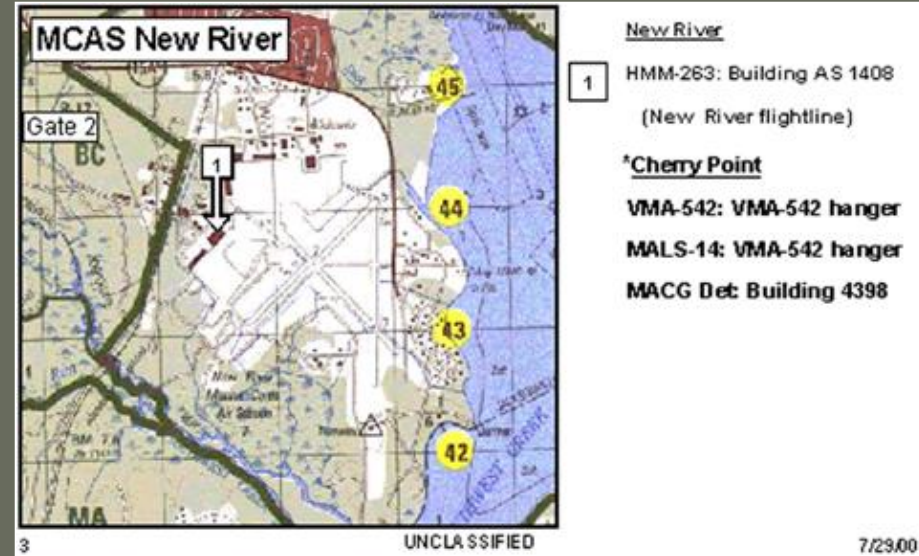




MAP ILLUSTRATIONS



- Mapmakers use standard symbols
- They represent natural and manmade features
- Resemble as close as possible, the actual features but as viewed from above





MARGINAL INFORMATION



- All maps are not the same, so it becomes necessary every time a different map is used to examine the marginal information carefully

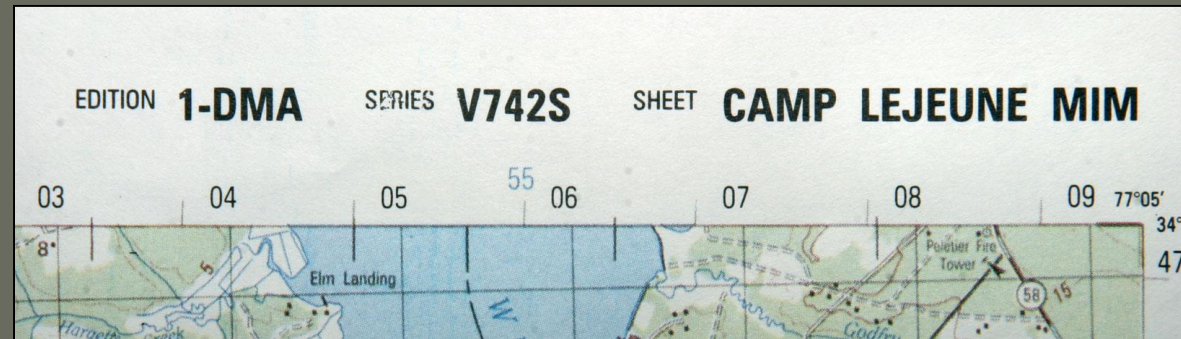




MARGINAL INFORMATION



- Includes:
 - Margin of Information
 - Sheet Name
 - Series Name
 - Series Number
 - Scale Notation
 - Edition Number
 - Index to Boundaries

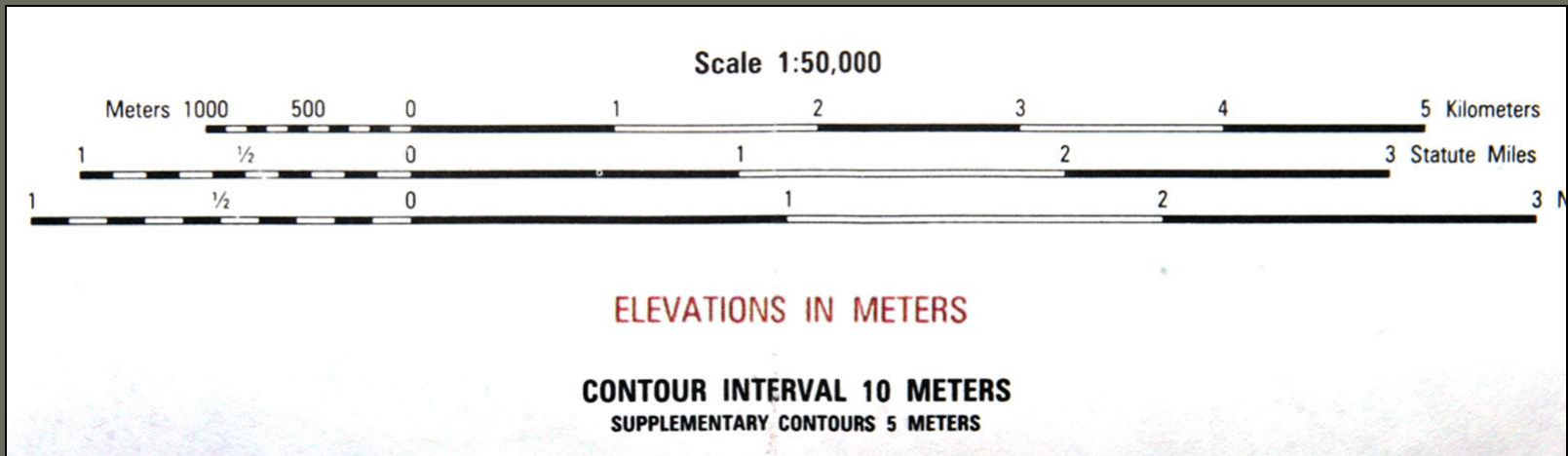




MARGINAL INFORMATION



- Contour Interval:
 - Appears in the center lower margin
 - States the vertical distance between adjacent contour lines on the map



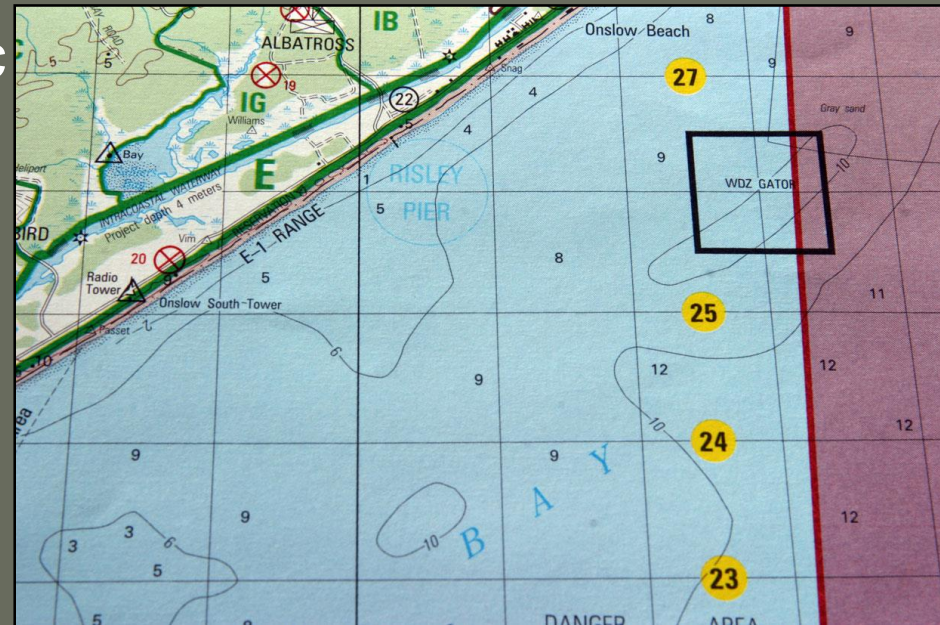


MARGINAL INFORMATION



- Grid Box:

- Gives basic instruction on reading grids in determination of specific points on the map

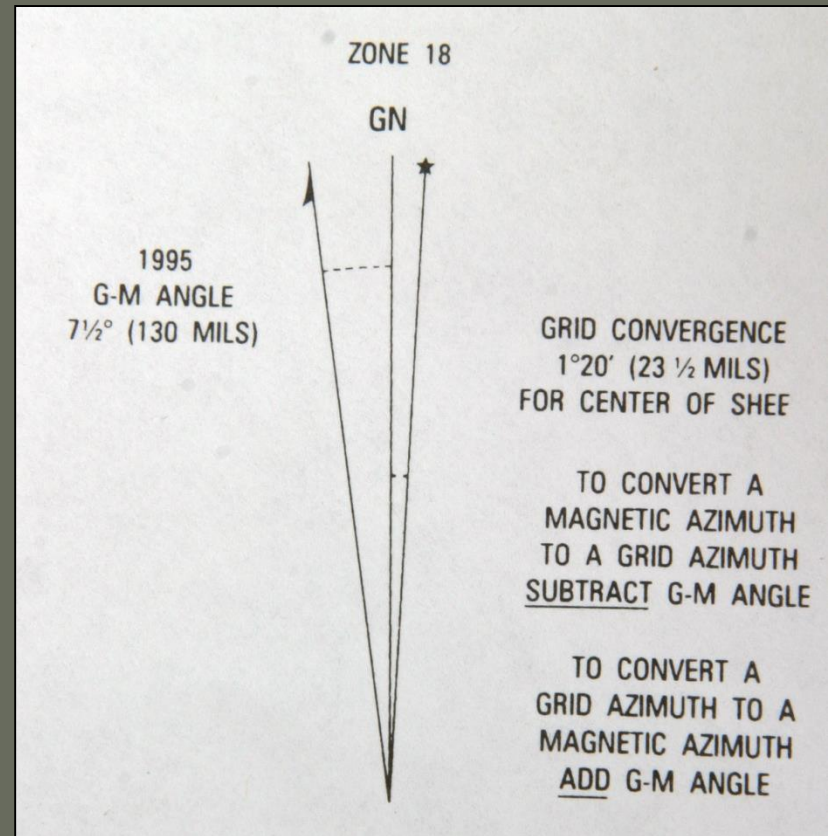




MARGINAL INFORMATION



- Declination Diagram:
 - It is located in the lower left margin of the large scale on the map and indicates the angular relationship of:
 - True North
 - Grid North
 - Magnetic North

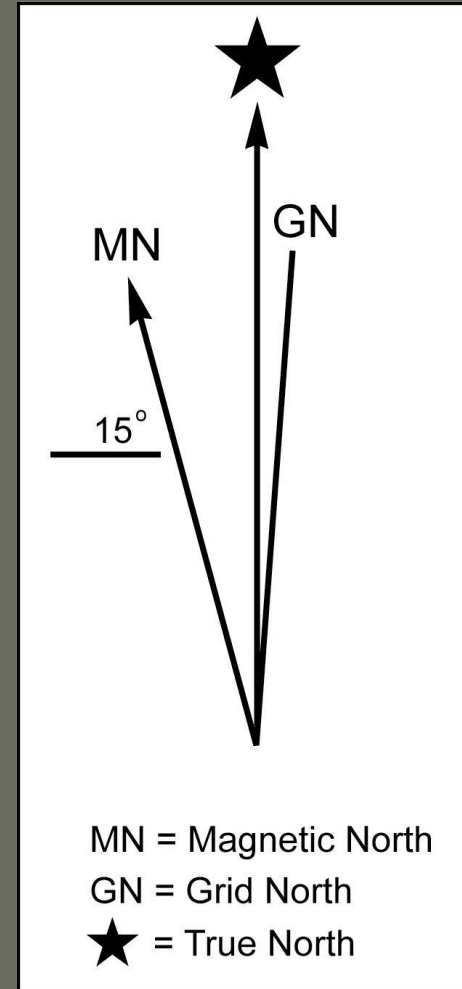




MARGINAL INFORMATION



- True North:
 - A line from any position on the earth's surface connects at the North Pole
 - Unlike grid lines, all lines of longitude are true north lines





MARGINAL INFORMATION

- Magnetic North:
 - The direction to the North Magnetic Pole, as indicated by the north seeking needle of a magnetic compass
 - The North Magnetic Pole is located in Canada at Hudson Bay.





MARGINAL INFORMATION



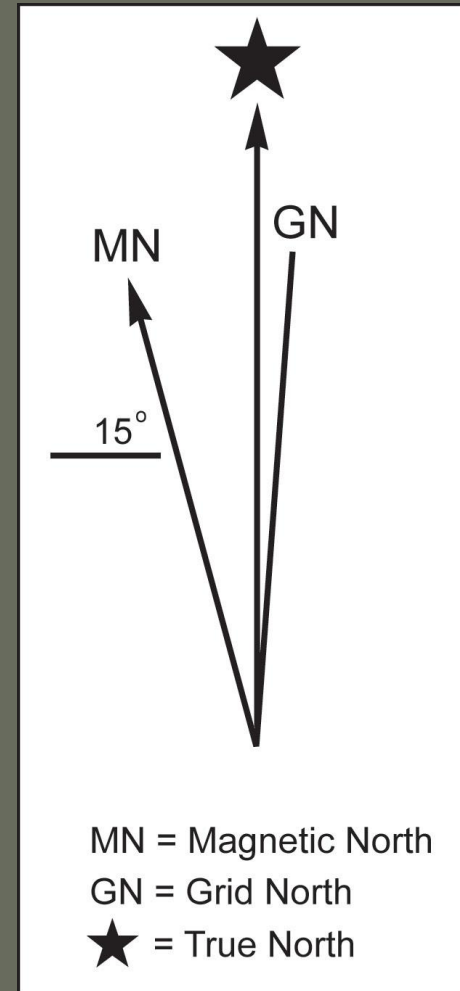
- Grid North:
 - The north that is established by the vertical grid lines on the map
 - The variation between grid north and true north is due to the curvature of the earth



MARGINAL INFORMATION



- Grid Magnetic (GM) Angle:
 - The GM angle is used to convert magnetic azimuth to grid azimuth and vice versa





MARGINAL INFORMATION



- Grid Magnetic (GM)

Angle:

- Determine the Grid azimuth with a protractor, measuring from Grid North
- Magnetic Azimuth is taken from a compass and measured from Magnetic North





NOTE



To convert one azimuth to the other, simply read the directions in the declination diagram

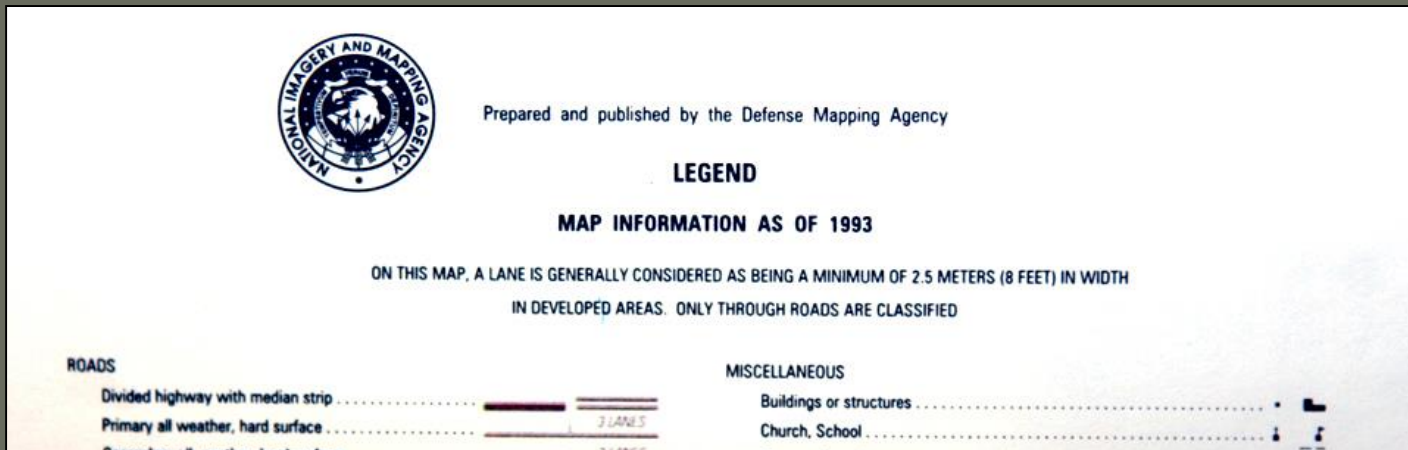




MARGINAL INFORMATION



- Legend:
 - Located in the lower left margin
 - Illustrates and identifies some of the symbols on the map


























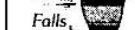
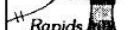







MARGINAL INFORMATION

- Legend note:
 - Every time a map is used, refer to the Legend to prevent errors in symbol identification

LEGEND

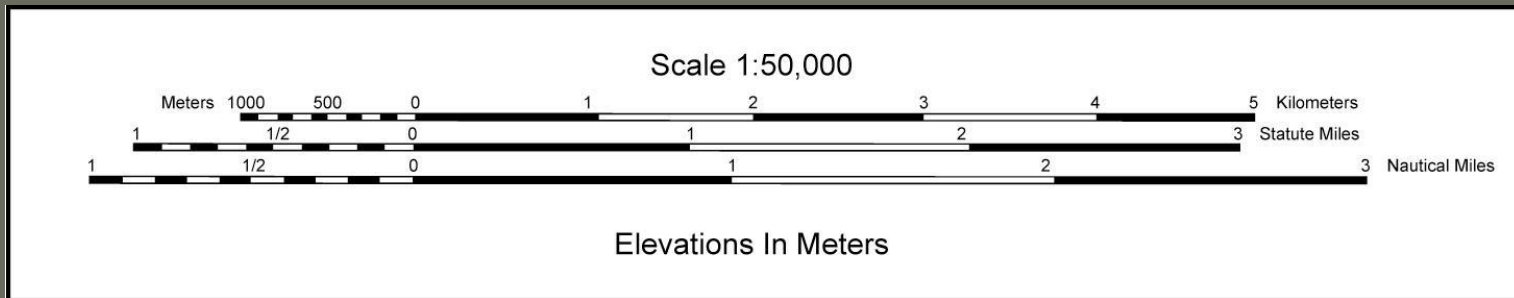
| | | | |
|---|-------|---|---------|
| ROADS | | | |
| Divided highway with median strip | _____ | ===== | ===== |
| Primary, all weather, hard surface | _____ | ===== | ===== |
| Secondary, all weather, hard surface | _____ | ===== | ===== |
| Light duty, hard or improved surface | _____ | ===== | ===== |
| Fair or dry weather, unimproved surface | _____ | ===== | ===== |
| Trail | _____ | ----- | ----- |
| Route markers: Interstate, Federal; State | _____ |    | |
| Bridge | _____ |   | |
| RAILROADS (Standard gauge 144 m. - 4'8 1/2") | | | |
| Single track | _____ | | |
| Multiple track | _____ | | |
| Nonoperating | _____ | + + + + | |
| Railroad station: Location known | _____ | + + + + | |
| Car line | _____ | + + + + | |
| Railroad bridge | _____ | + + + + | |
| Tunnel: Highway; Railroad | _____ | + + + + | |
| BOUNDARIES | | | |
| National, with monument | _____ | ===== | |
| State, territory | _____ | ----- | |
| County, parish | _____ | ----- | |
| Civil township, town | _____ | ----- | |
| Incorporated city, village, town | _____ | ----- | |
| Reservation: National; State; Military | _____ | ===== | MIL RES |
| Power transmission line | _____ |  | |
| Buildings | _____ |   | |
| Structures | _____ |   | |
| Church; School | _____ |   | |
| Power substation | _____ |  | |
| Windmill; Watermill | _____ |   | |
| Well; Tank | _____ |   | |
| Mine shaft | _____ |  | |
| Open pit mine or quarry | _____ |  | |
| Horizontal control station | _____ |  | |
| Bench mark, monumented | _____ | BM X 219.2 | |
| Bench mark, non-monumented | _____ | X 143.9 | |
| Spot elevations in meters | _____ | • 144 | |
| Levees, rims, dikes | _____ | | |
| Bluffs, cliffs | _____ | | |
| Woodland | _____ |  | |
| Scattered trees; Scrub | _____ |   | |
| Vineyard; Orchard; plantation | _____ |   | |
| Intermittent lake; Dam; Earthen; Masonr | _____ |  | |
| Stream: Perennial; Intermittent | _____ |  | |
| Marsh, swamp | _____ |  | |
| Small falls; Large falls | _____ |  | |
| Small rapids; Large rapids | _____ |  | |



MARGINAL INFORMATION



- Bar Scales:
 - Located at the center bottom of the margin
 - Special "rulers", ground distance may be measured directly without having to convert the map scale ratio
 - Normally, the scale for meters, yards, statute miles (land) and nautical miles (sea)



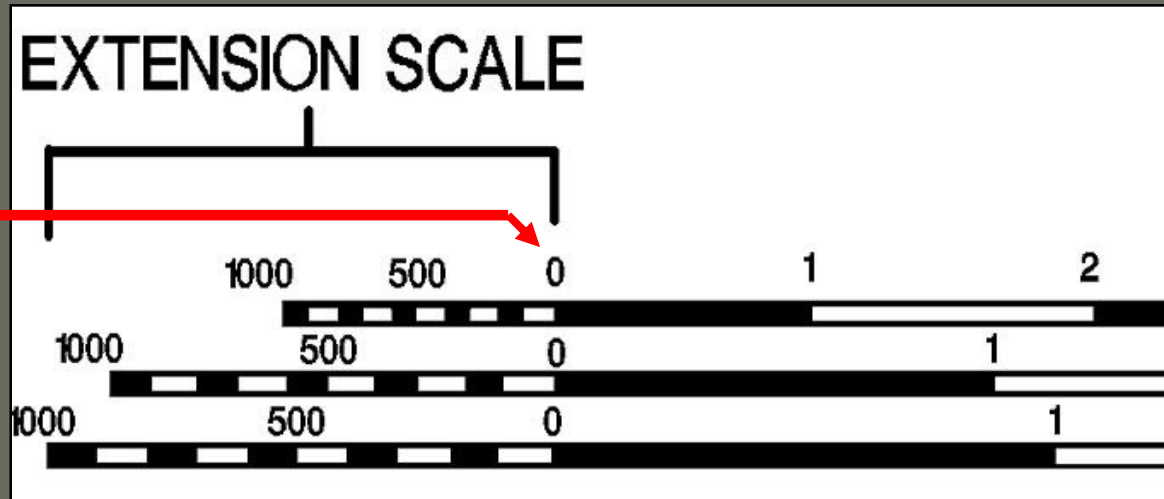


MARGINAL INFORMATION



- Extension scale:

Easy to use, but notice that “zero” is not at the end of the scale.



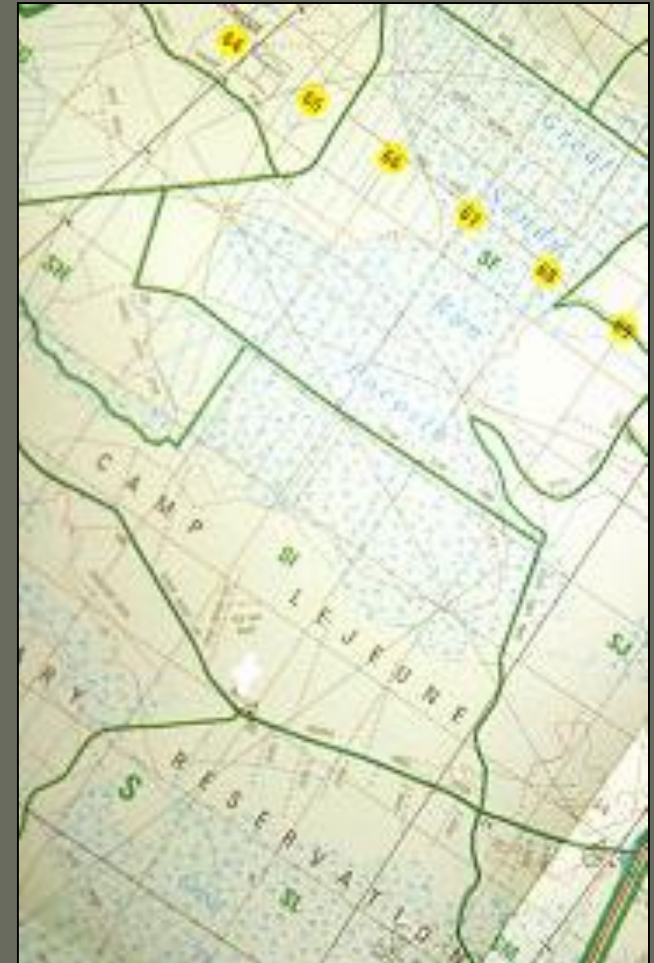




MAP COLORS



- To ease the identification of features on the map, the topographic symbols are usually printed in different colors, with each color identifying a class of features





MAP COLORS



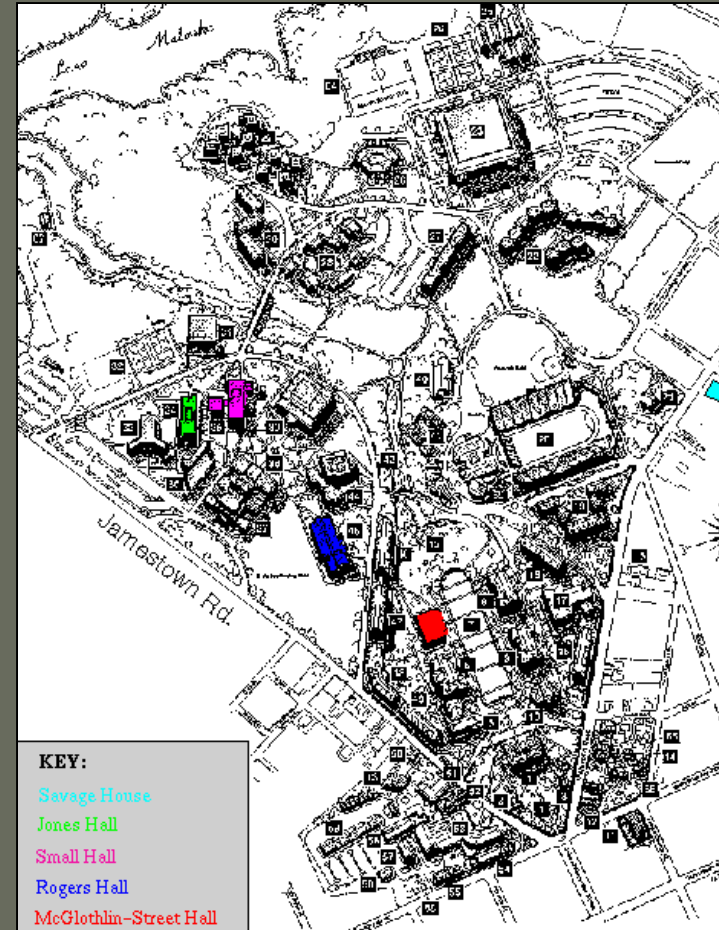
- The colors vary with different types of maps, but on a standard, large scale, topographic map, there are five basic colors:
 - **Black**
 - **Red**
 - **Blue**
 - **Green**
 - **Red / Brown**



MAP COLORS



- Black
 - Used to identify the majority of cultural or man made features:
 - Buildings
 - Bridges
 - Roads not shown in red





MAP COLORS



- Red

- Main roads, built up areas, and special features such as dangerous or restricted areas

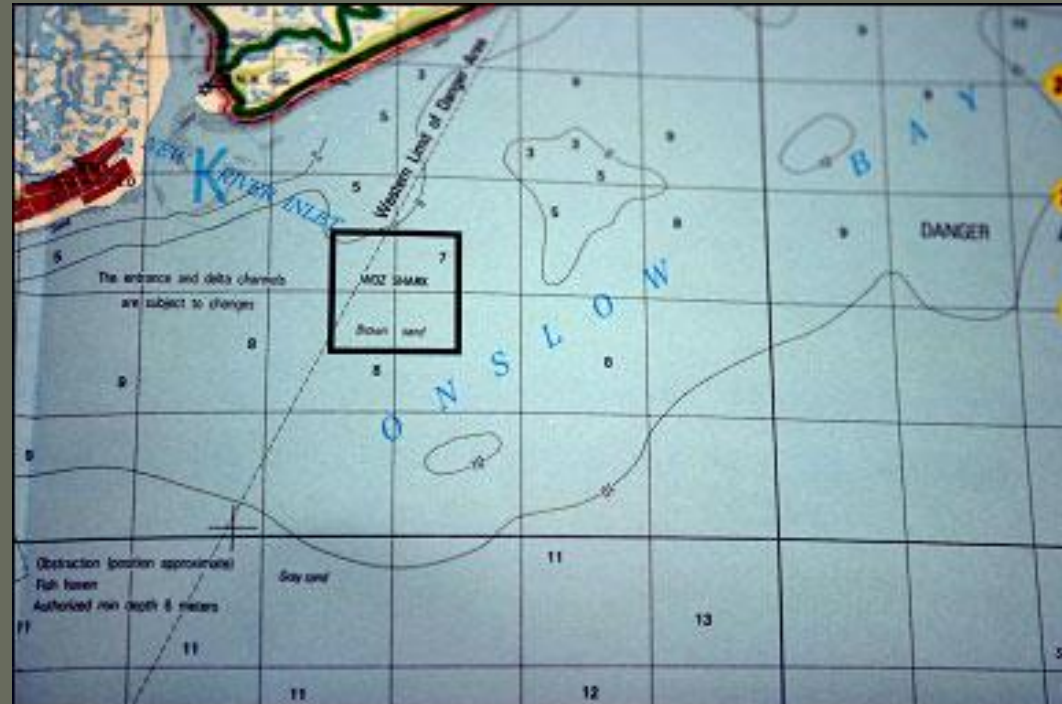




MAP COLORS



- Blue
 - Water features
 - Lakes
 - Rivers
 - Swamps
 - Streams





MAP COLORS



- Green
 - Identifies vegetation
 - Woods
 - Orchards





MAP COLORS



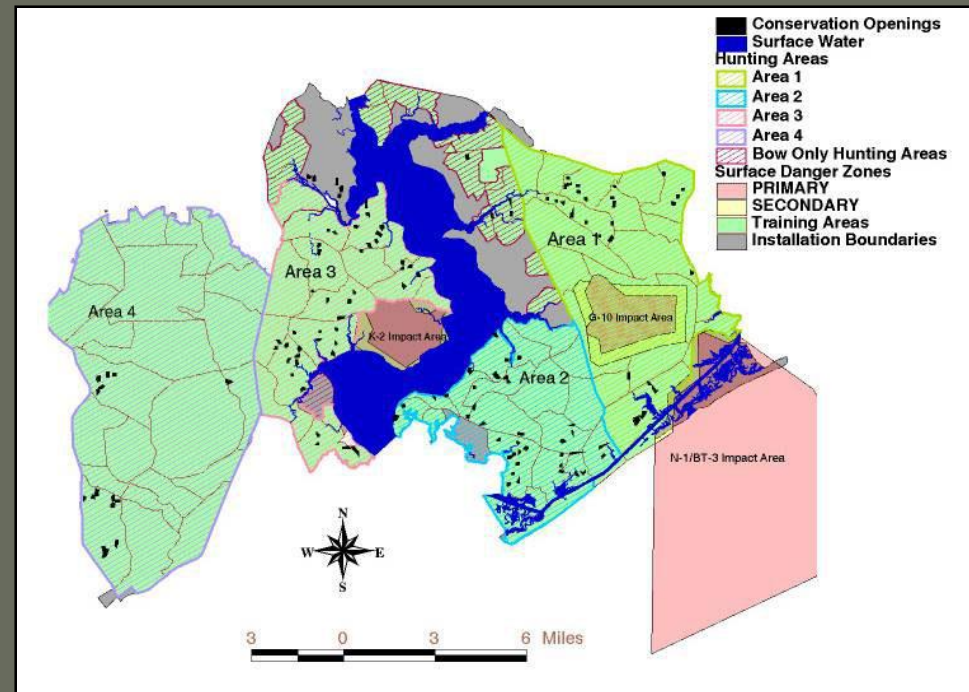
- Red / Brown
 - All landforms:
 - Contours
 - Fills
 - Cuts





NOTE

Occasionally other colors may be used to show special information. These will be indicated in the margin for information.







CONTOUR LINES





CONTOUR LINES

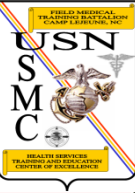


- Contour Lines:
 - Most common way of indicating elevation and relief on maps
 - A line representing an imaginary line on the ground, along which all points are at the same elevation





CONTOUR LINES



- Contour Lines:
 - Printed **red-brown**, starting at zero elevation
 - Every fifth contour line is a heavier brown line
 - These heavy lines are known as index contour lines. Also, some place along this heavy brown line, the elevation is given

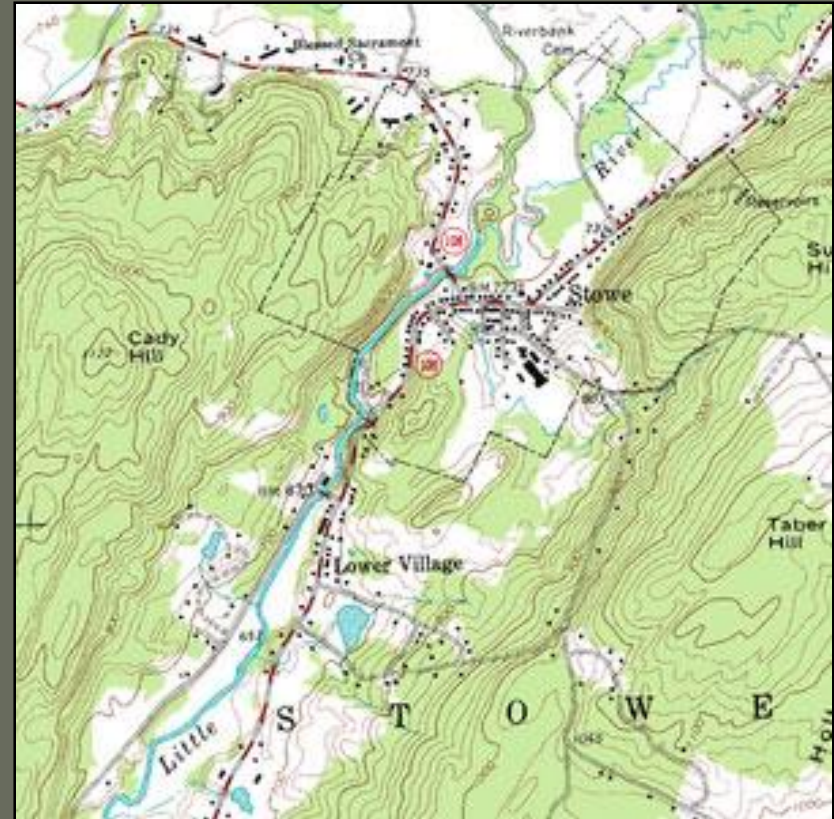




CONTOUR LINES



- Spacing of Contour Lines:
 - Indicate the nature of the slope
 - The closer the contour lines, the steeper the slope

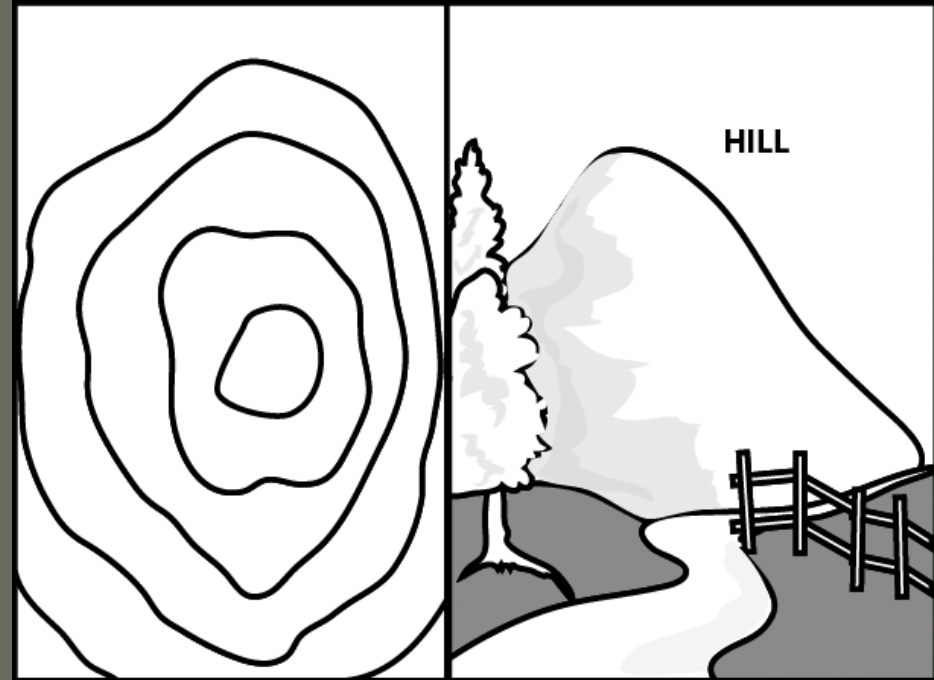




LAND FORMATIONS



- Hill:
 - A point or small area of high ground





LAND FORMATIONS

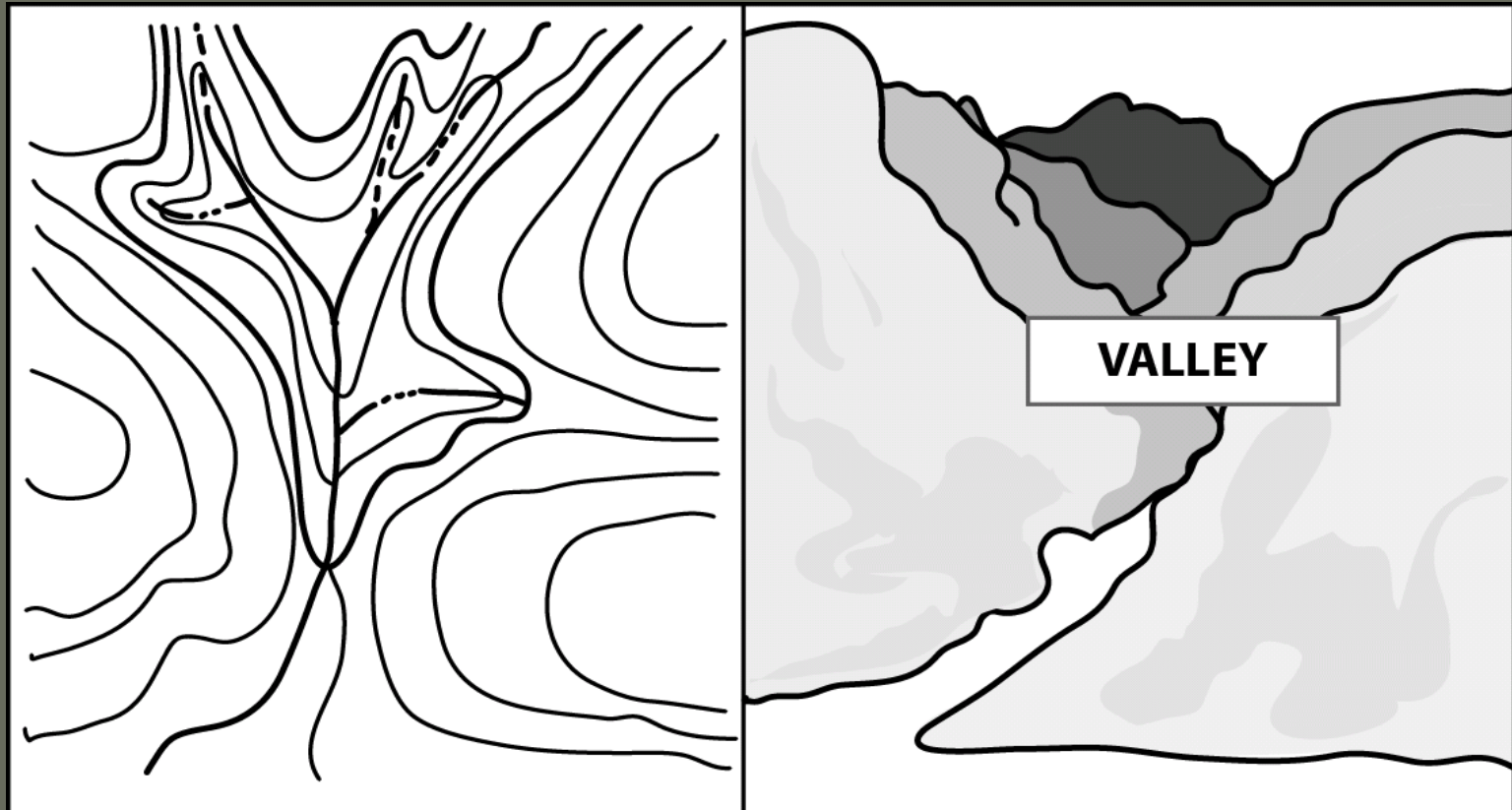


- Valley:
 - A stream course bordered on the sides by higher ground
 - Contours indicating a valley are "U" shaped, and the curve of the contour crossing always points up





LAND FORMATIONS





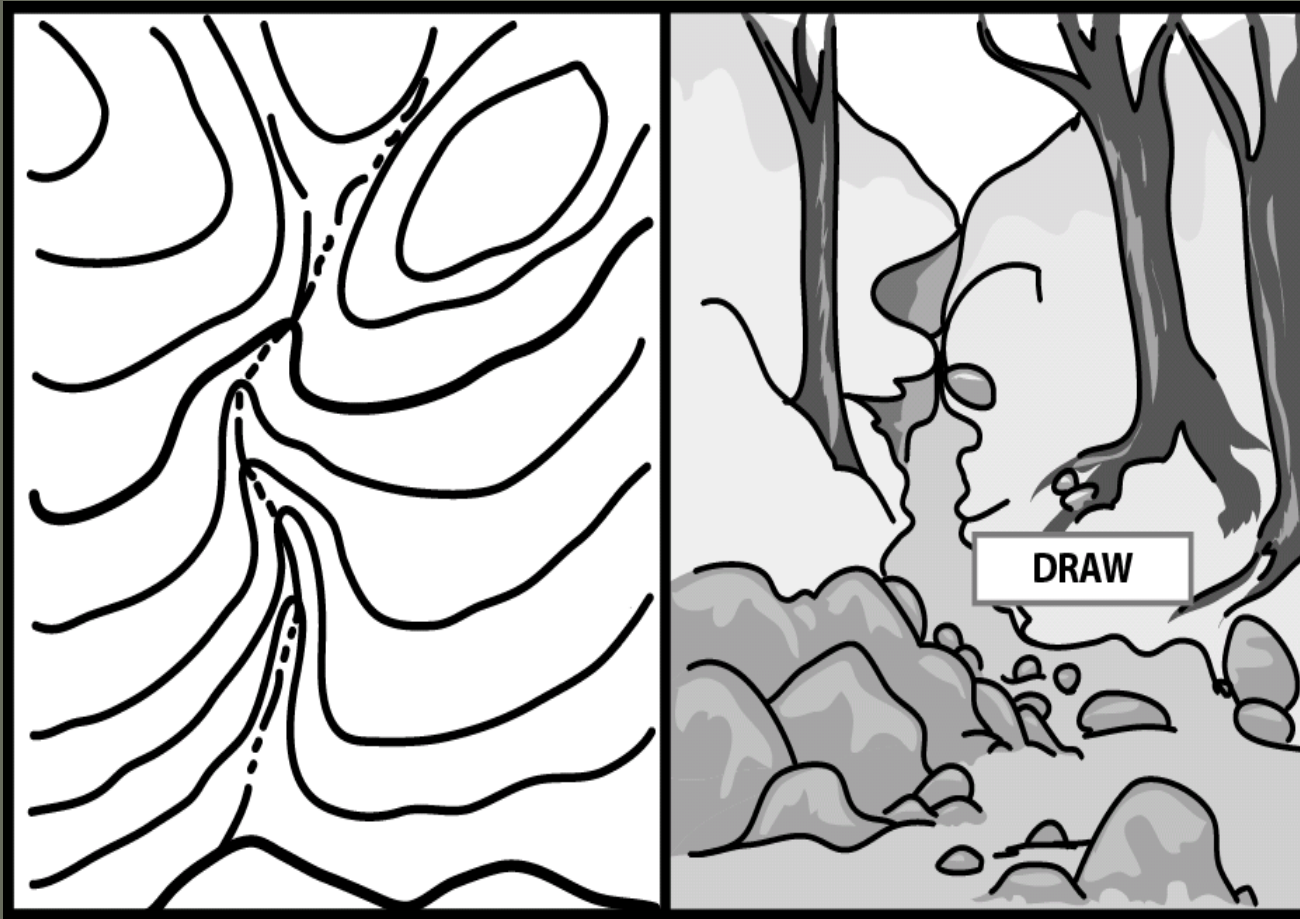
LAND FORMATIONS



- Draw:
 - A less developed stream course in which there is essentially no level ground, therefore, has little or no maneuver room within its confines
 - The ground slopes upward on each side and towards the head of the draw, contours indicating a draw are "V" shaped, with the point of the "V" toward the head of the draw



LAND FORMATIONS

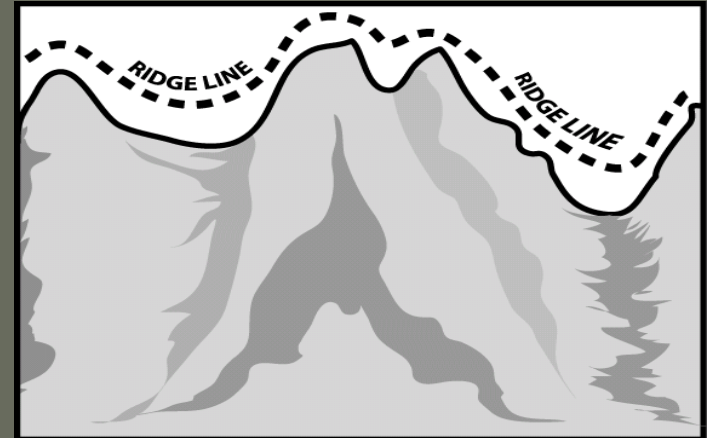




LAND FORMATIONS



- Ridge:
 - A line of high ground, with normally minor variations along its crest
 - The ridge is not simply a line of hills, all points of the ridge crest are higher than the ground on both sides of the ridge





LAND FORMATIONS

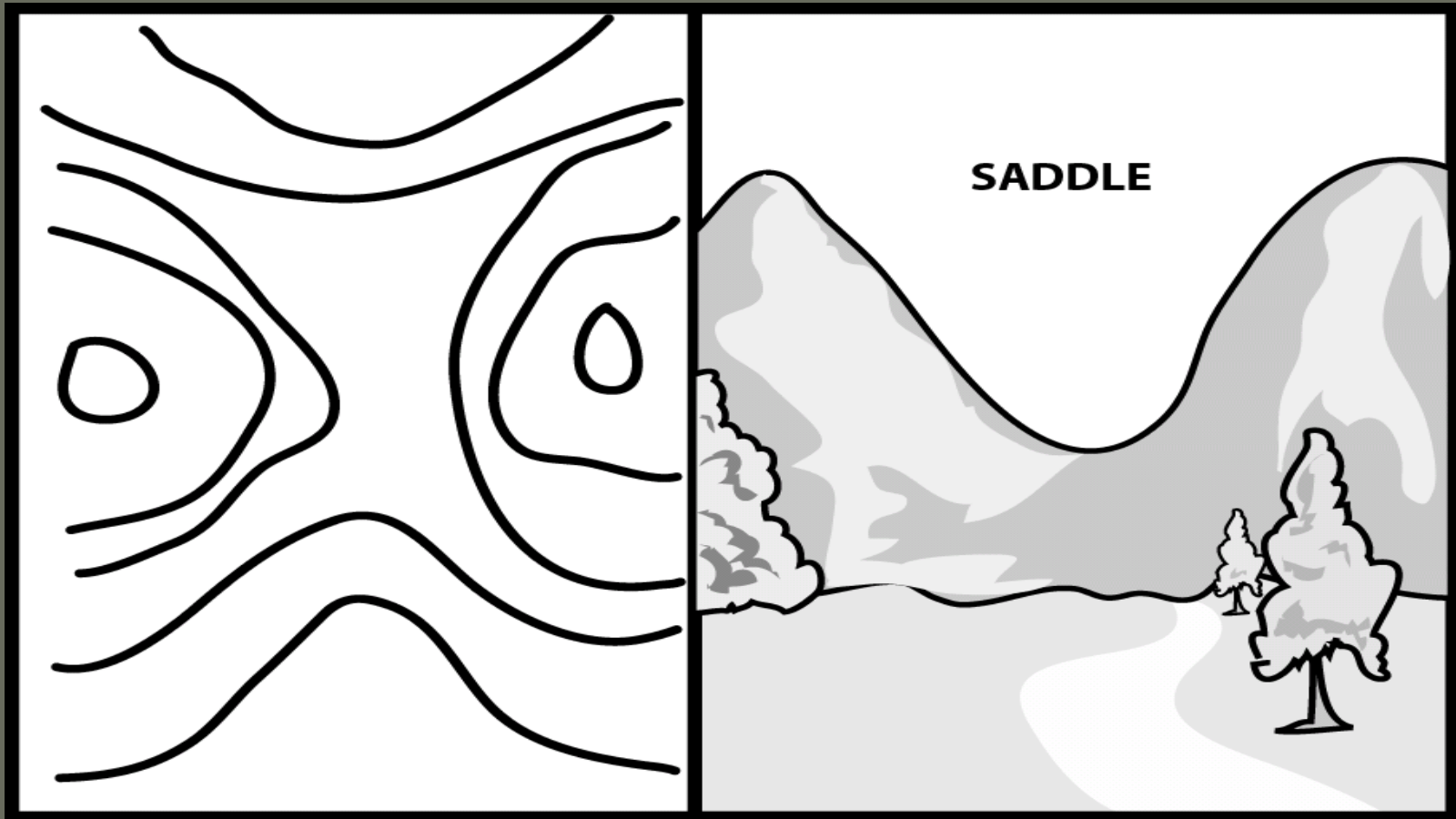


- Saddle:
 - A dip, or low point along the crest of a ridge
 - A saddle is not necessarily the lower ground between two hilltops, it may simply be a dip or break along an otherwise level ridge rest





LAND FORMATIONS

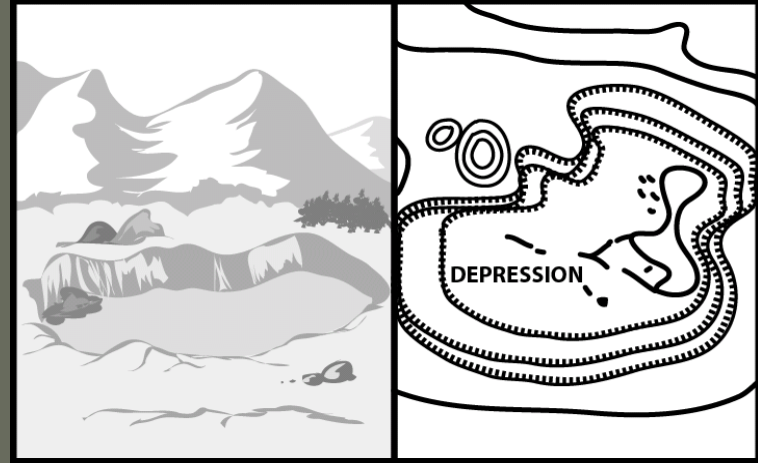




LAND FORMATIONS



- Depression:
 - A low point or sinkhole, surrounded on all sides by higher ground

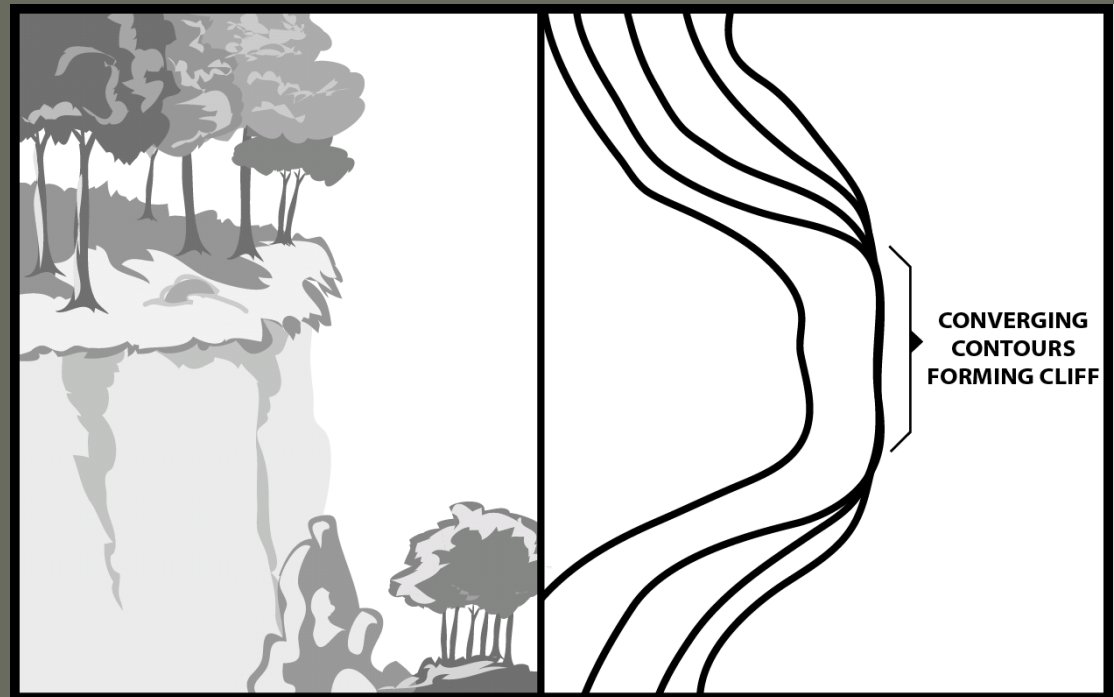




LAND FORMATIONS



- Cliff:
 - A vertical, or near vertical, slope







MEASURING DISTANCE

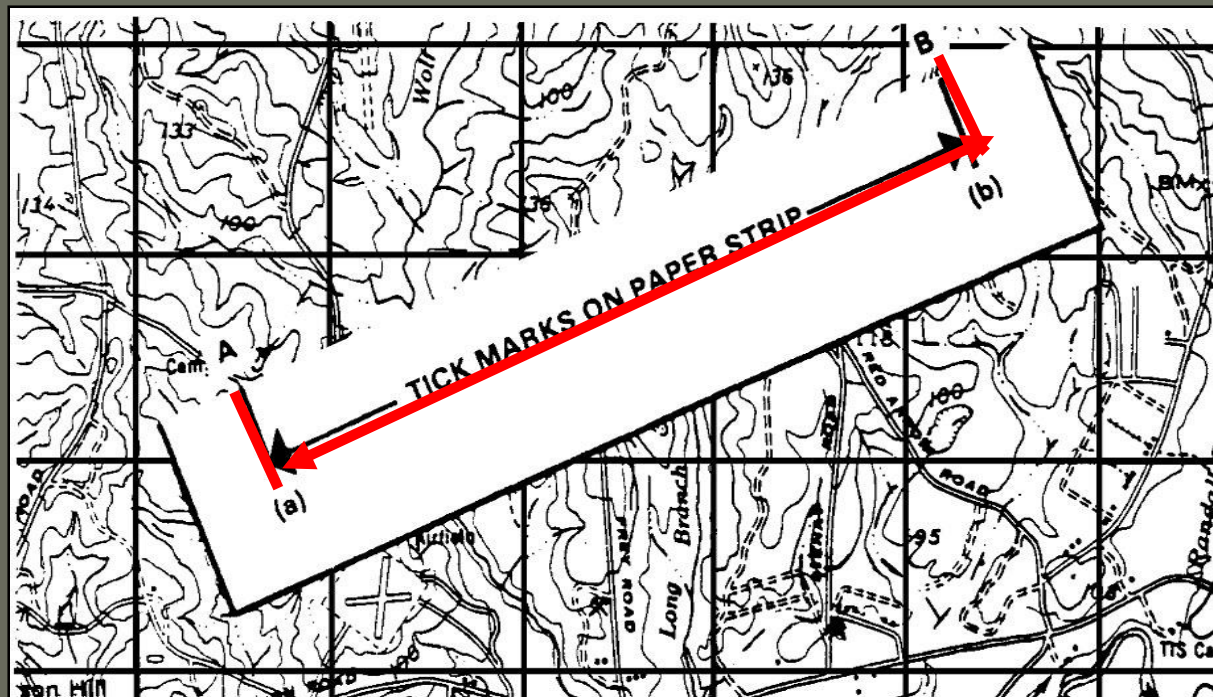




MEASURING DISTANCE



- Straight Line Distance:
 - Distance between 2 points

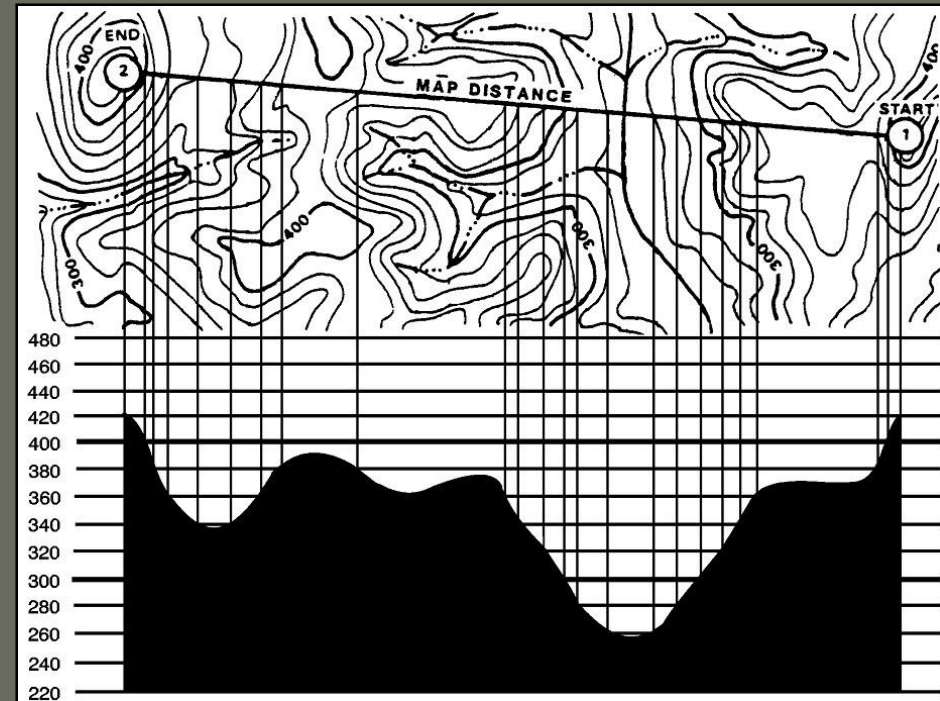




MEASURING DISTANCE



- Curved or Irregular Distance:
 - Measure distance along:
 - A winding road
 - Stream
 - Any other curved line





PACE COUNT





PACE COUNT



- Used to keep a record of ground distance
- Record your count in 100-meter increments
- Step off with your left foot and count every time the left foot hits the deck



PACE COUNT



- Record your 100-meter increments by putting a knot in a rope or piece of string





PACE COUNT EXAMPLE



- A student is walking an azimuth of 25°
- That person must travel in this direction for 500 meters to reach object
- The student's pace count equals 65 paces for 100 meters

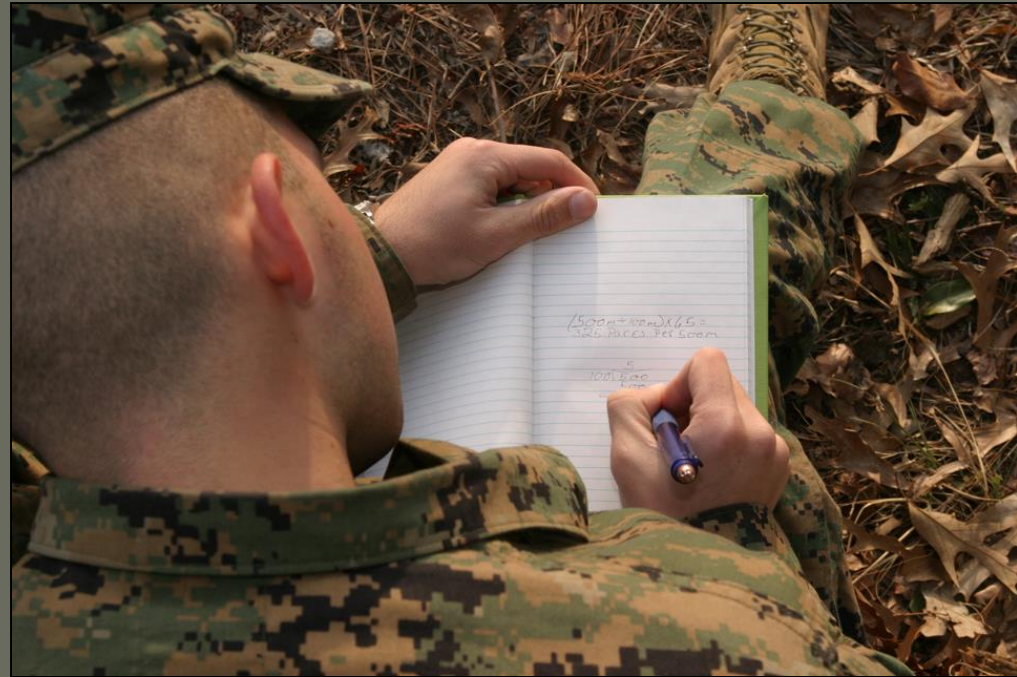




PACE COUNT EXAMPLE



- To figure out how many paces the student must take:
 - Multiply your pace count by the distance:
 - $(500\text{m} \div 100\text{m}) \times 65 = 325$ paces for 500m







LOCATE POSITION

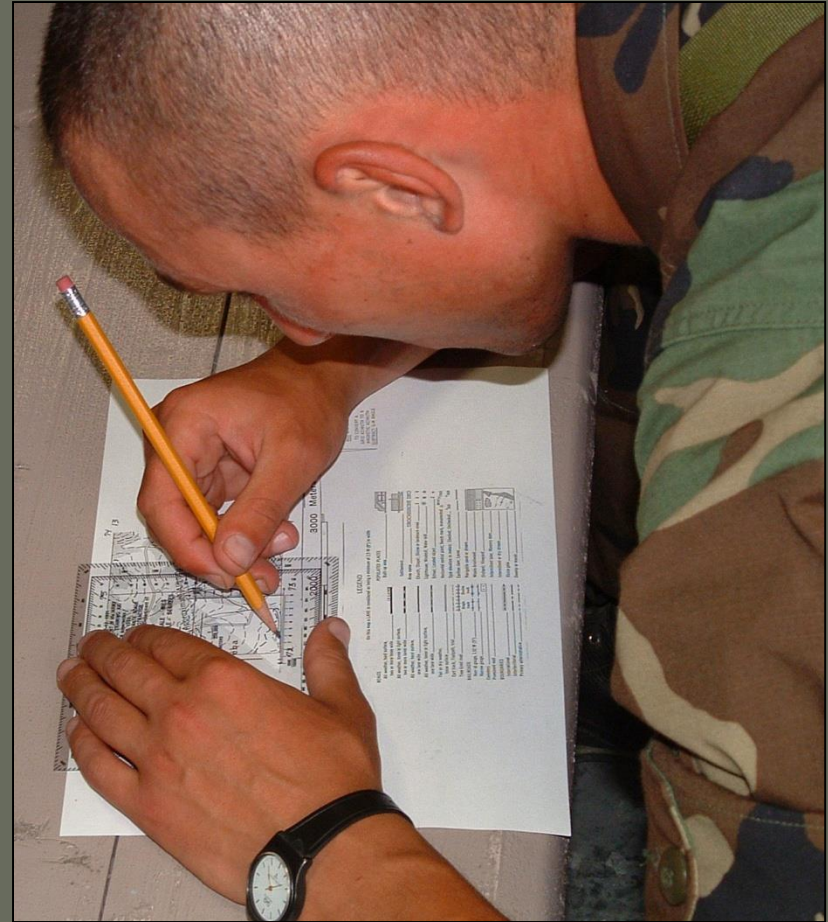




PROTRACTOR



The protractor is a tool used to locate the position on a map.



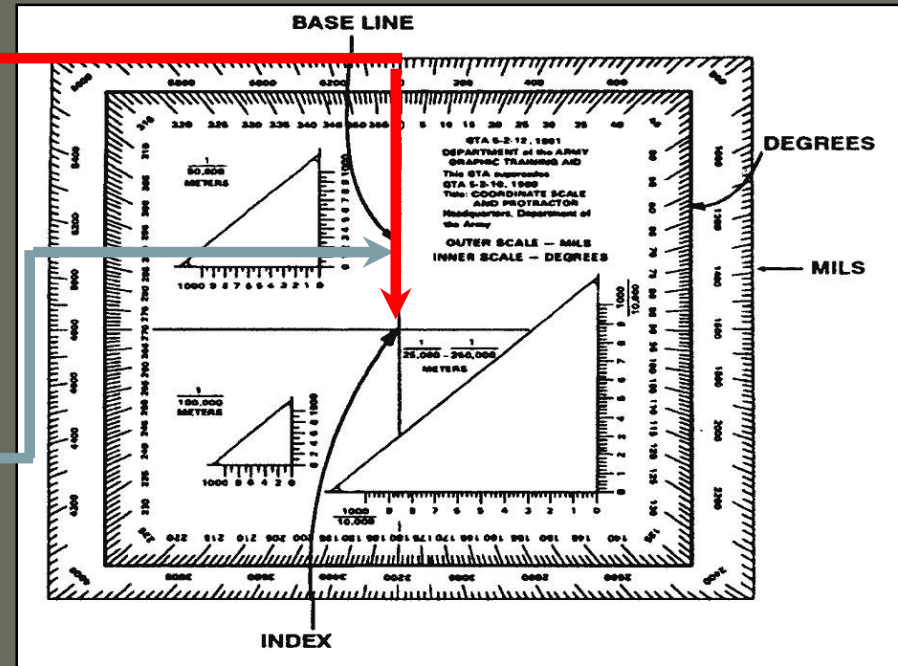


PROTRACTOR

- Index Mark:
 - Center of protractor from which all directions are measured
- Degrees:
 - Graduated in 1° tick marks (0° - 360°)
 - 0° - 180° is called Base Line

Index Mark

Base Line





THE GRID SYSTEM



The protractor is used in conjunction with the maps grid system to locate position (s).

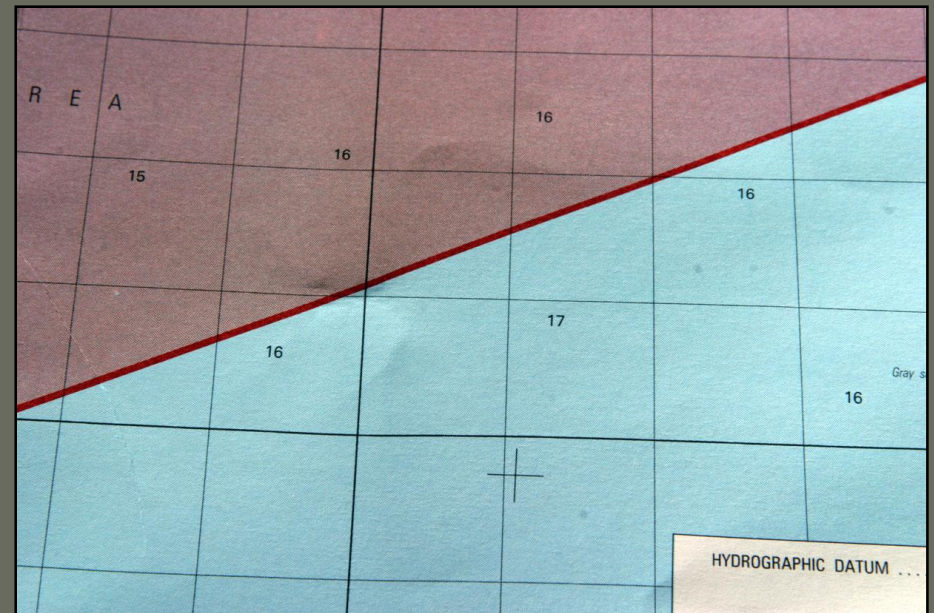




THE GRID SYSTEM



- Tells someone where specific locations or points are
 - A network of lines, in the form of squares placed on the face of the map

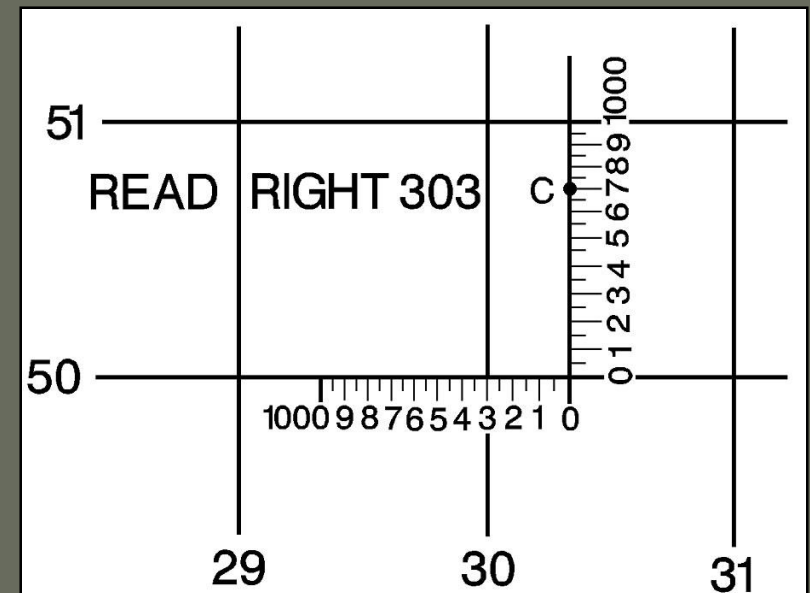




THE GRID SYSTEM



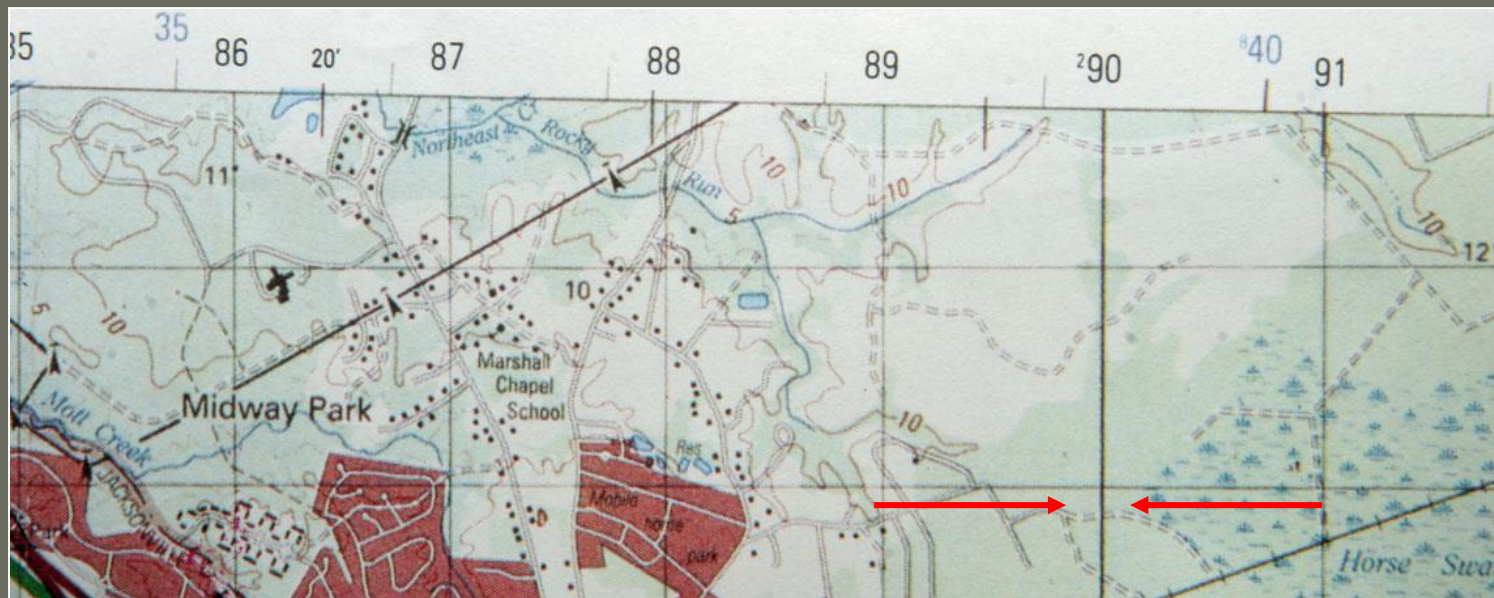
- Squares are somewhat like the blocks formed by the street system of a city
- The "streets" in a grid all have very simple names
- The names are all numbers





THE GRID SYSTEM

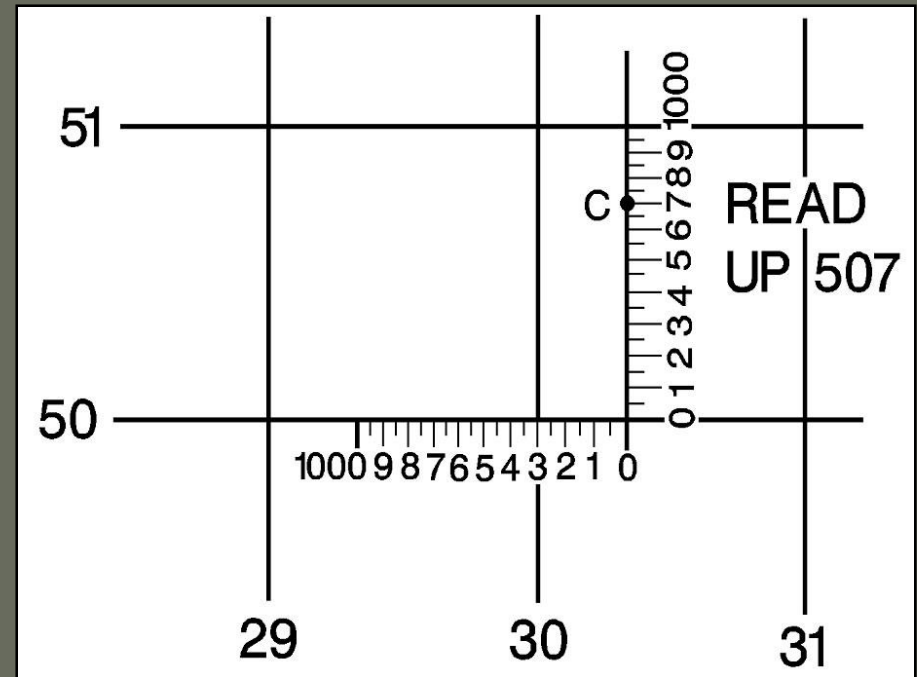
- Every tenth line is made heavier in weight
- This will help you find the line you are looking for
- Each grid line on the map has its own number





THE GRID SYSTEM

- Four digit numbers identify a 1,000 square meter grid square
- Six digits identify:
 - 100-meter grid square
- Eight digits identify:
 - 10-meter grid square

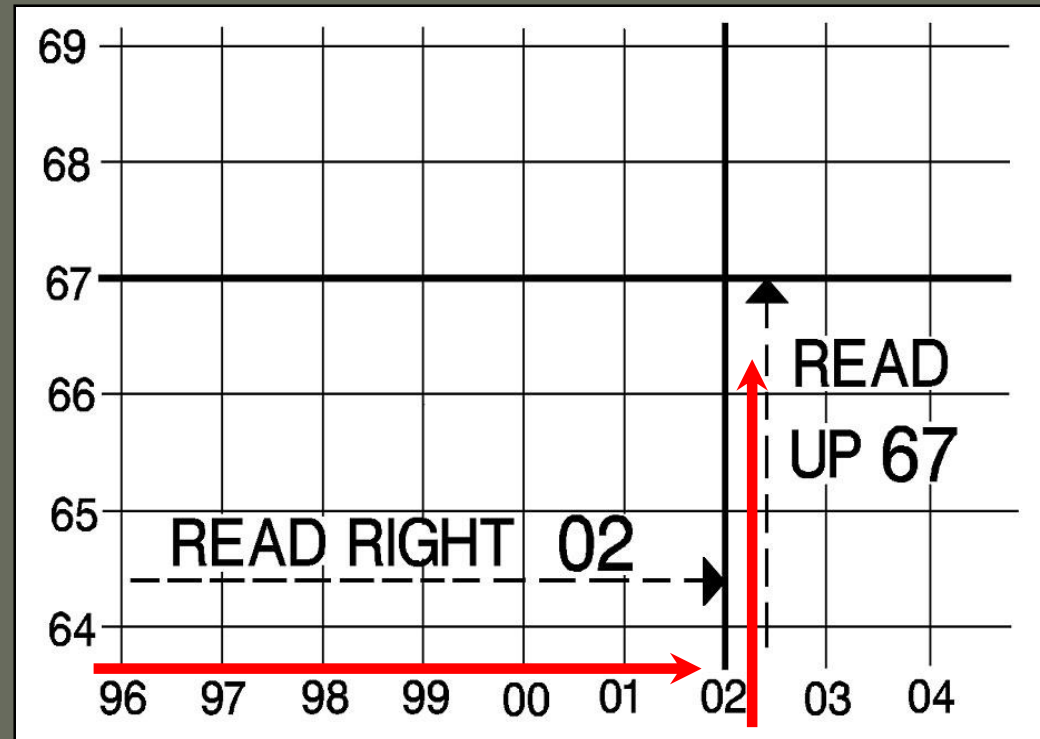




THE GRID SYSTEM



- Map Reading Rule:
 - Read Right and Up





SKILLS CHECK



SKILLS CHECK



What is located at grid coordinates?

A: 68558380

B: 64807880



SKILLS CHECK



What is located at grid coordinates?

A:68558380 Potable tank water storage

B:64807880 School, Hospital, Fence



SKILLS CHECK



What is the distance
between points A and B?



SKILLS CHECK



6,150 Meters





LENSATIC COMPASS



- The primary instrument used to determine and maintain direction during land navigation





PARTS OF THE COMPASS



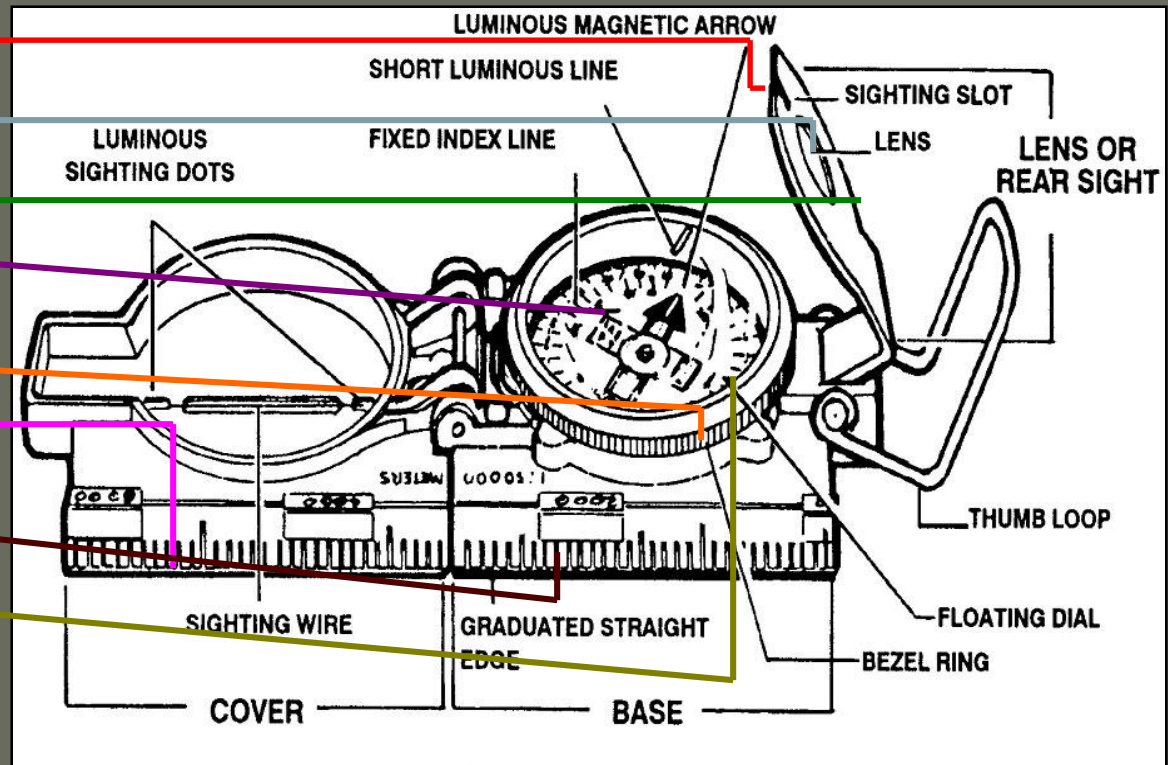
- Thumb loop
- Short Luminous line
- Luminous sighting dots
- Luminous arrow, “Magnetic North”
- Lanyard
- Sighting wire
- Graduated straight edge





PARTS OF THE COMPASS

- Sighting slot
- Lens
- Rear sight
- Fixed index line
- Bezel ring
- Cover
- Base
- Floating dial





COMPASS PRECAUTIONS



- Handle with care
- Reading should never be taken near visible masses of metal or electrical circuits





COMPASS PRECAUTIONS



- In cold weather, always carry the compass in its pouch, outside of your outer layer of clothing



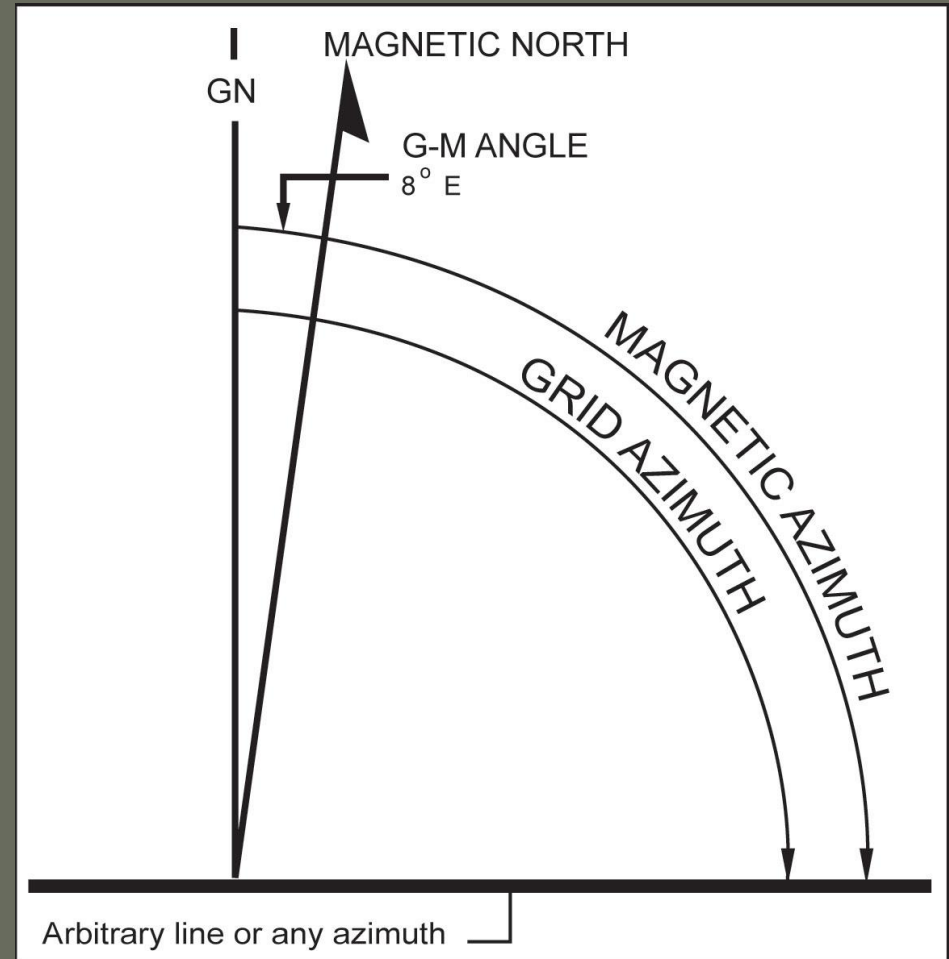


COMPASS TERMS AND CONCEPTS



- **Azimuth:**

An angle measured in a clockwise direction from a north base line





COMPASS TERMS AND CONCEPTS



- Grid Azimuth:
 - The heading due east is an azimuth of 90°
 - South = 180°
 - West = 270°
 - North = 360° or 0°
 - When using an azimuth, the point from which the azimuth originates is imagined to be the center of the azimuth circle



COMPASS TERMS AND CONCEPTS



- Obtaining A Grid Azimuth:
 - Draw a line to two points
 - Place the index of the protractor on point A
 - Ensure the base line is parallel to the north south grid lines





COMPASS TERMS AND CONCEPTS



- Obtaining A Grid Azimuth:
 - Read the inside scale
 - (Degree scale)
 - This is the grid azimuth from point A to point B





COMPASS TERMS AND CONCEPTS



- Back Azimuth:
 - The reverse direction of a forward azimuth
 - Is comparable to doing an about face
 - May be obtained by
 - Grid (protractor)
 - Magnetic (compass)





COMPASS TERMS AND CONCEPTS



- Back Azimuth:
 - To obtain a back azimuth from an azimuth less than 180° :
 - Add 180
 - If the azimuth is 180° or more:
 - Subtract 180





LAMS acronym for back azimuth

L- Less

A- Add

M- More

S- Subtract

If less then add, if more
then subtract



METHODS FOR HOLDING THE COMPASS



- The lensatic compass is used to determine or follow magnetic azimuth both day and night
- There are two recommended positions for holding the compass when navigating:
 - » Compass-to-Cheek
 - » Center Hold Position



COMPASS-TO-CHEEK METHOD



- Recommended when determining the azimuth to a distant object





CENTER-HOLD POSITION



- Recommended for a predetermined azimuth (DAY and NIGHT)





COMPASS USE AT NIGHT



- All the luminous features on the compass will be used
- One click on the bezel ring equals;
 - Three (3) Degrees





SKILLS CHECK



SKILLS CHECK



What is the grid azimuth from point A to point B?

A: 68558380

B: 64807880



SKILLS CHECK



Point A to point B?

214 Degrees

What is the BACK azimuth?



SKILLS CHECK



BACK azimuth?

$$214 - 180 = 34 \text{ Degrees}$$



SKILLS CHECK



Convert the grid azimuth of 214 Degrees to Magnetic azimuth.



SKILLS CHECK



Convert the grid azimuth of 214 Degrees to Magnetic azimuth.

$$214 - 13.5 = 200.5 \text{ Degrees}$$





ORIENTATION OF A MAP





ORIENTATION OF A MAP



- A map is oriented when it is in position with its north and south corresponding to north and south on the ground





ORIENTATION OF A MAP



- Using A Compass:
 - Keep compass horizontal
 - Place Compass straight edge parallel to a North-South grid with the cover of the compass pointing to the top of the map





ORIENTATION OF A MAP



- Without A Compass: Terrain Association
 - Find linear features common to the ground and the map
 - Roads
 - Railways
 - Fence lines
 - Power lines etc.



DETERMINING LOCATION BY MAP AND COMPASS



- Inspection and Estimation:
 - Easiest and most simple
 - Survey roads and topographical features
 - Orient map to the ground
 - Identify prominent landmarks

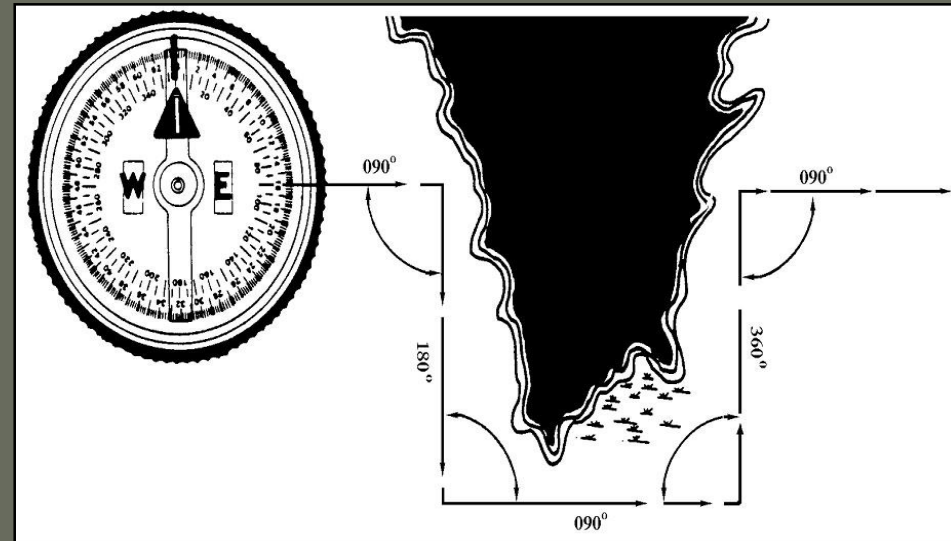




DETERMINING LOCATION BY MAP AND COMPASS



- 90° Offset Method:
 - To bypass enemy positions or obstacles and stay oriented
 - Detour around obstacle by moving in right angles, use this formula:
 - Right, add 90°
 - Left, subtract 90° (RALS)





DETERMINING LOCATION BY MAP AND COMPASS



DEMONSTRATION





DETERMINING LOCATION BY MAP AND COMPASS



PRACTICAL APPLICATION





LAND NAVIGATION





IMPROVISED EXPLOSIVE DEVICES





OVERVIEW



- Types of IEDs
- Primary Indicators
- Common Employment Techniques
- Operating in an IED Environment
- React to an IED
- Rules of Engagement
- Escalation of Force
- React to a Suicide Bomber



LEARNING OBJECTIVES



Please Read Your

Terminal Learning Objectives

And

Enabling Learning Objectives





DEFINITIONS

Improvised Explosive Device

A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals and designed to destroy, incapacitate, harass, or distract. It may incorporate military stores, but is normally devised from nonmilitary components.



IED COMPONENTS



- Casing



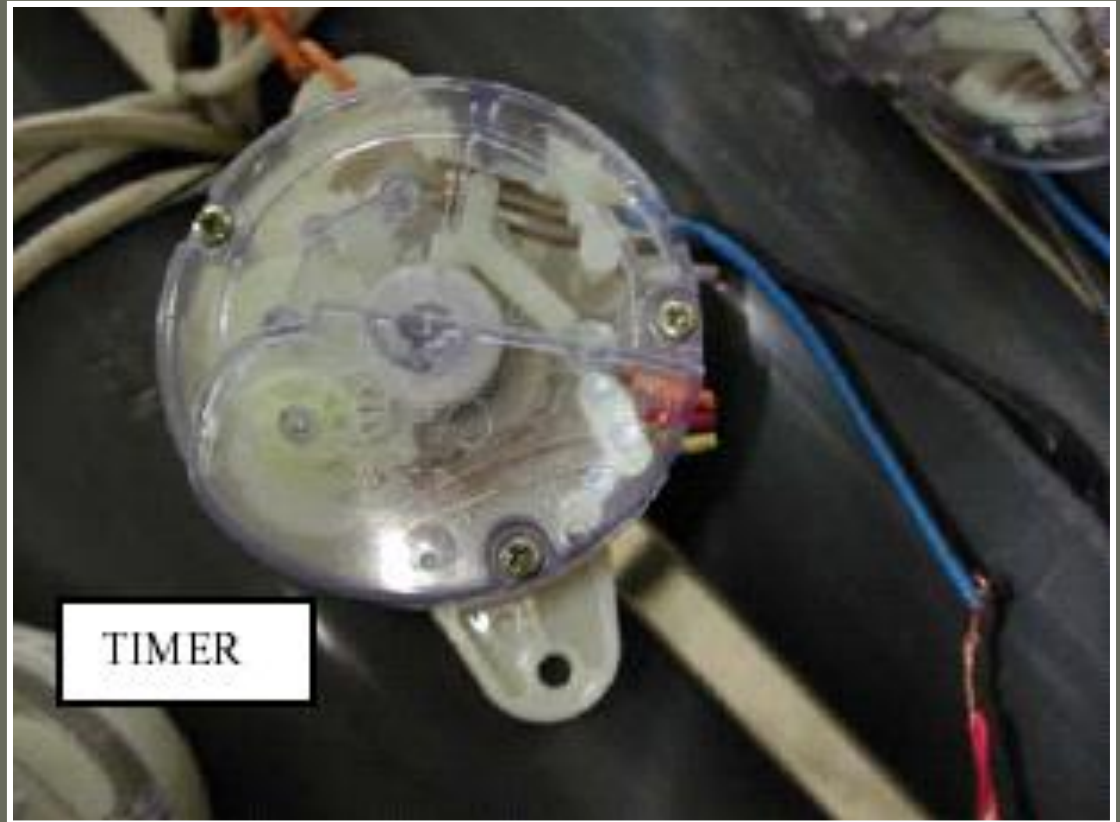


IED COMPONENTS



Initiating systems

- Time





IED COMPONENTS



- Initiating systems
 - Time
 - Command





IED COMPONENTS



- Initiating systems
 - Time
 - Command
 - Victim





IED COMPONENTS



- Main Charge
 - High Explosive
 - Most common and easiest to get a hold of
 - Usually 122mm or higher munitions
 - Provide ready made fragmentation
 - Easily made with the right training and elements



IED COMPONENTS



- Main Charge
 - Chemical
 - Any toxic chemical fabricated to kill or incapacitate
 - Types range from choking to biological
 - Possible recognition tips: odors and liquid on or near IED, dead animals and propane tanks



DEFINITION



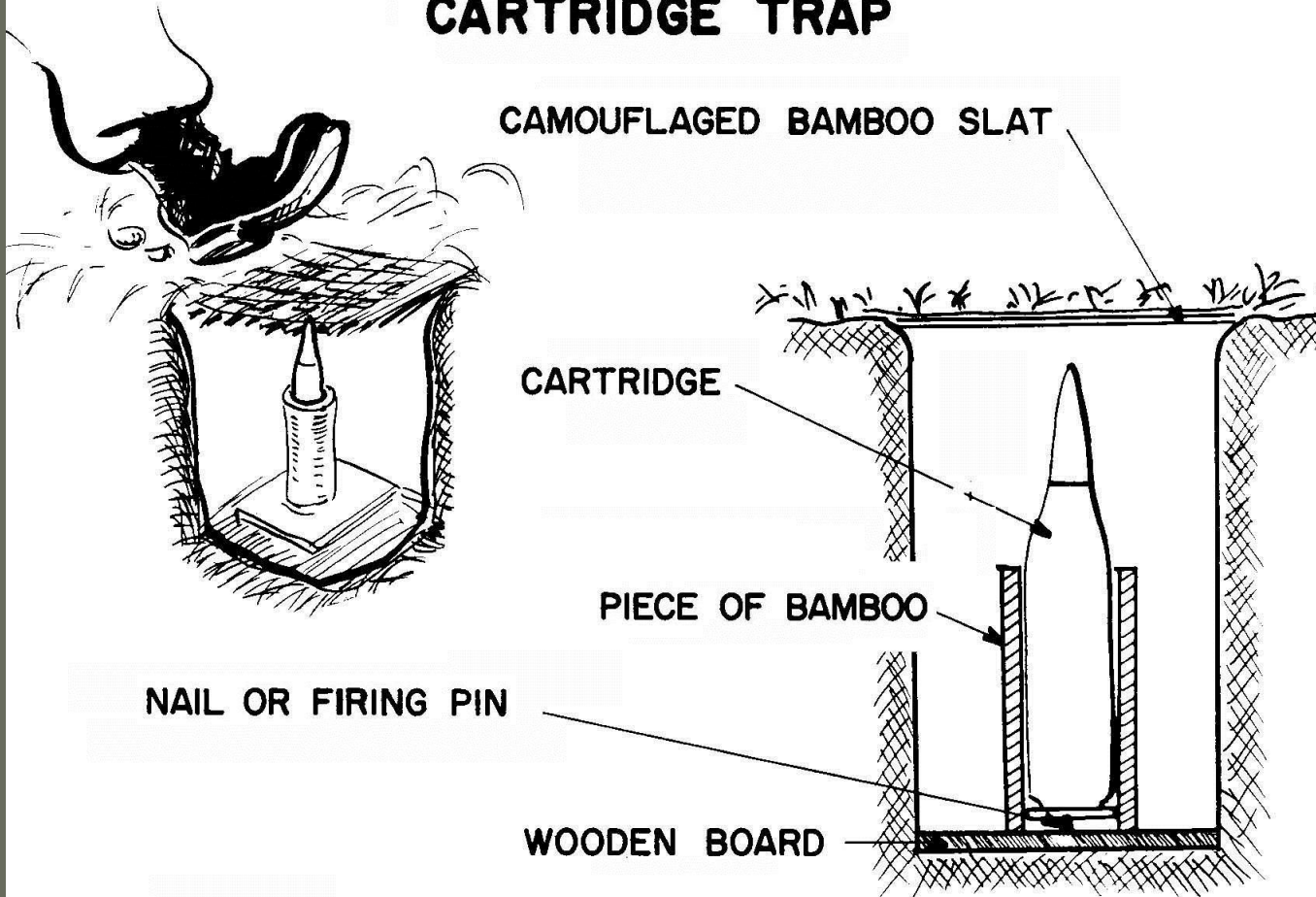
Booby Trap

An explosive or non-explosive device or other material, deliberately placed to cause casualties when an apparently harmless object is disturbed or a normally safe act is performed



BOOBY TRAP

CARTRIDGE TRAP





DEFINITION



Mine

In land mine warfare, an explosive or material, normally encased, designed to destroy or damage ground vehicles, boats, or aircraft, or designed to wound, kill, or otherwise incapacitate personnel. It may be detonated by the action of its victim, by the passage of time, or by controlled means.



FMST 306





IED DETECTION



There are numerous means of detection that can assist in locating IEDs, however the best means of detection is your personal awareness of what is going on around you.



IED DETECTION



- Primary Indicators
 - Variations in base-line (marketplace empty)





IED DETECTION



- Primary Indicators
 - Vehicles following a convoy
 - Personnel on overpasses





IED DETECTION



- Primary Indicators
 - Signals from vehicles or bystanders

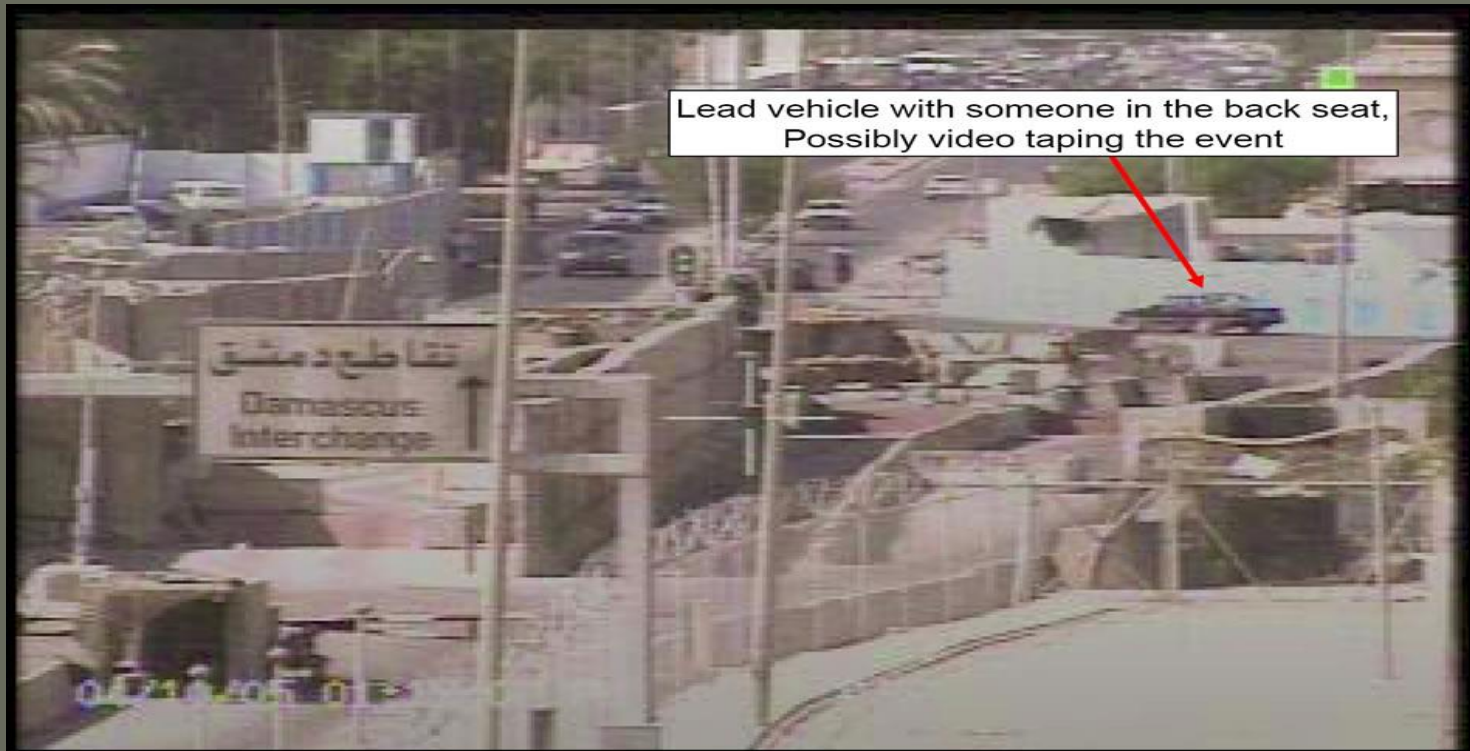




IED DETECTION



- Primary Indicators
 - People videotaping ordinary activities or military actions.





IED DETECTION



- Primary Indicators
 - Suspicious objects





IED DETECTION



- Primary Indicators
 - Markers by the side of the road





IED DETECTION



- Primary Indicators
 - New or out of place objects





IED DETECTION

- Primary Indicators
 - Graffiti symbols





IED DETECTION

- Primary Indicators
 - Signs that are new or out of place

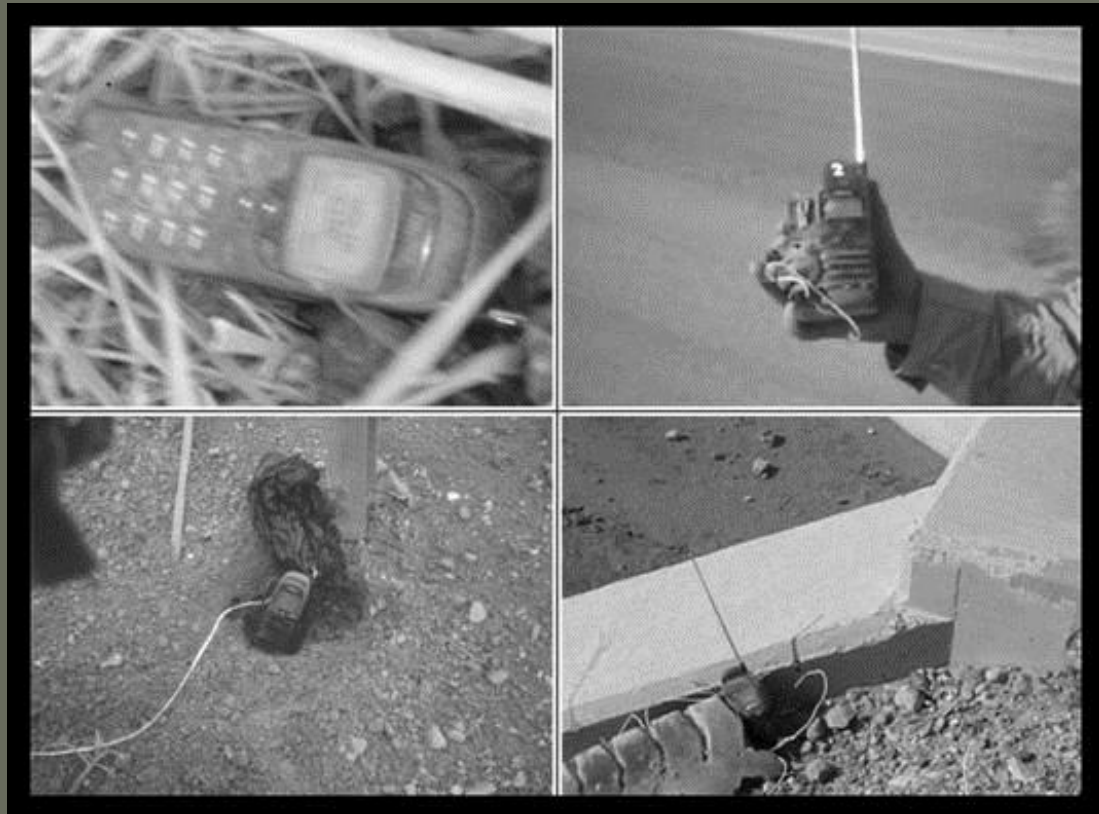




IED DETECTION



- Primary Indicators
 - Exposed antennas





IED DETECTION



- Primary Indicators
- Wires laid out in plain site





LOCATIONS OF IEDs



- Previous IED sites





LOCATIONS OF IEDs



- Frequently traveled roads





LOCATIONS OF IEDs



- Boundary turnaround points





LOCATIONS OF IEDs



- Medians, by the roadside, or buried under the surface of any type of road





LOCATIONS OF IEDs



- Trees, light posts, signs, overpasses, and elevated bridge spans





LOCATIONS OF IEDs



- Unattended vehicles

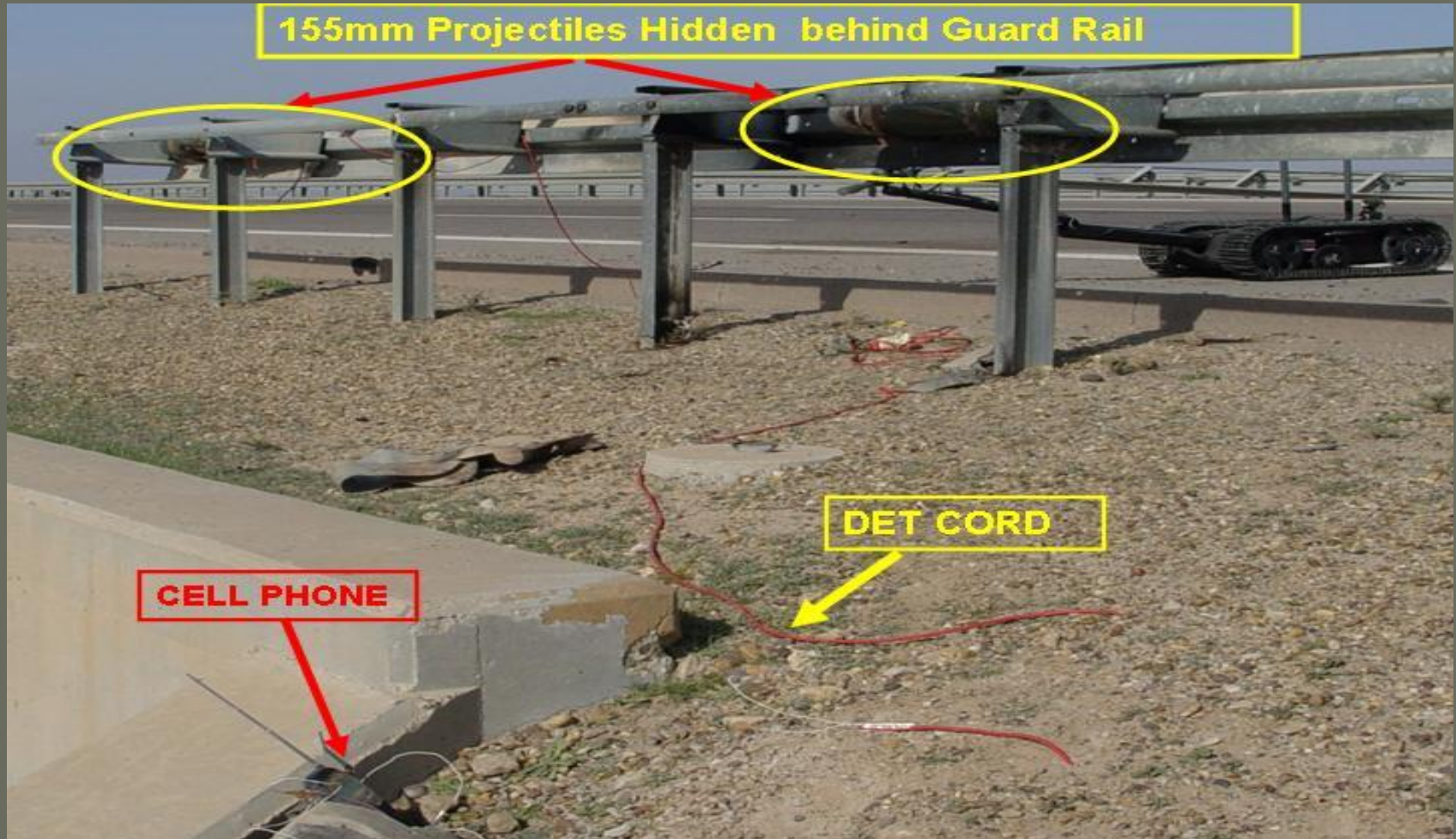




LOCATIONS OF IEDs



- Guardrails





LOCATIONS OF IEDs



- Potential incident control points





LOCATIONS OF IEDs



- Abandoned structures

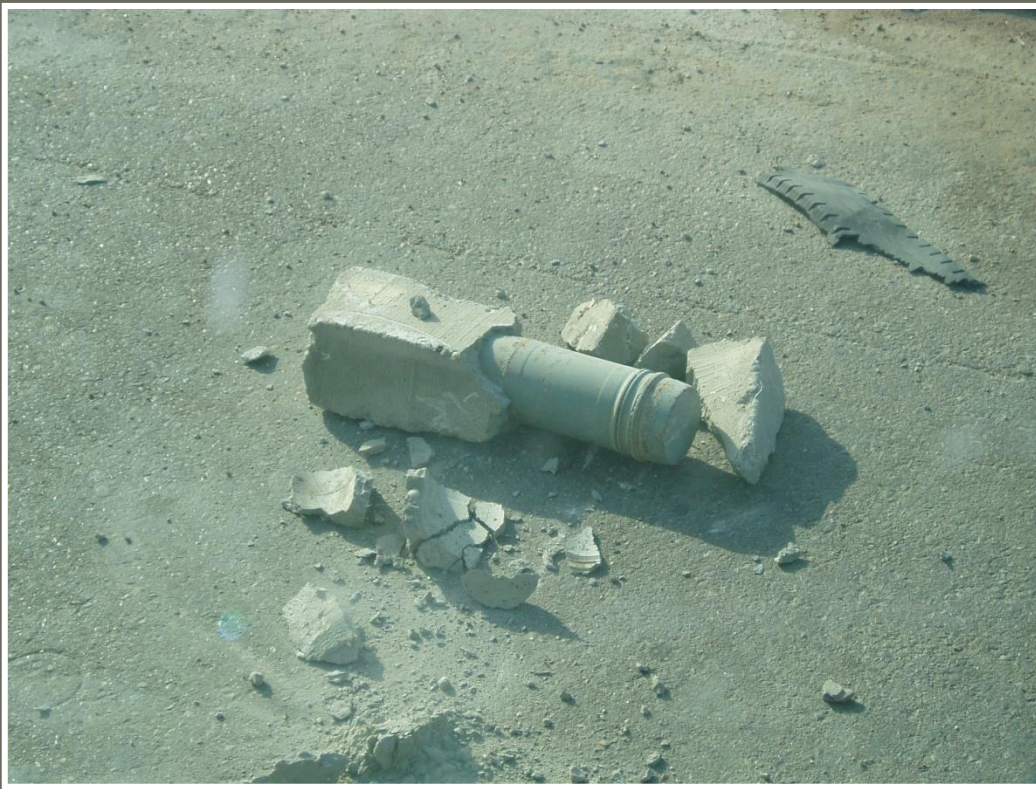




LOCATIONS OF IEDs



- Cinder blocks





LOCATIONS OF IEDs



- Animal carcasses





LOCATIONS OF IEDs



- Fake bodies/scarecrows in coalitions uniforms





LOCATIONS OF IEDs



- Edges of towns





VBIEDs



- IED delivered by any ground-based vehicle
- Typically an unattended vehicle placed in an area to cause the most damage
- Usually compromised of large amounts of explosives - 100 to 7000 pounds



SVBIED



- Driver Indicators
 - Lone male (*usually*)
 - Ignoring orders to stop, bypass checkpoint, or attempting to maneuver too close to coalition vehicles
 - Unusual appearance
 - Mid-twenties
 - Driving erratically



SVBIED



- **Vehicle Indicators**
 - Noticeable sagging
 - Additional antenna
 - Darkened or covered windows
 - Recent paint to cover alterations
 - Crudely covered holes
 - New welding marks
 - No license plates
 - Escorted security detail for type vehicle



SVBIED



- **Vehicle Indicators**
 - New tires on an old vehicle
 - Anything unusual in factory compartments
 - New or shiny bolts and or screws
 - Unusual scratches
 - Signs of tampering
 - Areas and components cleaner or dirtier than surroundings
 - Wire and tape stored in vehicle



SITUATION INDICATORS



- Camera crew “hanging out” near your area.
- Vehicle observed more than once.
- Absence of normal routine for that area of operations (AO).
- Odd traffic patterns.
- Person or persons observed conducting reconnaissance.
- Vehicle testing local defenses, i.e., drives at a high speed towards traffic control point (TCP) and then breaks off.





EMPLOYMENT TECHNIQUES



- Ever-changing
-
- Might not be set patterns

- Only limited by the imagination of enemy

- Different in any given area



EMPLOYMENT TECHNIQUES



Disguised static IEDs

- Tires, Boxes, MRE Trash, Etc..





EMPLOYMENT TECHNIQUES



Thrown or projected IEDs

- Improvised Grenades or Mortars





EMPLOYMENT TECHNIQUES



Hoax IEDs

- Include something resembling an actual IED, but have no charge or a fully functioning initiator device.





EMPLOYMENT TECHNIQUES



- More examples of attacks
 - Basic IED attack
 - “Broken down vehicle” attack
 - Coordinated attack
 - Ramming convoys
 - Motorcycles





OPERATIONS IN AN IED ENVIRONMENT



- Rehearsals Rehearsals Rehearsals
 - Base the Rehearsals off of most current intel
 - Vary Tactics, Techniques, Procedures. (TTP)
 - Updated Maps
 - Be On look out's (BOLO's)
 - Rotate Responsibilities
 - Practice Immediate Action Drills



OPERATIONS IN AN IED ENVIRONMENT



- Patrolling
 - Limit your predictability
 - Varying routes
 - Varying times of movement
 - Varying entry and exit points
 - Vary rate of march
 - Varying Movement Techniques





REACTING TO AN IED



- Counter VBIED/SVBIED techniques
 - Gunners/security: Constant awareness of approaching vehicles
 - Do not allow suspicious vehicles to approach you.
 - Know escalation of force procedures
 - Be aware of danger areas
 - Watch merging traffic
 - If **Allowing** cars to pass- Develop a technique to visually check passing cars
 - If **NOT Allowing** cars to pass- have a plan to inform civilians and know your EOF



MAINTAINING STANDOFF



(Counter VBIED/SVBIED)

- Mobile
 - Non-lethal warnings
 - Aggressive/defensive vehicle maneuvers
 - Signs in the local language on the rear of vehicle
("Stay Back, Do Not Pass")
 - Hand and arm signals with flags
 - Spotlight (nighttime)
 - Use of pen flares



MAINTAINING STANDOFF



(Counter VBIED/ SVBIED)

- Mobile
 - Lethal Warnings
 - Warning shots in a safe direction.
 - Engage vehicle with weapon, if necessary (ROE).
 - Engage the driver/occupants, if necessary (ROE).



MAINTAINING STANDOFF



(Counter VBIED/SVBIED)

- Stationary
 - Recon site prior to occupation.
 - Perform 5 to 25 meter checks upon halt.
 - Maximize distance from roadway (mine and buried IEDs may present a threat)
 - Make use of natural barriers
 - Maintain good dispersion



MAINTAINING STANDOFF



(Counter VBIED/SVBIED)

- Stationary
 - Quickly establish overt perimeter:
 - Cones
 - Barbed wire
 - Signs
 - Road spikes



MAINTAINING STANDOFF



(Counter VBIED/SVBIED)

- Stationary
 - Establish overwatch of primary position
 - Defend in depth
 - Position electronic countermeasure (ECM) devices for maximum coverage
 - Keep roads clear of civilian vehicles



ACTIONS TAKEN AT HALTS



- Maintain dispersion
 - Avoid clustering vehicles
 - Vary the vehicle interval between elements
 - Improve your position

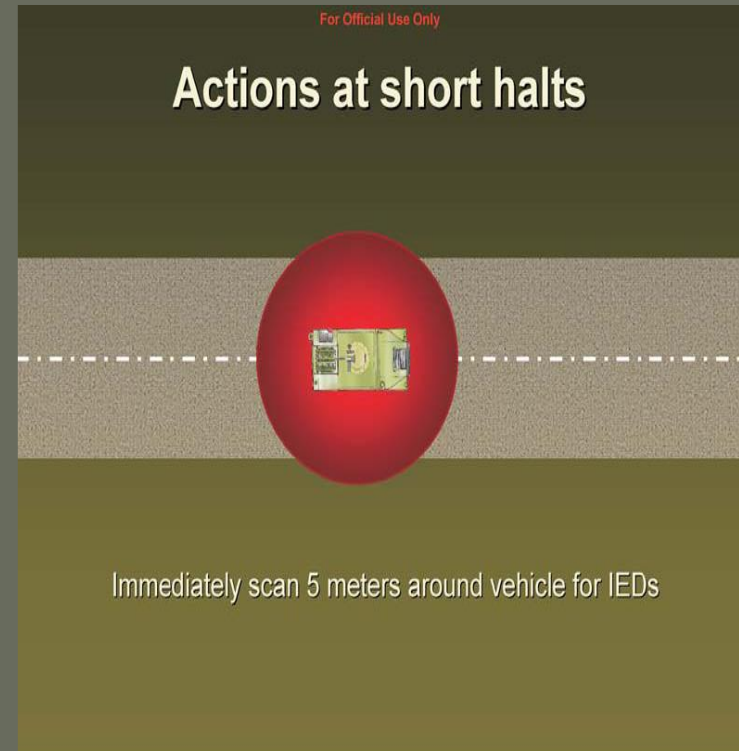
Most importantly, DO NOT remain at one site too long



5 TO 25 METER HALTS



- 5 meter checks
 - Visually ID position to halt
 - Visually check 5 meters out
 - Look for anything suspicious
 - Start at ground level
 - Armored vehicle-stay mounted
 - Conducted whenever stopped

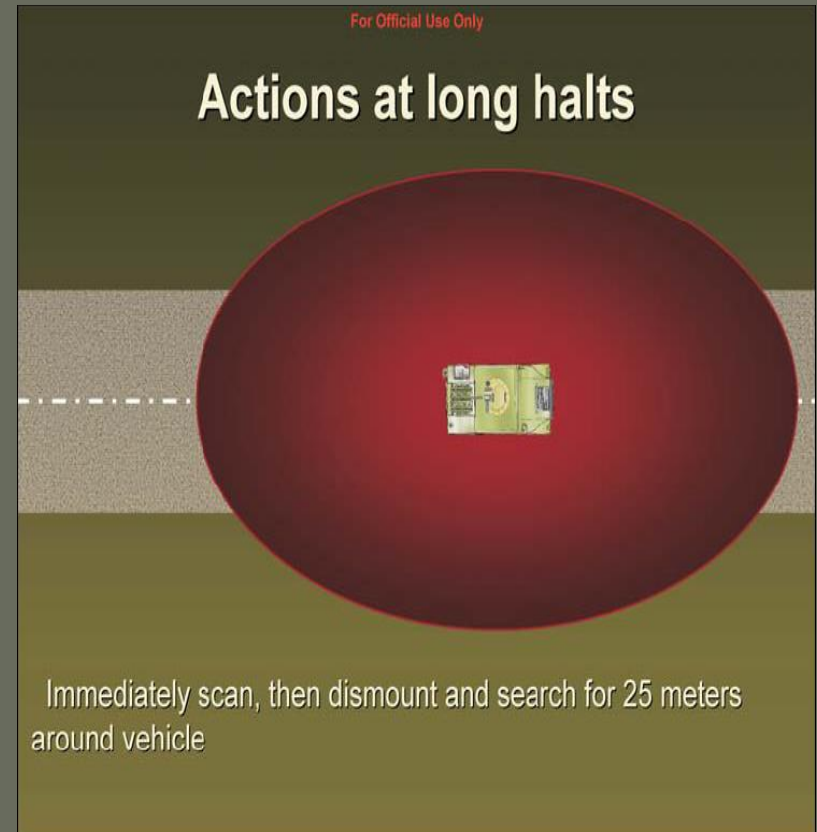




5 TO 25 METER HALTS



- 25 meter check
 - Once 5 meter checks are done
continue out to 25
 - Conduct physical search for
25 meter radius
 - Look for anything out of the
ordinary





ACTIONS ON CONTACT



(Before Detonation)

- You have just disrupted the enemy's attack
- Do not forget about the enemy's other forms of attack, RPGs, small arms fire, mortars, and secondary IED
- IED site = Enemy ambush site



ACTIONS ON CONTACT



- Training on basic tactics, techniques, and procedures (TTP) will enable you and your unit to win an engagement
- **The Five "C's"**
 - Confirm
 - Clear
 - Call/check
 - Cordon
 - Control



ACTIONS ON CONTACT



- **The Five "C's"**

- **Confirm**

- Confirm suspicion of device
- Maintain safe distance
- Use cover/defilade
- Use all tools at your disposal
 - OPTICS
- **WHEN IN DOUBT- back away**



ACTIONS ON CONTACT



- The Five "C's"
 - Confirm
 - Clear
 - Clear the area
 - Evacuate to 300 meters (minimum)
 - Sweep
 - Question anyone in the area



ACTIONS ON CONTACT



- The Five "C's"
 - Confirm
 - Clear
 - Call/check
 - Explosive Hazard 9 Line Report
 - Look for secondary devices



ACTIONS ON CONTACT



- Explosive Hazard 9 Line Report
 - LINE 1. DTG
 - LINE 2. location: Unit and 10 digit grid location of the IED/UXO.
 - LINE 3. Contact method:
 - LINE 4. Type of ordinance:
 - LINE 5. NBC contaminations:
 - LINE 6. Resources threatened:
 - LINE 7. Impact on mission
 - LINE 8. Protective measures:
 - LINE 9. Recommended priority: Immediate, indirect, minor, no threat.



ACTIONS ON CONTACT



- **The Five "C's"**

- Confirm
- Clear
- Call/check
- Cordon
 - 360 degree security around site
 - Check again for secondary devices
 - Check people leaving the area
 - Establish obstacles



ACTIONS ON CONTACT



- **The Five "C's"**
 - Confirm
 - Clear
 - Call/check
 - Cordon
 - Control
 - Control the site until EOD arrives
 - Don't allow people to "inspect" the IED
 - Contingency plans in case of ambush



IED DETONATION



- Team members should be cross-trained on other patrol member's duties
- Units should be proficient in actions on contact
- Focus on Five C's (They still apply)



IED DETONATION



- Quick, lethal and aggressive response → (ROE)
- Immediately scan outward.
- Move out of kill zone
- Report situation
- Treat/Evacuate casualties
- Search for/Clear additional IEDs (5 to 25)
 - At the new location (5 to 25)
 - At the location where the vehicle is disabled (5 to 25)
- Expect follow on attacks



IED DETONATION



- Report contact to personnel internal to patrol/convoy; gain situational awareness
- Evacuate disabled vehicles and personnel clear kill zone
- Area, Secure the area
- Clear the kill zone
- Treat casualties
- Establish CCP and LZ away from kill zone
- Report/recover : as required



CHEMICAL IED



- Move upwind
- Assume proper MOPP level
- Conduct all necessary NBC reports and procedures.
- Best indicators come from Marines' sense of sight and smell.



WHAT NOT TO DO



- NEVER approach a suspected IED
- DO NOT pick up detonating cord
- DO NOT directly trace command wires
 - Use the “S” pattern





RULES OF ENGAGEMENT



- Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagements with other forces encountered.





ESCALATION OF FORCE



- Assist Marines and Sailors in the application of force consistent with the ROE
- EoF principles leverage available force options (lethal and non-lethal) to set the conditions for desired outcomes
- Are NOT limitations of self-defense, and do NOT apply to Declared Hostile Forces



ESCALATION OF FORCE



- Is not a step-by-step process, but provides a range of options
- Unit Commanders have the inherent right to apply self-defense in response to a hostile act or demonstrated hostile intent to protect his Marines and Sailors



ESCALATION OF FORCE



- Daylight signaling procedures
 - Signs in local language
 - Bullhorn
 - Colored flags or paddles
 - Pop-up flares
 - Warning shots
 - Disabling shots
 - Lethal shots



ESCALATION OF FORCE

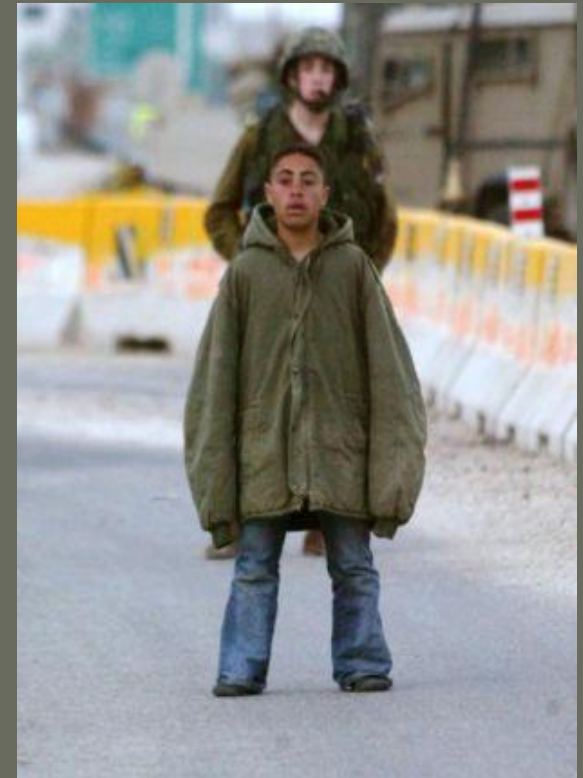


- Night and limited visibility signaling procedures
 - Spotlights
 - Pop-up flares
 - Warning shots
 - Disabling shots
 - Lethal shots





SUICIDE BOMBERS (PBIED)





SUICIDE BOMBERS (PBIED)



- Amount of explosives vary, usually will be 12 pounds but can be as much as 45
- Fragmentation producing materials are often incorporated into the design of the belts



SUICIDE BOMBERS (PBIED)



- Indicators
 - Deliberately ignores orders to stop or attempts to bypass security
 - Too much clothing for the weather
 - Suspicious bulges in clothing or carrying bags/cases
 - Handling wires, switches, actuators, or a “dead man’s” switch



SUICIDE BOMBERS (PBIED)



- Defensive Actions
 - Evacuate the area immediately
 - Do NOT attempt to “close and negotiate”
 - Be aware of potential “fail safe” devices
 - Know the dangers of shooting at a suicide bomber
 - If suspect is neutralized and there is no explosion, do not administer first aid





IMPROVISED EXPLOSIVE DEVICES





M50 FIELD PROTECTIVE MASK





OVERVIEW



- Components
- Disassembly
- Assembly
- Fitting
- Don & Clear
- Maintain the Gas Mask





LEARNING OBJECTIVES



Please Read Your
Terminal Learning Objectives
And
Enabling Learning Objectives





COMPONENTS





COMPONENTS



Characteristics

- Protects the wearer against
 - Chemical agents
 - Biological agents
 - Radiological fallout
- Will NOT protect wearer against industrial gases
 - Ammonia
 - Carbon monoxide



COMPONENTS



Characteristics

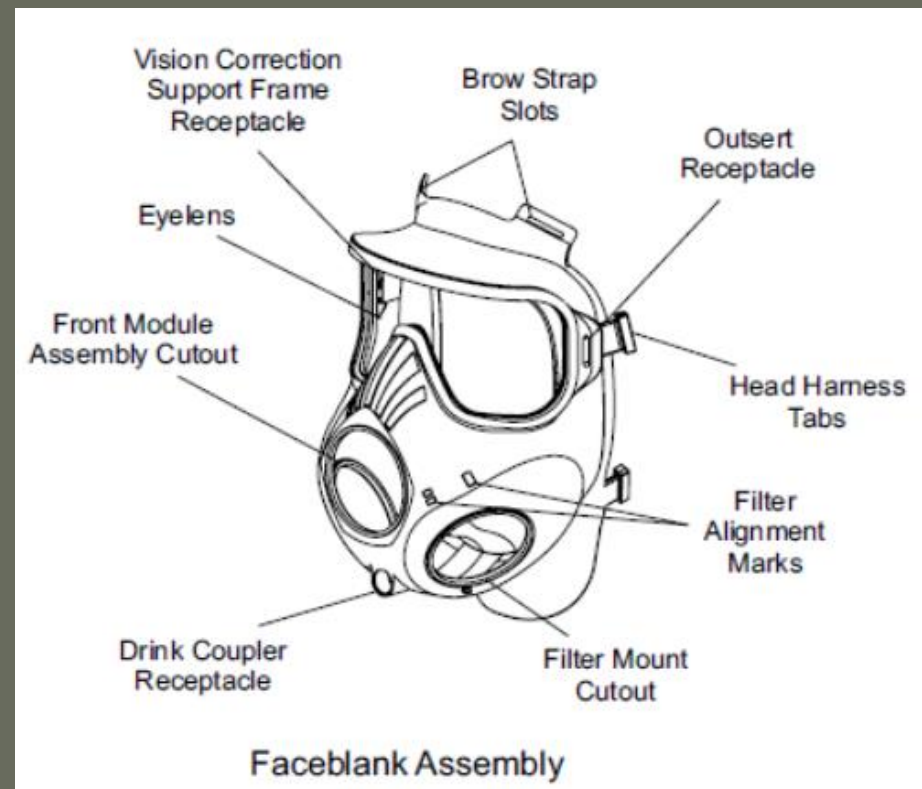
- Allows wearer the capability to drink water while worn
- Comes in three sizes, marked top left of mask
 - SMALL
 - MEDIUM
 - LARGE



COMPONENTS



- FACEPIECE ASSEMBLY
 - Butyl/silicone rubber faceblank
 - Foundation of the mask

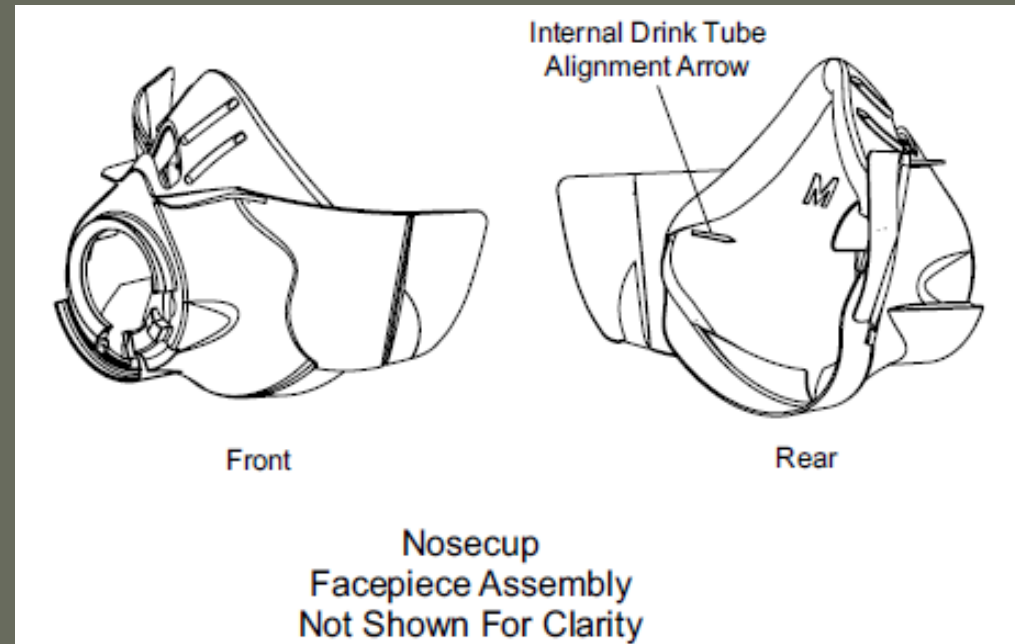




COMPONENTS



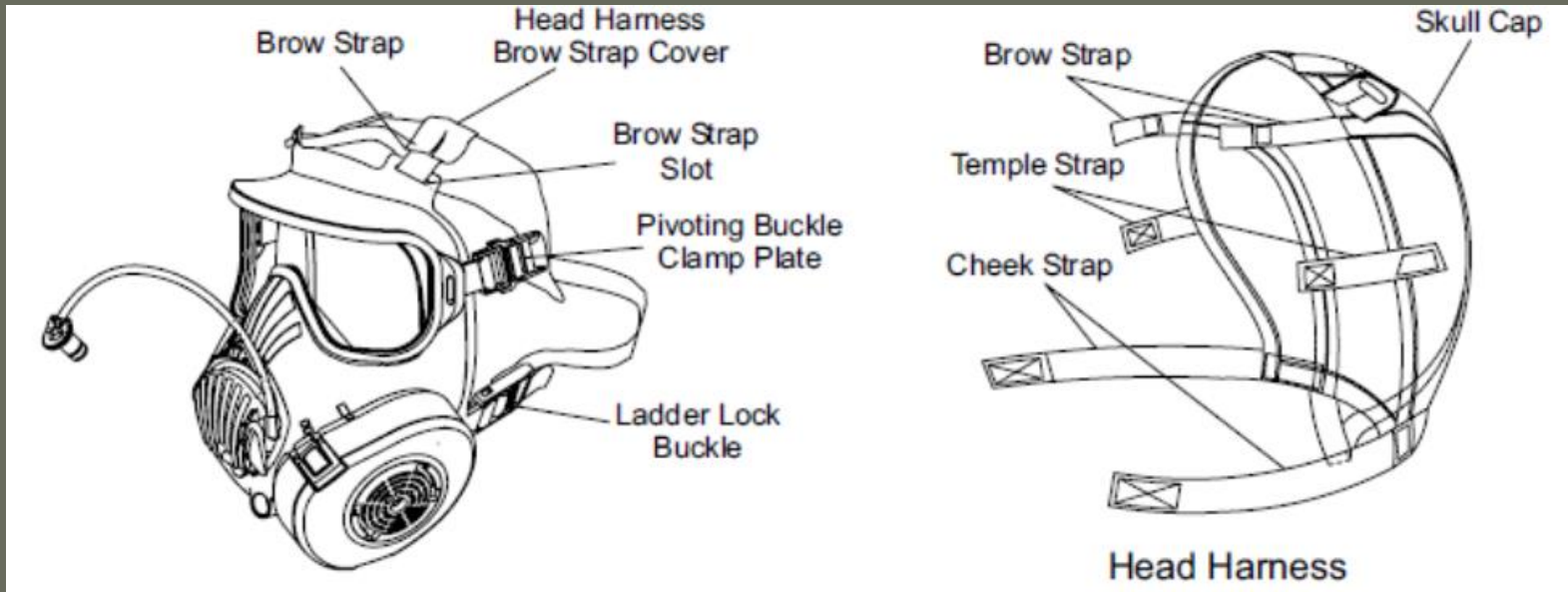
- NOSE CUP ASSEMBLY
 - Made of injection molded silicone rubber
 - Assists in air flow through mask
 - Size located on left interior side





COMPONENTS

- HEAD HARNESS
 - Constructed of elastic side straps and skull cap

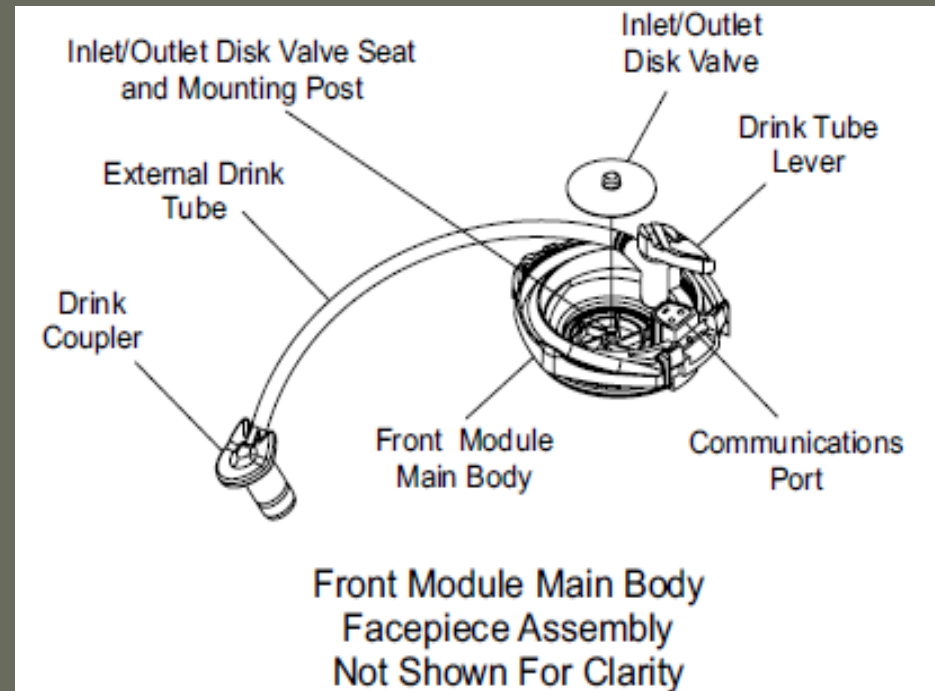




COMPONENTS



- FRONT MODULE
 - Plastic housing that integrates:
 - Inlet/Outlet disk valve
 - Drink system components
 - Communications port



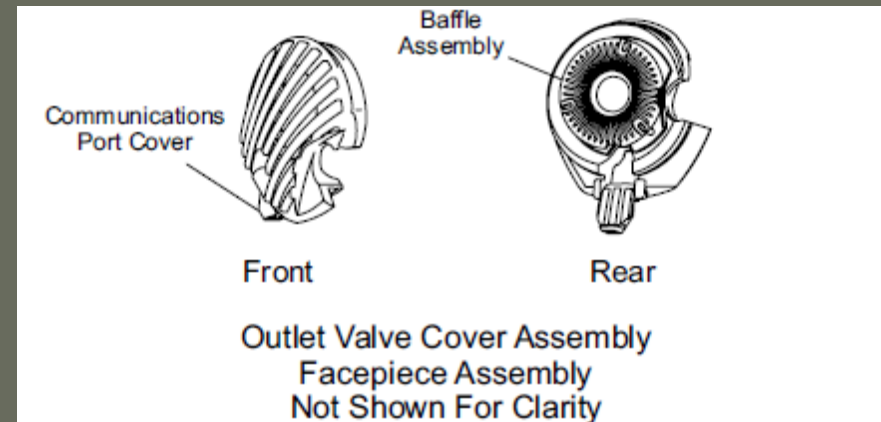


COMPONENTS



- OUTER VALVE COVER ASSEMBLY

- Fits over front module main body
- Protects drinking system and communications port
- Provides a direct speech capability

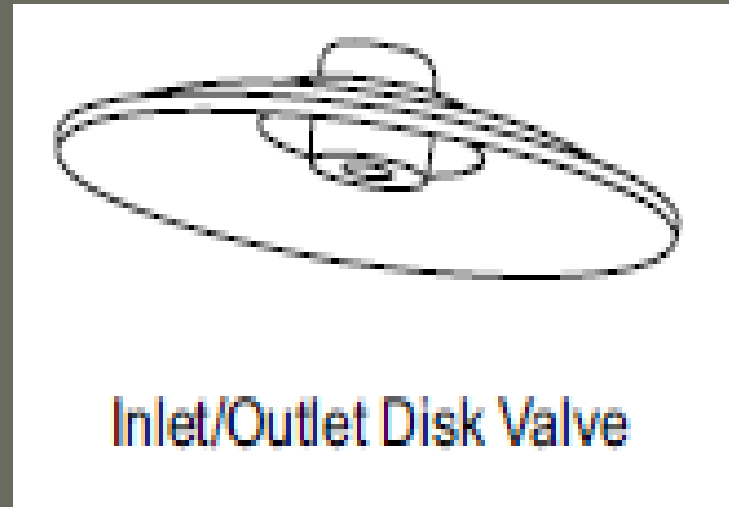




COMPONENTS



- Inlet/Outlet Disk Valve
 - 3 Inlet/outlet disk valves in facepiece assembly
 - Outlet disk releases exhaled air
 - Inlet disks permit filtered air into mask
 - Disks are black for identification purposes





COMPONENTS



- SELF-SEALING DISK VALVE
 - 2 self-sealing disk valves in facepiece assembly
 - Opened by properly attached filter
 - Prevents unfiltered air from entering mask
 - Clear in color for identification purposes

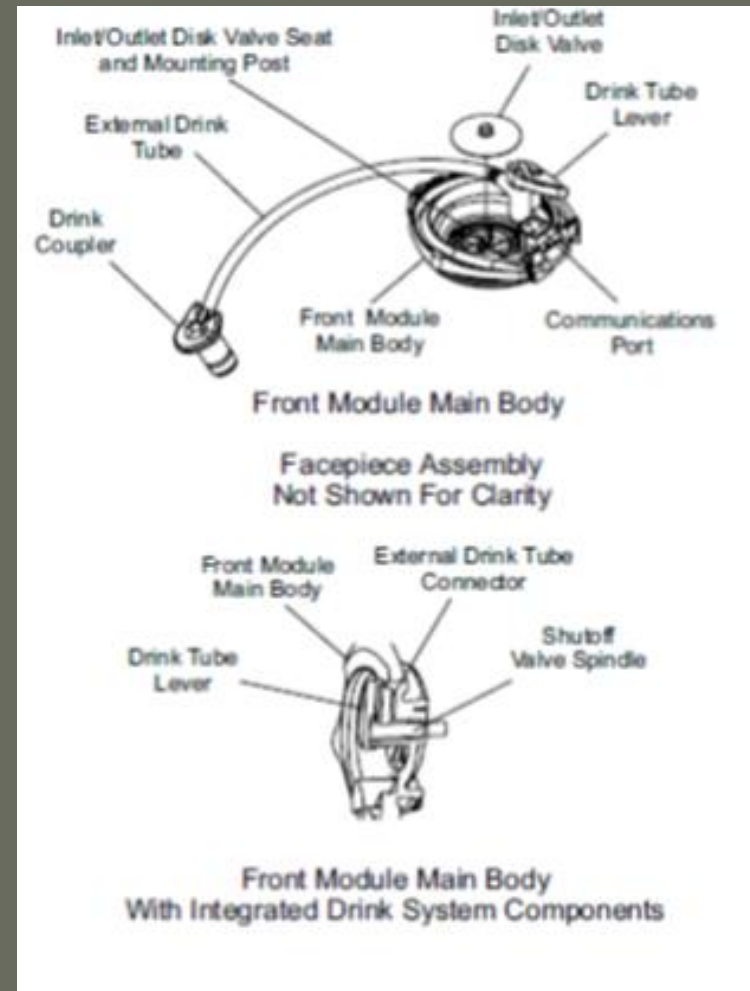




COMPONENTS



- DRINKING SYSTEM
 - Integrated into the mask
 - External tube with coupler to link to canteen
 - Internal drink tube inside of mask
 - Lever opens shutoff valve and swings internal drink tube

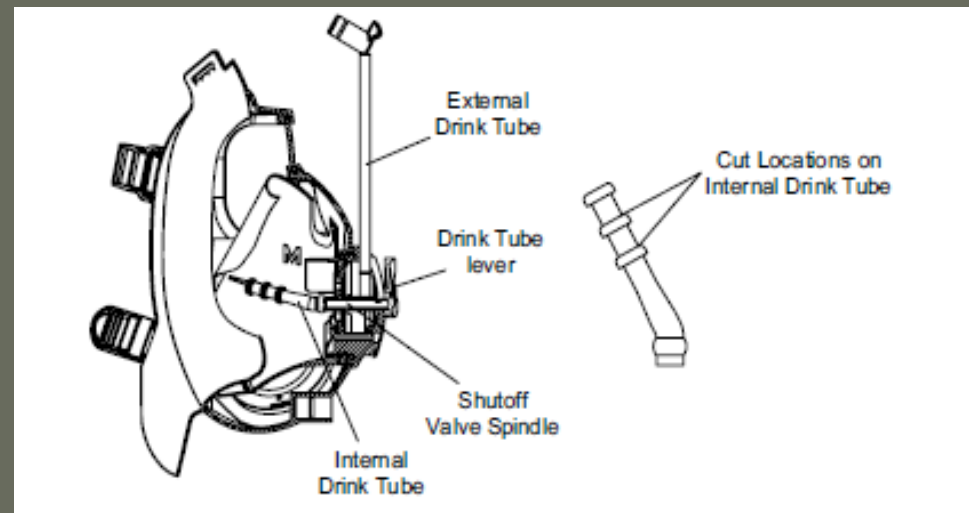




COMPONENTS



- INTERNAL DRINK TUBE
 - Attached directly to shutoff valve spindle
 - Length of tube can be cut to fit individual

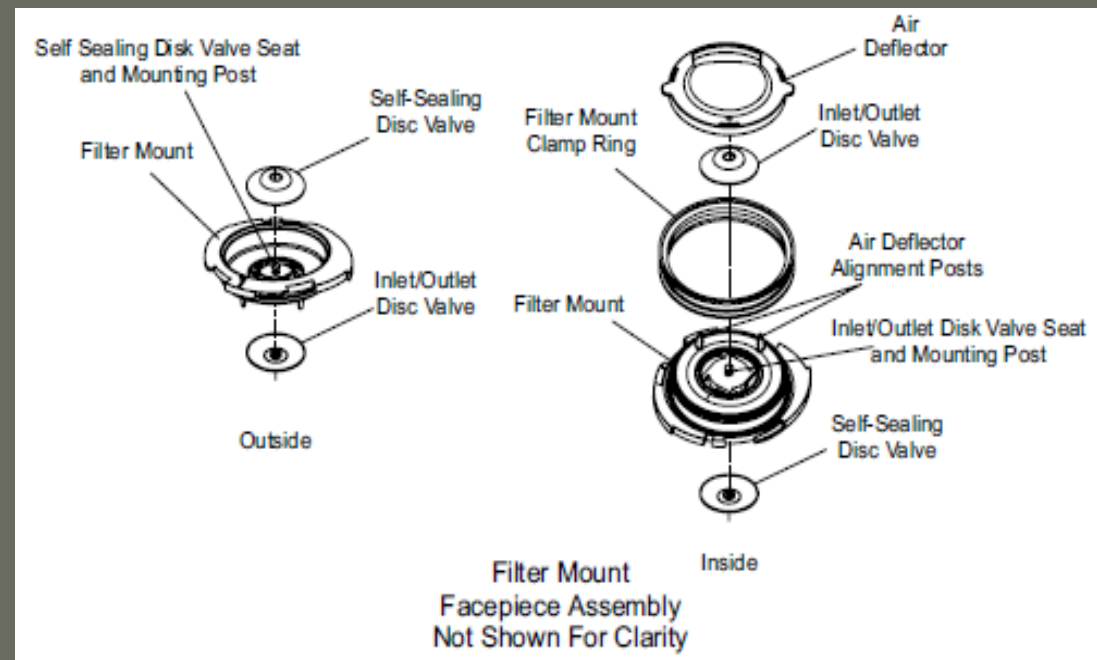




COMPONENTS



- FILTER MOUNTS
 - Designed to allow quick installation of filters
 - Integrates disk valves and air deflectors





COMPONENTS

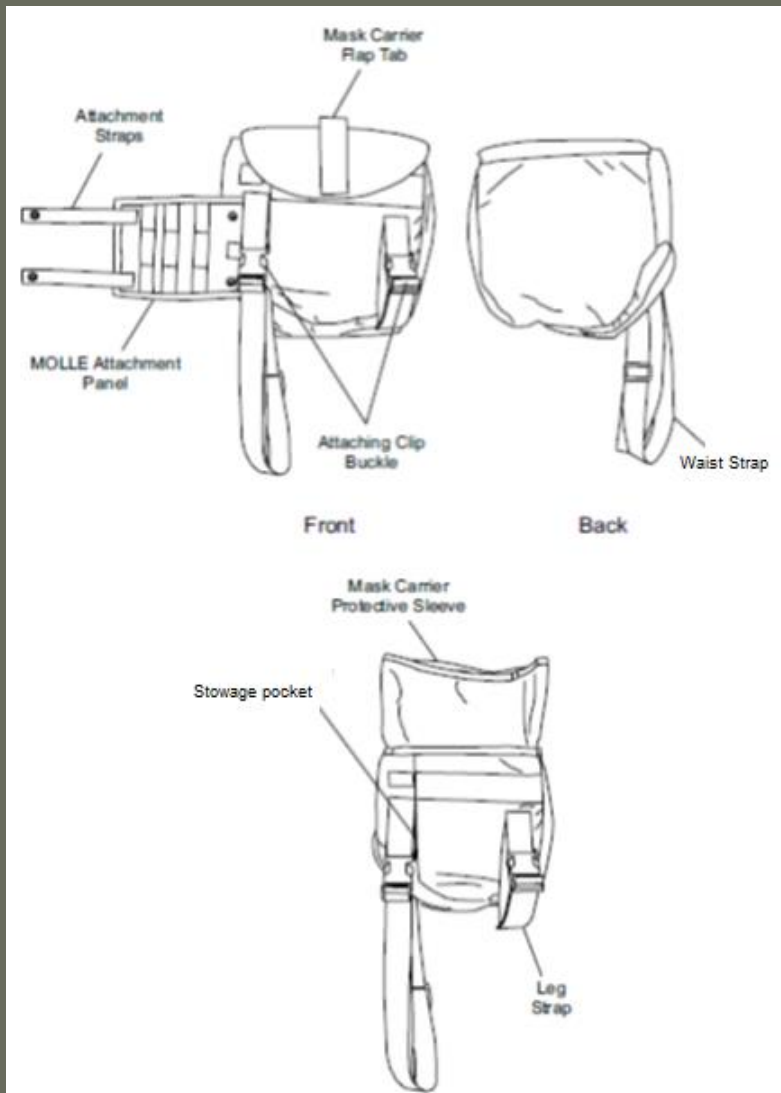


- AIR DEFLECTORS
 - Direct filtered incoming air
 - Assist in eyelens defogging





COMPONENTS

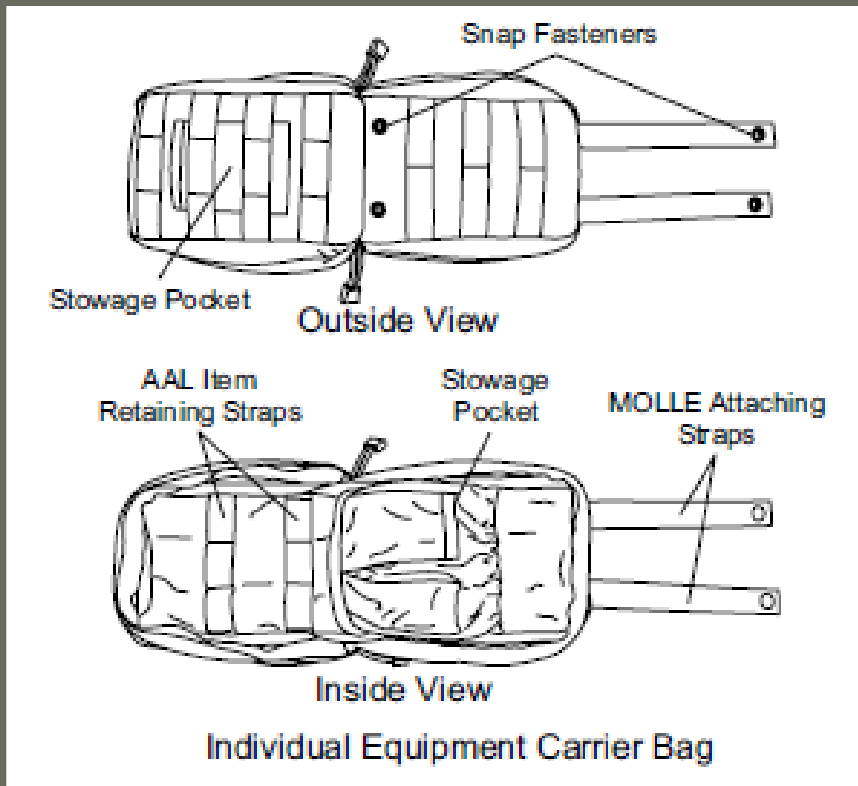


- MASK CARRIER
 - Provides for storage and carriage of M50FPM and components
 - Protective sleeve within carrier protects mask



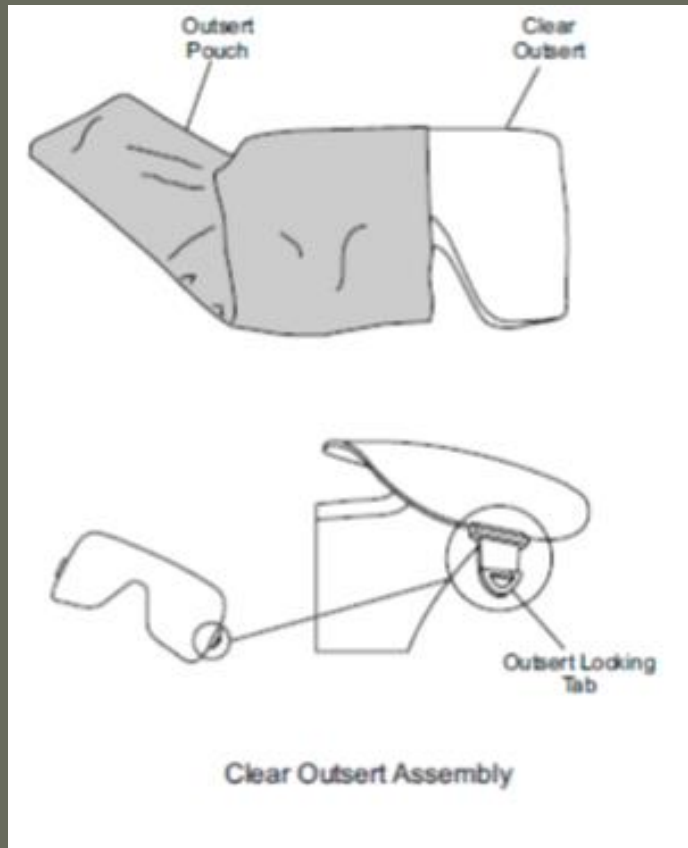
COMPONENTS

- **INDIVIDUAL EQUIPMENT CARRIER BAG**
 - Provides for storage of select items





COMPONENTS

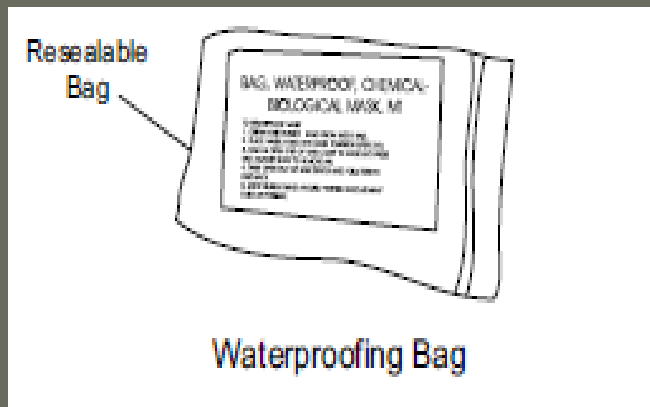


- CLEAR OUTSERT ASSEMBLY
 - Protects eyelens from scratches and damage
 - Issued with an outsert pouch which can be used to clean the mask
 - Stowed attached to mask



COMPONENTS

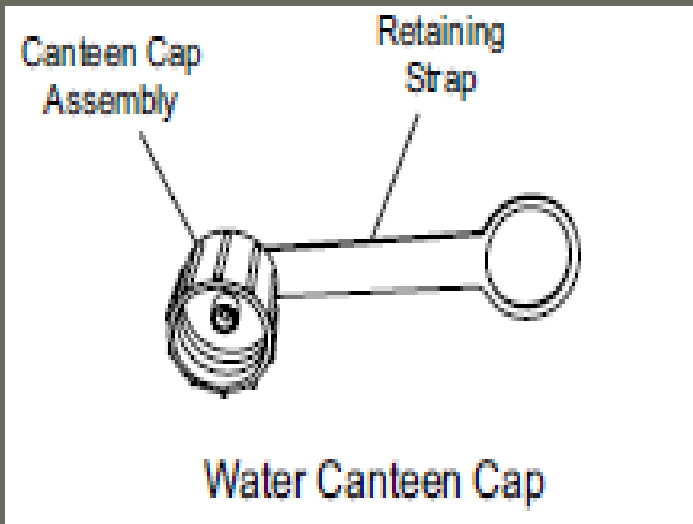
- WATERPROOFING BAG
 - Used to keep mask dry
 - WARNING: DO NOT PLACE FOOD IN BAG
 - Food may become contaminated and cause illness or death





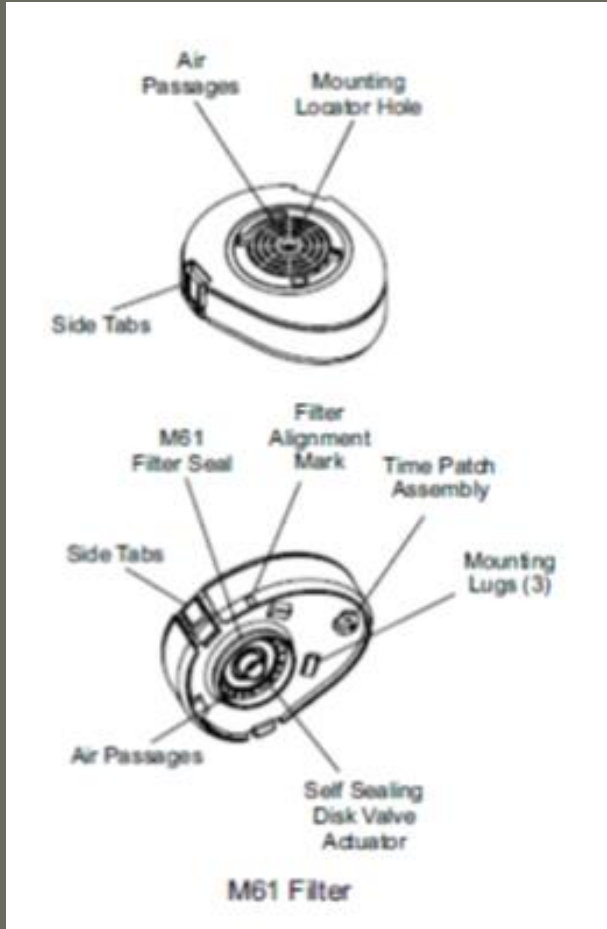
COMPONENTS

- WATER CANTEEN CAP
 - Replaces the M1 canteen cap
 - Provides capability to connect the drink coupler





COMPONENTS

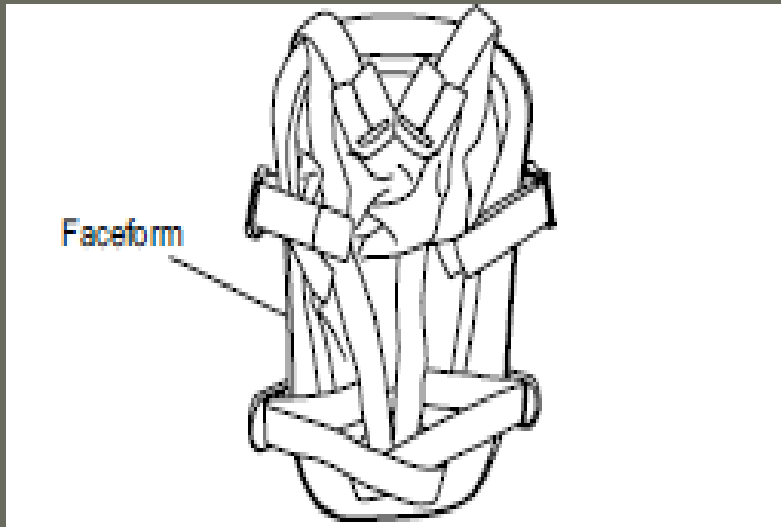


- M61 FILTERS
 - Contain activated carbon media and particulate filter
 - Twin filters, one on each side of mask
 - Sealed and packaged filters have a 5 year shelf life
 - Time patch to indicate unserviceable filters



COMPONENTS

- FACEFORM
 - Placed in the mask to minimize deformation
 - Used whenever storing mask assembly >30 days

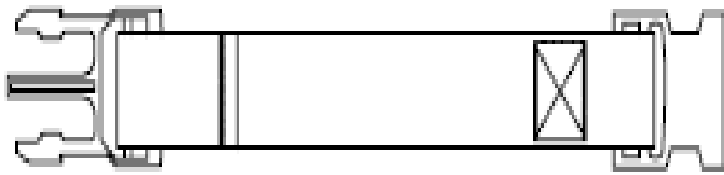


STUDENT NOTE:
DO NOT discard the
faceform



COMPONENTS

- MASK CARRIER EXTENSION STRAP



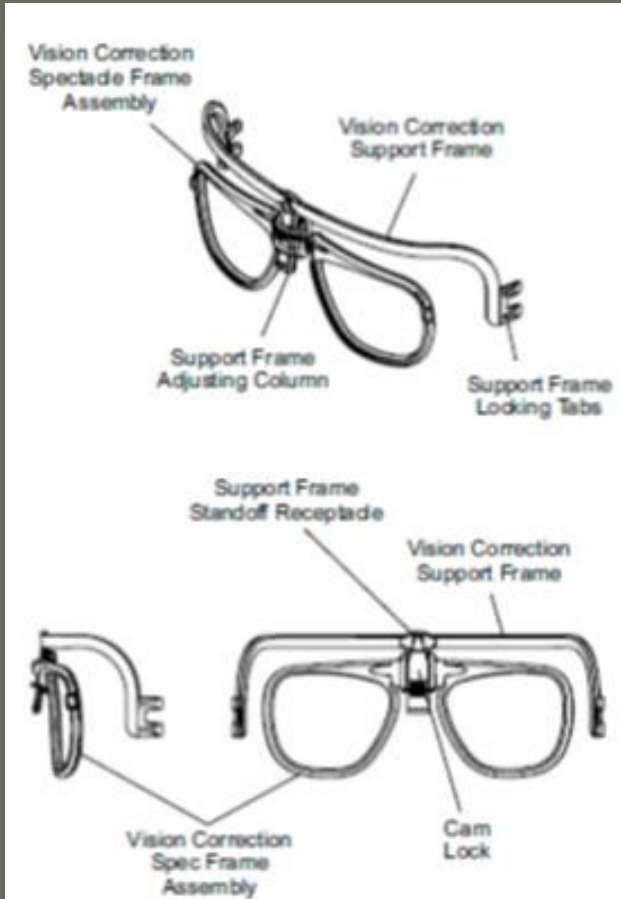
Mask Carrier Extension Strap

- Used to extend leg strap

- Facilitates shoulder carry configuration



COMPONENTS



- VISION CORRECTION ASSEMBLY
 - Vision Support Frame attaches to inside of mask
 - Vision Correction Spectacles can be adjusted to fit individual





DISASSEMBLE THE M50 MASK



DISASSEMBLE THE M50 MASK



1. Remove clear/sunlight/laser outserts.
 - Grasp the top and bottom of the outsert with both hands
 - Gently rotate the bottom of the outsert up and away from the face piece assembly



DISASSEMBLE THE M50 MASK



2. Remove outlet valve cover

- Remove drink tube couple from receptacle
- Unwrap external drink tube
- Turn the drink tube lever to a horizontal position
- Grasp outlet valve cover from underneath the communications port and lift



DISASSEMBLE THE M50 MASK



3. Remove outlet valve disk

- Pinch center of the outlet disk valve between thumb and middle finger
- Pull gently away from the mounting post



DISASSEMBLE THE M50 MASK



4. Remove M61 Filters

- Grip the filter side tabs on the M61 Filter and squeeze inward
- Twist the filter towards the front of the mask, and lift it from the filter mount



DISASSEMBLE THE M50 MASK



STUDENT NOTE

- Filters DO NOT decontaminate or neutralize contamination
- Contaminated filters are hazardous



DISASSEMBLE THE M50 MASK



5. Remove self-sealing disk valves

- Pinch the center of the self-sealing disk valve
- Pull gently away from the mounting post



DISASSEMBLE THE M50 MASK



6. Remove Internal Drink Tube

- Turn drink tube lever on front module assembly upward
- Grasp internal drink tube and firmly pull
- Turn drink tube lever downward to place internal drink tube coupler in stowed position



DISASSEMBLE THE M50 MASK



7. Remove air deflectors

- Reach into facepiece and move the nosecup to one side exposing the air deflector
- Gently pull the air deflector off the filter mount clamp ring exposing the inlet disk valve
- Repeat on the other side



DISASSEMBLE THE M50 MASK



8. Remove inlet valve disks

- Pinch valve gently with thumb and middle finger
- Pull gently away from the mounting post



DISASSEMBLE THE M50 MASK



9. Remove head harness

- Undo the two brow strap hook and pile fasteners at the top of the harness skullcap
- Pull the brow straps through the slots
- Lift the clamp plates of the pivoting buckles and pull the temple straps through and out of the buckles
- Remove the cheek straps





ASSEMBLE THE M50 MASK



ASSEMBLE THE M50 MASK



1. Install head harness

- Install brow straps first
- Temple straps second
- Cheek straps are final straps to be installed
- Head harness should sit centered



ASSEMBLE THE M50 MASK



2. Install inlet disk valves

- Check that disk valve and seat are clean
- Fold back the nosecup to expose center hole of the filter mount assembly
- Position the outlet disk valve
- Gently press the center of the disk until fully seated on the mounting post



ASSEMBLE THE M50 MASK



3. Install air deflectors

- Move nosecup and position air deflector over filter mount clamp ring, ensure air deflector is aligned over the alignment posts and press



**Filter mount clamp ring
alignment post**



ASSEMBLE THE M50 MASK



4. Install internal drinking tube.

- Turn drink tube lever on front module assembly upward
- Install drink tube on tube coupler and press
- Adjust to fit
- Place internal drink tube in stowed position
- Check for proper alignment



ASSEMBLE THE M50 MASK



5. Install self-sealing disk valves

- Check the valve seat and valve mounting post for cleanliness and damage
- Position self-sealing disk valve on mounting post
- Gently press the center of the disk until seated on post



ASSEMBLE THE M50 MASK



6. Install M61 Filters

- Pick up the filter with the side tabs facing toward the bottom
- Align the filter alignment tab with marking on the facepiece assembly and press until the filter is snug against the mask
- While pressing, turn toward the back until tabs click



ASSEMBLE THE M50 MASK



Ensure a self-sealing disk function check is performed after replacement of the disk valves:

- Place mask snug against the face
- Remove either the left or right M61 Filter
- Place hand over the filter air inlet passages
- Inhale, mask should collapse against your face
- Replace filter and check other side



ASSEMBLE THE M50 MASK



7. Install outlet disk valve

- Visually inspect the disk
- Align over the valve mounting post
- Gently press the center of the disk until fully seated on the mounting post



ASSEMBLE THE M50 MASK



8. Install outlet valve cover

- Turn drink tube lever to clear outlet valve cover
- Align outlet valve cover over communications port
- Gently snap into place
- Close communications port door by pushing on the raised tab until it clicks
- Reinstall drink components



ASSEMBLE THE M50 MASK



9. Install clear/sunlight/laser outserts

- Align the locking tabs on the ends of the outsert with the outsert receptacles
- Gently rotate the outsert down pushing the locking tabs into the outsert receptacles





DEMONSTRATION OF DISASSEMBLY AND ASSEMBLY OF M50





PRACTICAL APPLICATION OF DISASSEMBLY AND ASSEMBLY OF M50





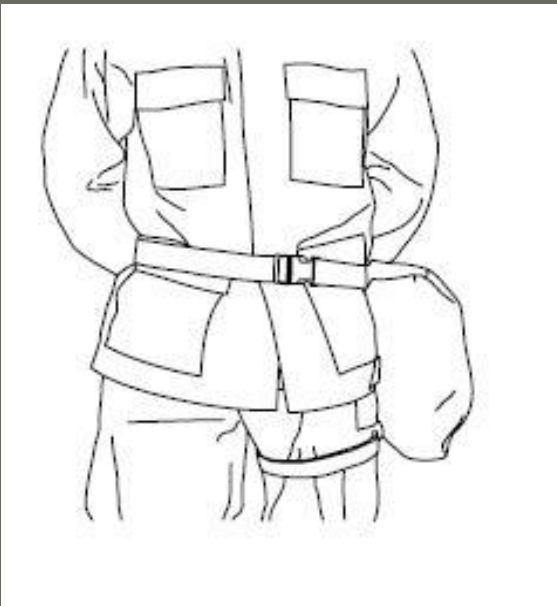
WEARING THE CARRIER & FITTING/ADJUSTING THE M50 FPM



WEARING THE CARRIER



- **WAIST BELT CONFIGURATION**



- Place carrier on left hip
- Wrap waist strap around and clip buckle
- Adjust strap to proper size
- Wrap leg strap around and clip buckle
- Adjust strap to proper size



WEARING THE CARRIER



- SHOULDER SLING CONFIGURATION



- Extend both straps to max length
- Attach extension strap to leg strap
- Clip waist strap into buckle
- Place carrier overhead and left arm
- Wrap leg strap around waist and clip buckle
- Adjust straps to proper size



FITTING AND ADJUSTING THE FPM



FITTING & ADJUSTING THE FPM



1. FITTING

- Loosen head harness
- Pull head harness over front of mask
- Hold hair back from sealing area and place chin in the chin pocket
- Hold mask against face with one hand
- Using other hand, slip head harness over head
- Straps should lie flat



FITTING & ADJUSTING THE FPM



2. ADJUSTING

Have a buddy complete the following steps:

- Hold mask tightly to your face
- Center skullcap on back of head
- Place thumb under buckle of forehead strap
- Give strap end short, sharp tugs until buckle feels snug
- Adjust other forehead strap in same manner



FITTING & ADJUSTING THE FPM



2. ADJUSTING (cont'd).

- Place thumb under buckle of cheek strap
- Adjust cheek strap until it feels snug
- Adjust other cheek strap in same manner
- Release mask, mask should not slip down
- If mask slips, readjust straps until mask remains in place
- Adjust temple straps



FITTING & ADJUSTING THE FPM



3. CHECKING FOR FIT

- Edge of mask comes up on forehead but not into hairline
- Temple and cheek straps do not cut into ears
- Mask does not press flesh so tightly that eyes are partly closed
- Bottom of mask does not cut into throat
- Nosecup does not obscure vision





DONNING, DRINKING, AND DOFFING THE M50 FPM



DONNING, DRINKING, & DOFFING



Once the sign is given, you have

9 SECONDS!!!



DONNING, DRINKING, & DOFFING



- PREPARING AND CARRYING THE FPM
 - Your mask should be pre-fit
 - Store the mask with the head harness wrapped to the front
 - Faceform should be removed
 - Filters should be checked and installed



DONNING, DRINKING, & DOFFING



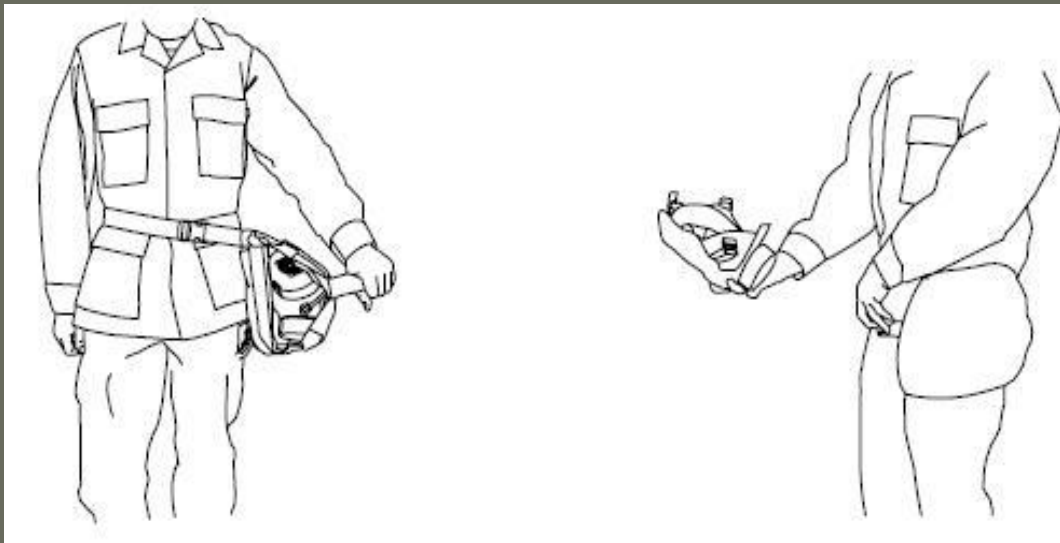
- DONNING PROCEDURES
 - Stop breathing and close your eyes
 - DO NOT TAKE ANOTHER BREATH OR OPEN YOUR EYES UNTIL THE MASK HAS BEEN PROPERLY DONNED
 - Remove cover/helmet as well as glasses



DONNING, DRINKING, & DOFFING



- With your left hand grasp the mask carrier flap tab
- Pull open carrier
- With your right hand grasp mask and remove it from carrier

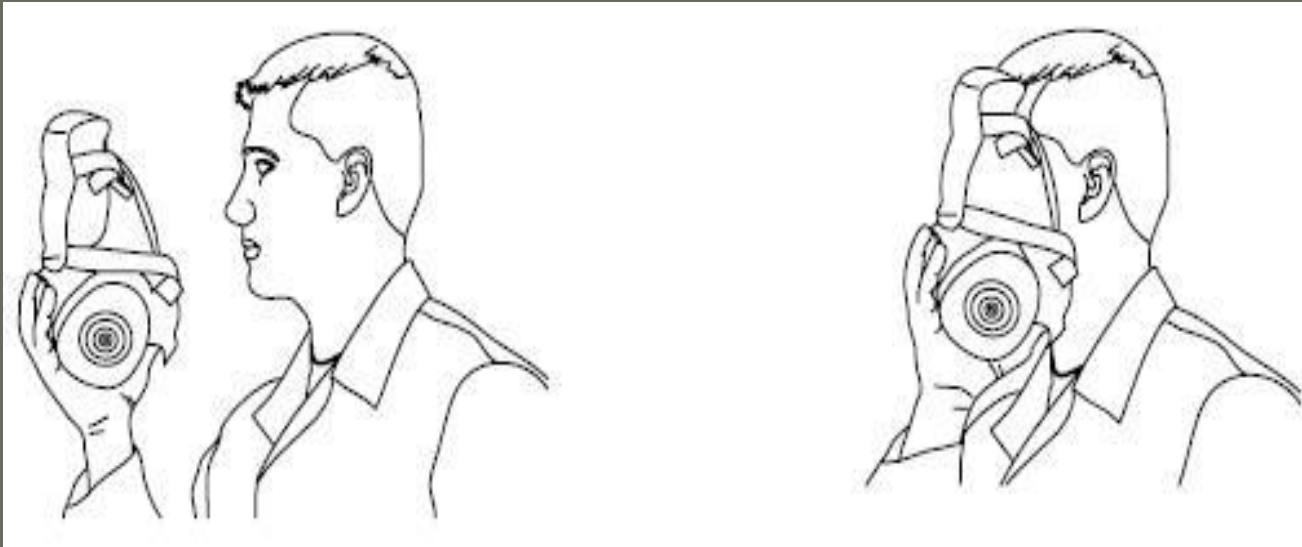




DONNING, DRINKING, & DOFFING



- Put your chin in chin pocket and press mask snugly against your face

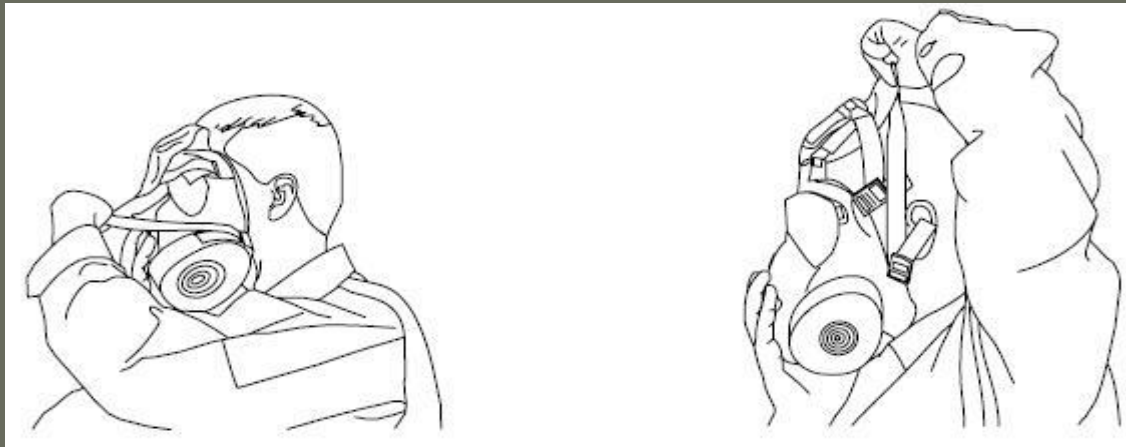




DONNING, DRINKING, & DOFFING



- Grasp head harness tab and pull harness over your head
- Be sure ears are between the temple and cheek straps
- Pull head harness as far down as possible
- Brow and temple straps should be tight and approximately parallel

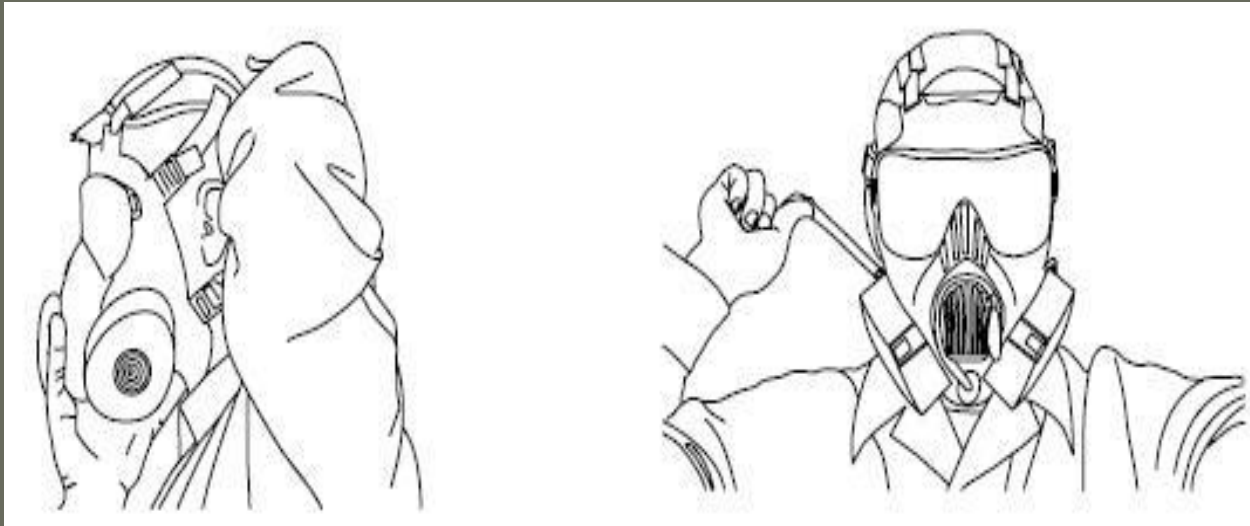




DONNING, DRINKING, & DOFFING



- Tighten cheek straps one at a time or both at the same time
- Ensure straps lay flat against your head





DONNING, DRINKING, & DOFFING



- Seal outlet valve by placing one hand over the outlet valve cover assembly
- Exhale forcibly
- Contaminated air is forced out around the edges of the mask assembly





DONNING, DRINKING, & DOFFING



- Conduct a negative pressure test
- With both hands cover both M61 filters and breath in
- Mask should collapse against your face and remain as you hold your breath
- If mask does not collapse, check for matter between face and mask
- Clear and try again





DONNING, DRINKING, & DOFFING



- Once your mask is properly sealed, breathe normally
- Give the hand and arm signal while shouting GAS! GAS! GAS!



- If wearing MOPP ensemble, pull up hood and secure
- Put on helmet and pick up rifle
- Close carrier, continue your mission





DONNING, DRINKING, & DOFFING

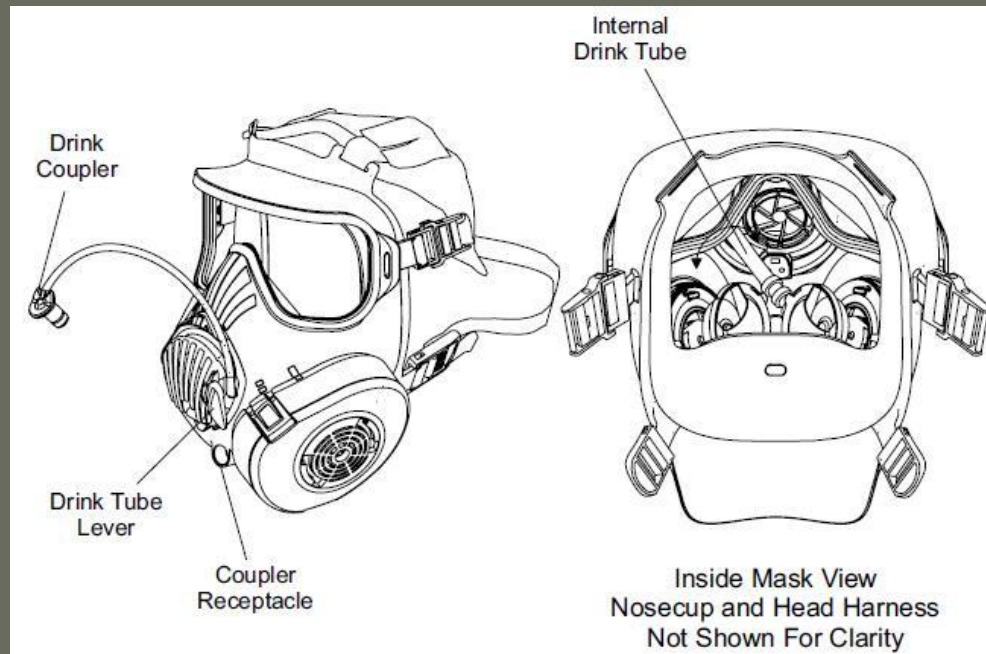


- DRINKING WHILE MASKED

- Decontaminate top of canteen
- Pull drink coupler out of receptacle
- Push drink coupler into canteen cap so that seal snaps
- Turn drink tube lever on front module assembly upward
- Lever opens system and positions internal tube
- Blow air into canteen



DONNING, DRINKING, & DOFFING



- Once done drinking
 - Blow into tube to remove water
 - Disconnect tube from canteen
 - Stow external tube and canteen



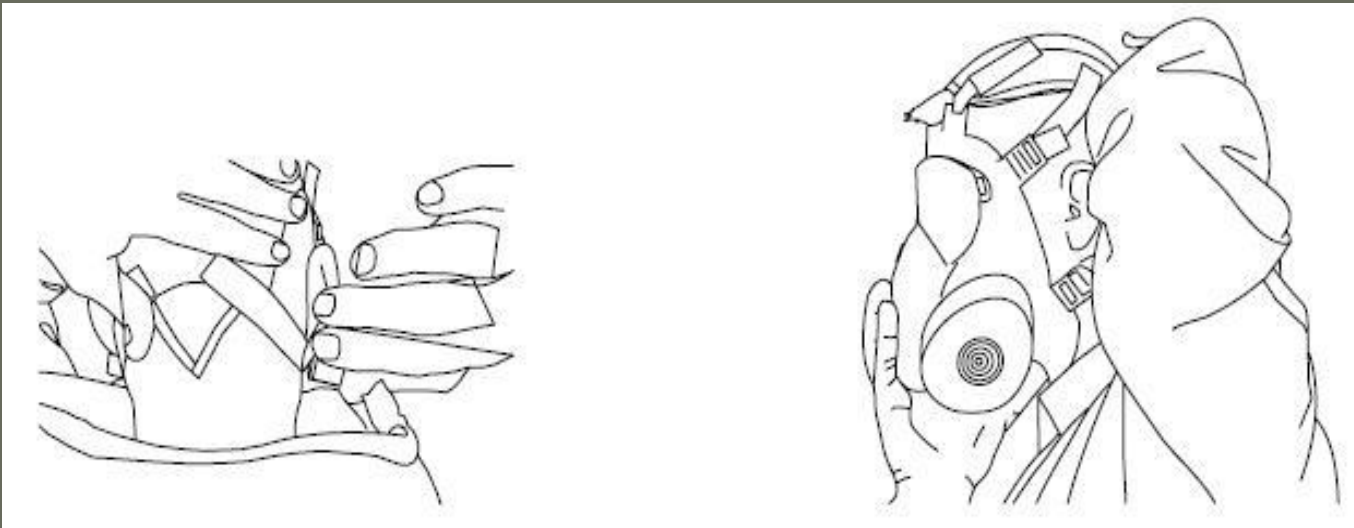


DONNING, DRINKING, & DOFFING



- DOFFING PROCEDURES

- Loosen cheek straps
- Grasp front of mask and pull off your head
- Stow mask with head harness over front of the mask







DEMONSTRATION OF DONNING, DRINKING, AND DOFFING THE M50





PRACTICAL APPLICATION OF DONNING, DRINKING, AND DOFFING THE M50





MAINTAINING THE M50 FPM



MAINTAINING THE MASK



It is YOUR responsibility to maintain the mask. The mask should be cleaned anytime it is soiled.

- DO NOT stow mask until it is completely dry after cleaning
- DO NOT use hot or boiling water
- DO NOT use chemicals or baby wipes
- Use only warm water and mild toilet soap
- There are two levels of cleaning: Light and Heavy



MAINTAINING THE MASK



- Light Cleaning:
 - Disassemble the M50
 - Use a damp outsert pouch
 - Clean outlet valve cover assembly, outlet disk valve, inlet disk valves, air deflectors, self-sealing disk valves, audio frequency amplifier adapter, and head harness
 - Allow to dry completely
 - Reassemble and stow



MAINTAINING THE MASK



- Heavy Cleaning:
 - Disassemble the M50
 - Immerse mask in warm, soapy water
 - Shake all debris from mask, do not scrub
 - Rinse mask in clean, warm water
 - Clean other pieces as in light cleaning
 - Allow to dry completely



MAINTAINING THE MASK



- Cleaning the Drinking system:
 - Connect drink coupler to a canteen of clean water
 - Open drink lever and shutoff valve
 - Hold mask upside down and allow water to flow through the system
 - Remove cap from canteen while still attached to system to drain remaining water
 - Close lever and shutoff valve, allow mask to dry



MAINTAINING THE MASK



- Cleaning the Mask Carrier:
 - Empty contents from bag
 - Shake dirt and foreign matter from bag
 - If needed use a dry brush to remove dirt and foreign matter
 - If water is required, soak brush not carrier
 - Hang bag to air dry





M50 FIELD PROTECTIVE MASK





DON MISSION-ORIENTED PROTECTIVE POSTURE (MOPP) GEAR





OVERVIEW



- Definition
- Limitations
- Levels
- Chemical Agent Detection Equipment
- Personal Decontamination



LEARNING OBJECTIVES



Please Read Your
Terminal Learning Objectives
And
Enabling Learning Objectives





MOPP



Definition:

A flexible system of protection against chemical agents, which is used in chemical warfare to facilitate mission accomplishment.







LIMITATIONS OF MOPP



- Heat Exhaustion
- Work Rate
- Five Senses
- Personal Needs
- Eating







FOUR LEVELS OF MOPP





MOPP LEVEL 1



- Established when a *general warning* is given
- Threat of NBC warfare exists



MOPP LEVEL 1



- Over garment is worn, open or closed
- Over boots are carried
- Mask is carried
- Gloves are carried





MOPP LEVEL 2



- Established during a tactical situation that requires units to cross terrain where previous use of chemical agents is *unknown*.



MOPP LEVEL 2



- Over garment is worn, open or closed
- Over boots are worn
- Mask is carried
- Gloves are carried





MOPP LEVEL 3



- Established when units are on the move
- Chemical *attack* is possible



MOPP LEVEL 3



- Over garment is worn and closed
- Over boots are worn
- Mask is worn
 - Hood open or closed
- Gloves are carried





MOPP LEVEL 4



- Established when units are *operating within an area of contamination*
- Chemical attack is *imminent*



MOPP LEVEL 4



- Over garment is closed
- Over boots are worn
- Mask and hood are worn
 - Closed
- Gloves are worn





DEMONSTRATION



CHEMICAL DETECTION

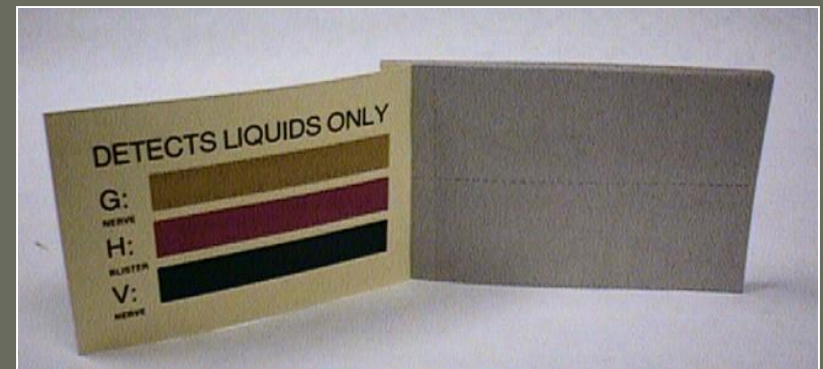
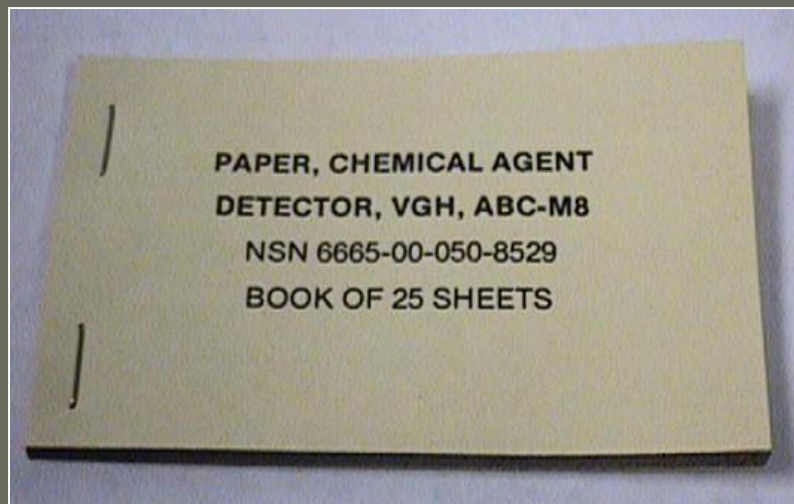




M-8 CHEMICAL AGENT DETECTOR PAPER



- Purpose
 - To identify the type of chemical agent present in liquid form on the battlefield
- Supplied
 - In a booklet and carried within the M40 field protective mask carrier





M-8 CHEMICAL AGENT DETECTOR PAPER



- Use

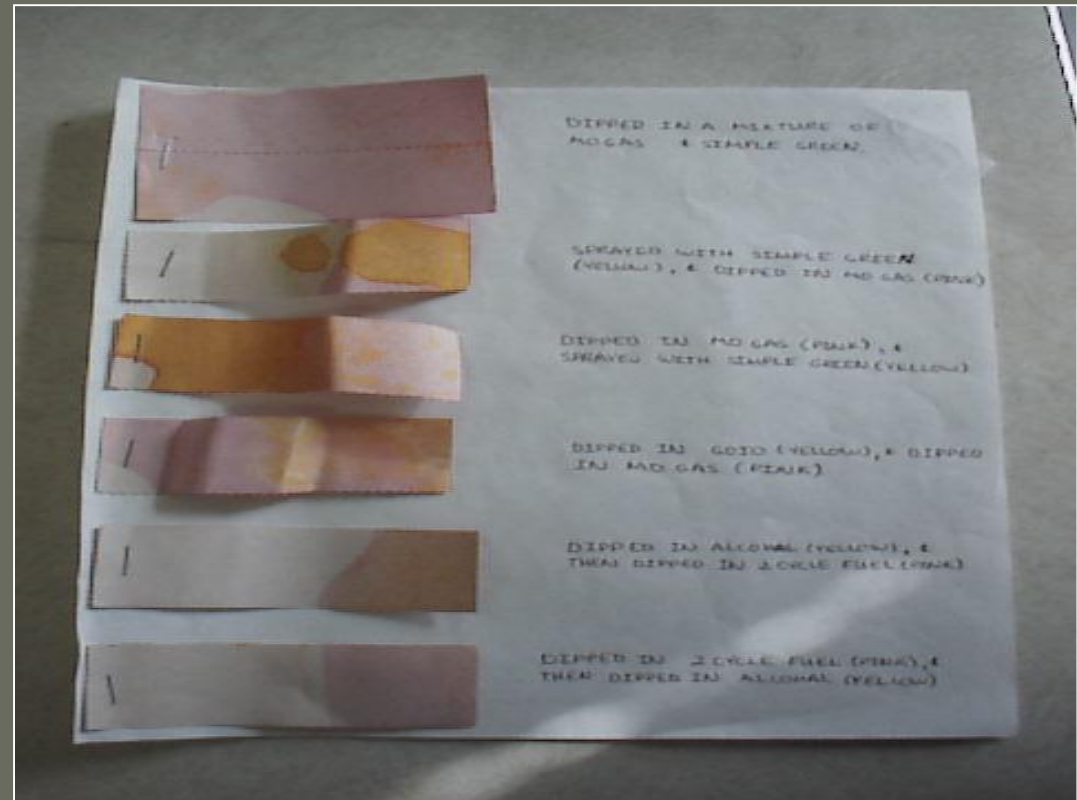
- When an unknown liquid suspected of being a chemical agent is encountered, immediately don the M40 field protective mask and protective suit.
- Obtain the M8 paper booklet from the carrier.
- Remove a half sheet from the booklet, and if possible, affix the sheet to a stick
- Blot the paper onto the unknown liquid and wait for 30 seconds for a color reaction to occur



M-8 CHEMICAL AGENT DETECTOR PAPER



- Use
 - Compare to the colors on the inside of the front cover of the booklet for identification.





M-9 CHEMICAL AGENT DETECTOR PAPER





M-9 CHEMICAL AGENT DETECTOR PAPER



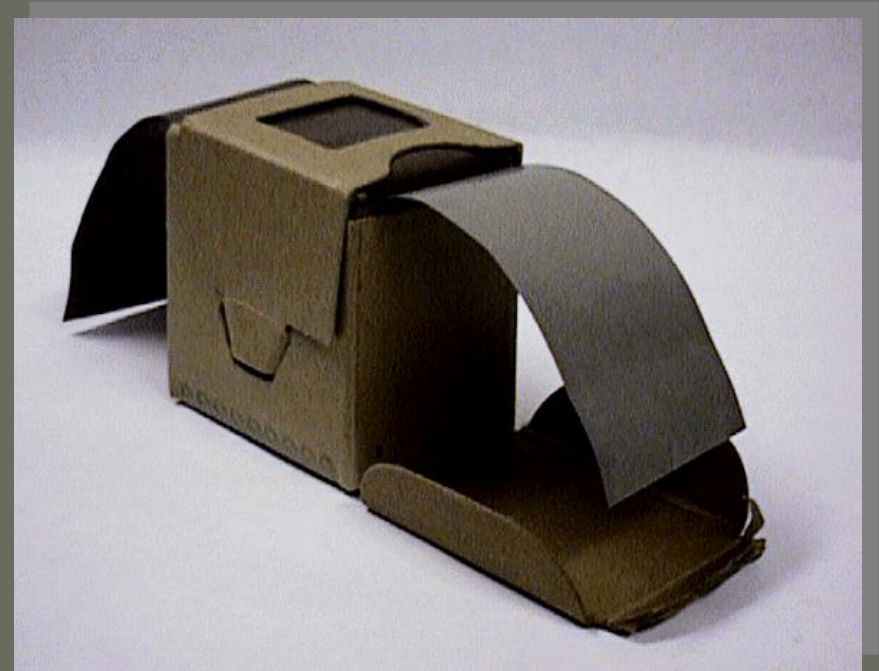
- Purpose:
 - Used to detect the presence of liquid nerve and blister chemical agents
 - Does not identify either the specific agent or the type of agent encountered



M-9 CHEMICAL AGENT DETECTOR PAPER



- Supplied:
 - M9 detector paper comes in:
 - 30 feet long X 2 inch wide roll strip
 - Has adhesive backing to facilitate wrapping the tape to clothing





M-9 CHEMICAL AGENT DETECTOR PAPER



- Instructions for use:
 - Place tape around a sleeve and a trouser leg of the over garments.
 - Absence of liquid agent
 - The paper is a dull off-white or cream color
 - When dissolved in liquid agent
 - The indicator chemical, turns a reddish color





M-9 CHEMICAL AGENT DETECTOR PAPER



- Instructions for use:
 - When the tape turns a reddish color,
 - Immediately don your protective mask and alert others.
 - If there is a possibility of skin contamination,
 - Immediately decontaminate the suspected area



M-9 CHEMICAL AGENT DETECTOR PAPER



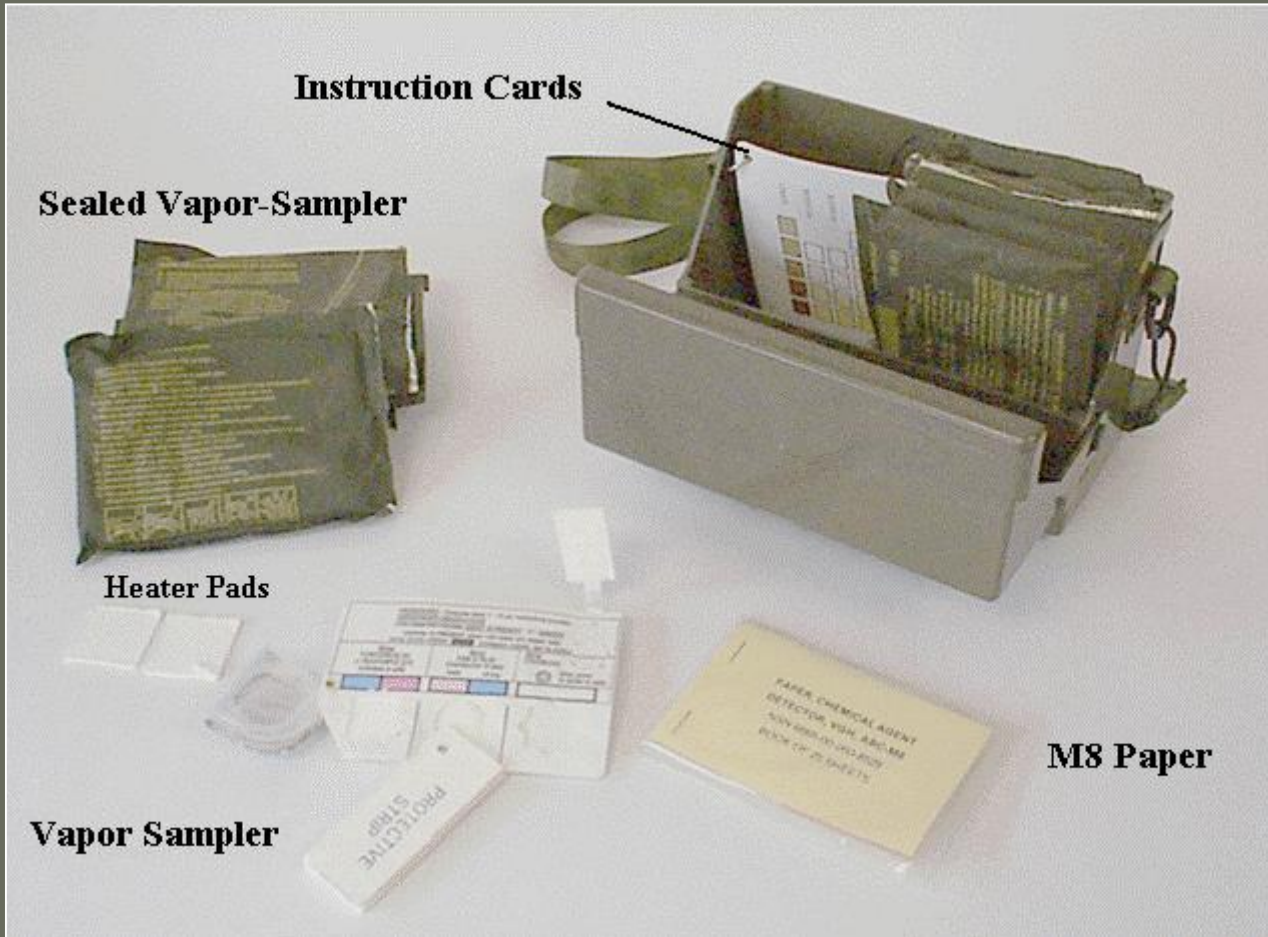
- False reading can occur:

False positive results can occur if liquid insecticides are on the surface being tested.

Antifreeze and petroleum products will also cause false positive reactions.



M-256 A1 CHEMICAL AGENT DETECTOR KIT





M-256 A1 CHEMICAL AGENT DETECTOR KIT



- Purpose:
 - Used to detect and identify chemical agents present, either as a liquid or as a vapor
- Supplied:
 - A booklet of M8 paper to detect agents in liquid form





M-256 A1 CHEMICAL AGENT DETECTOR KIT



Instructions for use:

- Following the instructions, testing can be completed in approximately 20 minutes.
- During testing is it important to keep the ticket out of direct sunlight.



- The ticket must be kept stationary during all parts of the test.





M291 SKIN DECONTAMINATING KIT





M291 SKIN DECONTAMINATING KIT



- Purpose:
 - To absorb and neutralize liquid chemical agents present on the skin
- Supplied:
 - Comes with six identical packets
 - Each contains a mixture of activated resins in the form of applicator pads



M291 SKIN DECONTAMINATING KIT



- Instructions for use:
 - Remove a packet from the kit
 - Remove the applicator pad
 - Apply an even coating of the black resin powder while scrubbing the entire skin area suspected to be contaminated
 - Be sure to keep resin out of the eyes, mouth, and open wounds.





PRACTICAL APPLICATION



DON MISSION-ORIENTED PROTECTIVE POSTURE (MOPP) GEAR





MANAGE CHEMICAL AGENT CASUALTIES





HISTORY



- DATES FROM AT LEAST 423 B.C.
 - Sparta used sulfur fumes in Peloponnesian War
- WORLD WAR I
 - Germans used Chlorine and Mustard gas
- WORLD WAR II
 - Cyanide in Concentration Camps



HISTORY



- IRAQ

- Used Mustard and Sarin on Kurds and Iranians in the 1980's
- During Operation Desert Storm,
 - U.S. destroyed several chemical stockpiles by land and air
- Congress has passed a bill mandating the destruction of all U.S. chemical agents



CHEMICAL WARFARE (CW)



Defined as the use of chemical agents in military operations to kill, seriously injure, or incapacitate personnel through physiological effects.



OVERVIEW



- Chemical Agents
 - Types
 - Signs and Symptoms
 - Treatment
- NATO Warning Marker



LEARNING OBJECTIVES



Please Read Your
Terminal Learning Objectives
And
Enabling Learning Objectives





CHEMICAL AGENTS





NERVE AGENTS



- GA – TABUN
- GB – SARIN
- GD – SOMAN
- VX



NERVE AGENTS



DESCRIPTIONS:

- Colorless to **light brown** liquid
- Nonpersistent
- Faint *fruity* odor
- May be inhaled, ingested, or absorbed through the skin
- Most Toxic





NERVE AGENTS



Signs and symptoms can appear within seconds to hours, depending on the agent and amount of exposure

- Massive secretions
- Chest tightness
- Headache
- Muscle twitching
- Constricted pupils
- Respiratory arrest
- Death, if left untreated!



NERVE AGENTS



TREATMENT:

- Don protective mask
- Decontaminate exposed skin
- Inject MARK 1 Kit



MARK 1 KIT





MARK 1 KIT



MARK 1 KIT PROCEDURES:

1. Remove yellow cap from Atropine.
2. Press green tip against the meaty portion of the thigh and hold in place for 10 seconds.
3. Grasp the 2 PAM-Chloride auto injector like a pen. Remove gray cap.
4. Press black tip against the meaty portion of the thigh and hold in place for 10 seconds.
5. If signs/symptoms are mild, member can administer their own kit.





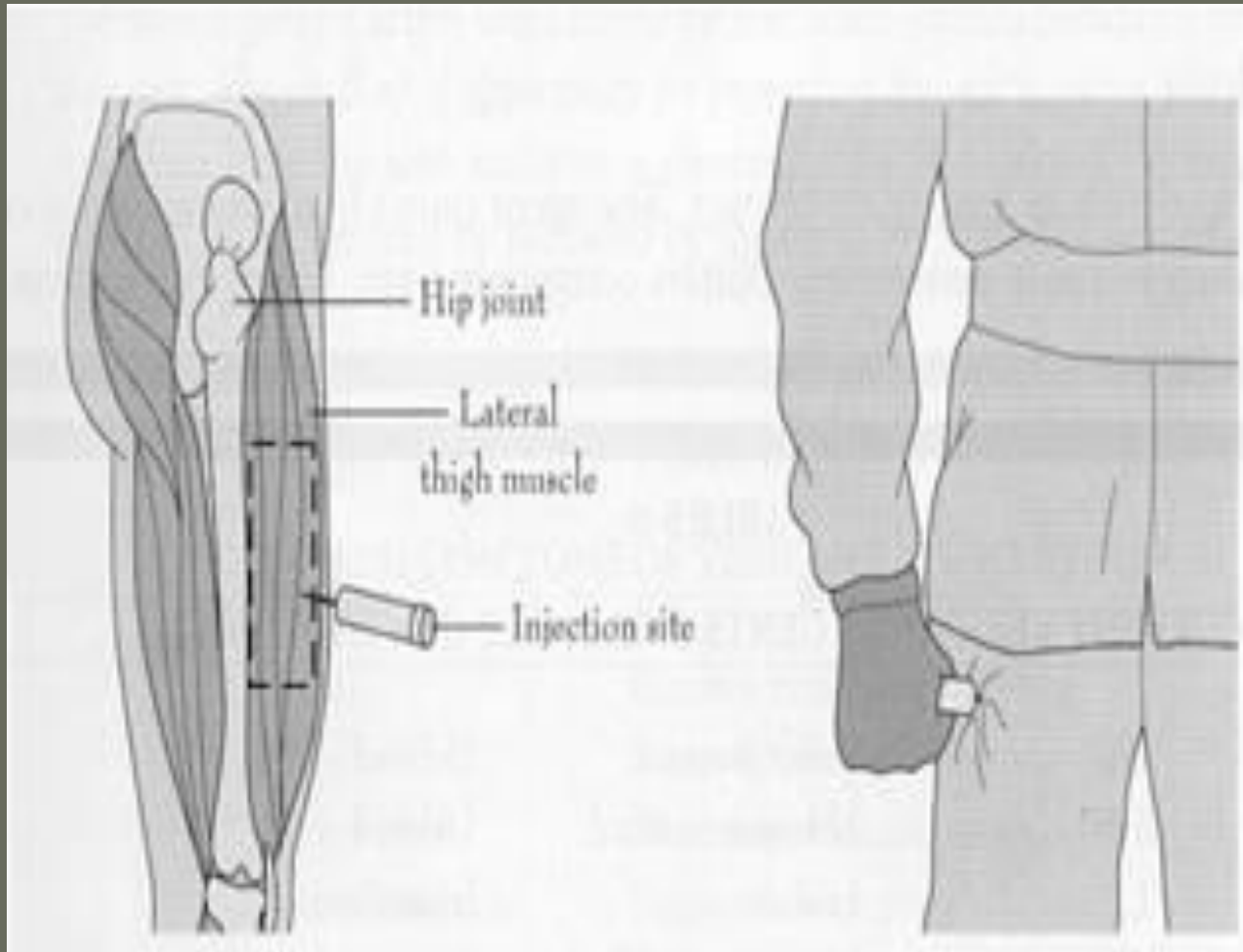
MARK 1 KIT



6. One kit may be given every 10 minutes until improvement is seen or a total of three kits have been given.
7. If signs/symptoms are severe, (member is unable to inject themselves) give all three kits immediately then inject 10mg Diazepam.
8. If symptoms continue after three kits have been administered, medical personnel may administer repeated Atropine (2mg) injections at three to five minute intervals and should be titrated to a reduction of secretions and to a reduction in respiratory distress.



MARK 1 KIT





NERVE AGENTS



Prevention/Pre-treatment

- Pyridostigmine
 - Inhibits nerve agents from binding
 - Dose: 30mg, Q8 hrs. (Not to exceed 14 days)



VESICANTS (Blister Agents)



- HD – Distilled Mustard
- HN – Nitrogen Mustard
- Lewisite
- Phosgene Oxide



BLISTER AGENTS





BLISTER AGENTS



DESCRIPTION:

- *Light yellow to brown in color*
- Persistent
- Odors
 - Distilled Mustard smells of *garlic or horseradish*
 - Nitrogen Mustard smells *fishy*
 - Lewisite smells like *geraniums*
 - Phosgene Oxide smells *pepperish/pungent odor*
- Heavier than water
- May be absorbed through the skin



BLISTER AGENTS



Signs and symptoms can appear 2-48 hours after contamination

- Erythemic skin with blisters
- Necrosis where agent touches
- Nausea and vomiting
- Edema of the eyes and eyelids
- Corneal scarring
- If ingested – intense pain in the GI tract and diarrhea



BLISTER AGENTS



TREATMENT:

- Don protective mask
- Decontaminate exposed skin
- Flush eyes to prevent scarring of the cornea
- Apply Vaseline to the eyes to prevent adhesions
- Apply Calamine lotion to reduce burning and itching of the skin
- Consider giving Morphine
- Use antibiotics and IV fluid replacement as required



BLOOD AGENTS



- AC – Hydrogen Cyanide
- CK – Cyanogen Chloride



BLOOD AGENTS



DESCRIPTION :

- Colorless liquids dispersed in gas form
- Smells like *bitter almonds* or *peach pits*
- Must be inhaled



BLOOD AGENTS



SIGNS/SYMPTOMS:

- Hyperpnea
- Anxiety, agitation, vertigo
- Weakness
- Nausea/vomiting
- Cherry red skin; possibly streaked
- Unconsciousness/seizures within 30 seconds
- Respiratory arrest and death within 2-4 minutes if treatment is delayed



BLOOD AGENTS



TREATMENT:

- Don protective mask
- Decontaminate exposed skin
- Treat symptomatically
- Administer IV Sodium Nitrite (10ml) followed by Sodium Thiosulfate (50ml)
- Second treatment with each of the two antidotes may be given, up to half the original dose if needed



CHOKING AGENTS



- CG – Phosgene
- DP – Diphosgene
- CL – Chlorine



CHOKING AGENTS



DESCRIPTION :

- Colorless
- Smells like *freshly mown hay, grass, or corn*
- Must be inhaled
- Contaminated food is of little consequence
- No known effect on body when ingested
- Rapidly becomes nontoxic in water



CHOKING AGENTS



SIGNS/SYMPTOMS:

- Headache and eye irritation
- Coughing and Choking
- Substernal ache with sensation of pressure
- 2 to 6 hours after exposure
 - Dyspnea/Cyanosis
 - Hypotension
 - Pneumonia (late sign)
 - Pulmonary edema and red frothy sputum
 - Hypoxia
 - Death



CHOKING AGENTS



TREATMENT:

- Don protective mask
- Establish airway
- Provide rest, warmth, and sedation
- No known antidote for choking agents
- Give Oxygen, if available



VOMITING AGENTS



- DA – Diphenylchlorasine
- DC – Diphenylcyanarisine
- DM – Adamsite



VOMITING AGENTS



DESCRIPTION :

- Crystalline solid, dispersed as gas
- Color
 - DA and DC (**white** smoke color)
 - DM (**canary yellow** smoke color)
- Smells like burning fireworks/shoe polish
- Must be inhaled



VOMITING AGENTS



Signs and Symptoms appear 30 seconds to 2 minutes after exposure

- Severe headache
- Intense burning in throat
- Chest pain and tightness
- Lacrimation
- Coughing, sneezing, nausea, vomiting



VOMITING AGENTS



Treatment

- Don protective mask
- Get fresh air ASAP
- Lift mask ONLY to vomit
- Symptoms usually subside within 30 minutes to 3 hours if left untreated



LACRIMATORS / TEAR AGENTS



- CS – Ochlorobenzylmalonitrile
- CN – Chloracetophenone



LACRIMATORS / TEAR AGENTS



DESCRIPTION :

- Crystalline solids or liquids dispersed in the air as vapors or white smoke
- *Strong pepper* odor for CS, and *apple blossom* odor for CN
- Absorbed through the eyes, nasal passages, and skin pores



LACRIMATORS / TEAR AGENTS



SIGNS/SYMPTOMS:

- Pain and burning in the eyes
- Profuse tearing and photophobia
- Rhinorrhea, epistaxis
- Chest tightness, coughing, dyspnea
- Blepharospasm



LACRIMATORS / TEAR AGENTS



TREATMENT:

- Don protective mask
- Get to fresh air ASAP
- Heavy contaminants should be flushed from the eyes with copious amounts of water



INCAPACITATING AGENTS



- BZ - Buzz Gas
- Agent 15





INCAPACITATING AGENTS



DESCRIPTION:

- Odorless and non-irritating
- Highly potent
- Rate of action: Delayed by 30 minutes to 4 hours



INCAPACITATING AGENTS



SIGNS/SYPMTOMS:

- Skin
 - “Dry as a bone”
 - “Hot as a Hare”
 - “Red as a beet”
- Slowing of mental activity
 - “Mad as a Hatter”

 - “Blind as a Bat”



INCAPACITATING AGENTS



TREATMENT:

- Clear the airway if needed
- Treat for heat stroke
- Give PO fluids only if the victim can drink unassisted
- Approach with caution, the individual could become dangerous



INCAPACITATING AGENTS



TREATMENT:

- Remove all weapons
- Restrain as needed
- Physostigmine
 - 45 mcg/kg (IM)
 - Observe for 1 hour, repeat if needed





NATO CW WARNING MARKER



A triangular sign measuring 11" x 8" x 8" with yellow background, and red letters spelling "GAS."







MANAGE CHEMICAL AGENT CASUALTIES





MANAGE BIOLOGICAL AGENT CASUALTIES





OVERVIEW



- General Groups of Biological Agents
- Treatment of Biological Agent Casualties
- The four defensive measures against Biological agents



LEARNING OBJECTIVES



Please Read Your
Terminal Learning Objectives
And
Enabling Learning Objectives





HISTORY OF BIOLOGICAL WARFARE



- At the end of WWII, the Imperial Japanese army initiated an aggressive research effort to produce an effective biological agent. The goal was to learn the medical effects of such agents and determine the different methods of delivery.



BIOLOGICAL WARFARE



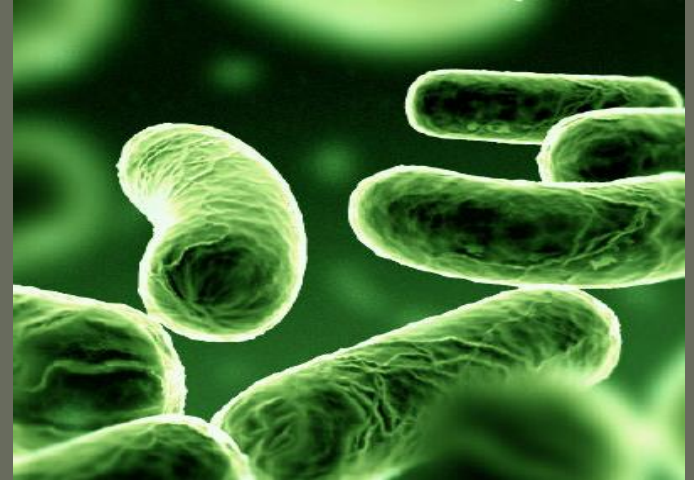
- Defined as the intentional use of living infectious microorganisms or toxins. Derived from living organisms, to cause death or disease in humans, animals or plants.
- Delivered in sprays, explosive devices, contaminated food / water supplies.
- Most common delivery is in a spray (i.e. crop dusting).
- Signs and symptoms make exposure difficult to diagnose.



GROUPS OF BIOLOGICAL AGENTS

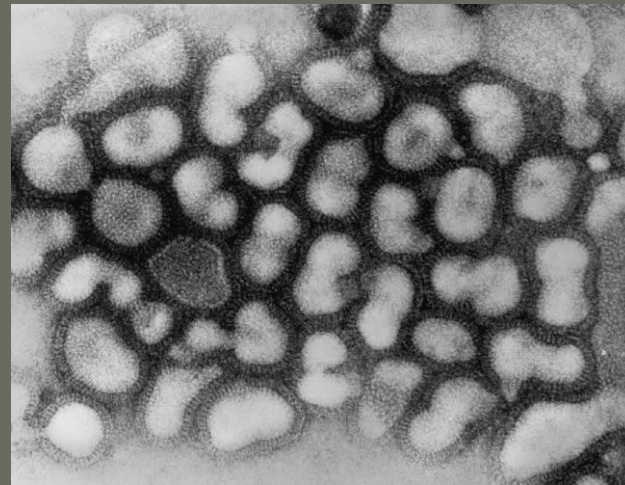


- Bacteria



- Virus

- Biological Toxins

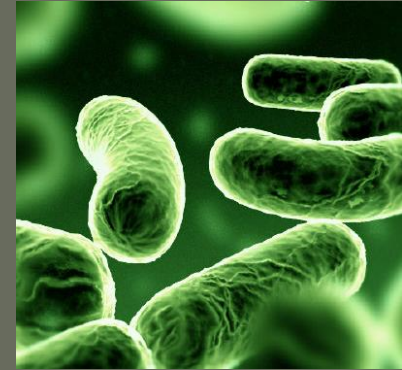




BACTERIA



- Free living microorganisms that are naturally occurring or engineered.
- They work by overcoming the body's defense mechanism by invading cells. Most are killed by antibiotics.



Examples are: Anthrax, Plague, Brucellosis



VIRUS



- An infectious agent, smaller than bacteria, that lacks independent metabolism and is able to replicate only within a host cell.
- Viruses produce diseases that do not respond to antibiotics. Supportive care is the only treatment.
- Examples are: Smallpox, Venezuelan Equine Encephallitis (VEE), Viral Hemorrhagic Fever (VHF)



BIOLOGICAL TOXINS



- Toxins are a poisonous substance produced within living cells or organisms.
- Toxins do not grow or replicate, but have been classified biological agents by the United States due to their ability to be biochemically engineered.





Cont.



- Cutaneous infection occurs when handling infected animal tissue, contaminated hair, wool, hides or products made from infected slaughtered animals.
- Respiratory infection
- Intestinal infection



Signs and Symptoms



Signs and Symptoms- Signs usually present within 48 hours. The incubation period for anthrax is hours to 7 days.

Cutaneous:

- Begins as a papule followed by the formation of a fluid filled vesicle.



Cont.

- The vesicle typically dries and forms a coal-black eschar (scab). This eschar is usually surrounded by mild to moderate edema and sometimes with small secondary vesicles.





Cont.



- Inhalation:
 - Gradual and nonspecific onset of fever, malaise, fatigue, nonproductive cough and mild chest discomfort.
 - Initial symptoms are followed by a short period of improvement (hours to 2-3 days).
 - Abrupt onset of severe respiratory distress with dyspnea, diaphoresis, stridor and cyanosis.



CONT.



- Gastrointestinal:
 - Presents with severe sore throat or a local oral or tonsillar ulcer.
 - Nonspecific symptoms of nausea, vomiting and fever.
 - Followed by severe abdominal pain with hematemesis and diarrhea.



Treatment

- Treatment:
 - Ciprofloxacin 400mg IV Q8-12 hours or 500mg PO twice daily for four (4) weeks.
 - Employ standard precautions for active cases.
- Prevention:
 - Prophylactic vaccination series.



Plague



- Caused by the bacterium *Yersinia Pestis* which naturally infects rodents in certain parts of the world.
- Three main types of plague:
 - Bubonic
 - Pneumonic
 - Septicemic



Signs and Symptoms



Bubonic

- Acute onset fever, malaise, headache
nausea/vomiting
- Bubo (painful swollen lymph nodes)
develop
- May have lesions at site of bite from flea.
- Bubonic plague may progress
spontaneously to lungs and produce
pneumonic disease



Bubonic Plague





Signs and Symptoms



Pneumonic

- Acute onset fever, chills and malaise
- Hemoptysis
- Death is caused by respiratory failure and circulatory collapse



Pneumonic



Main symptoms of Pneumonic plague

Systemic:

-Fever

Central:

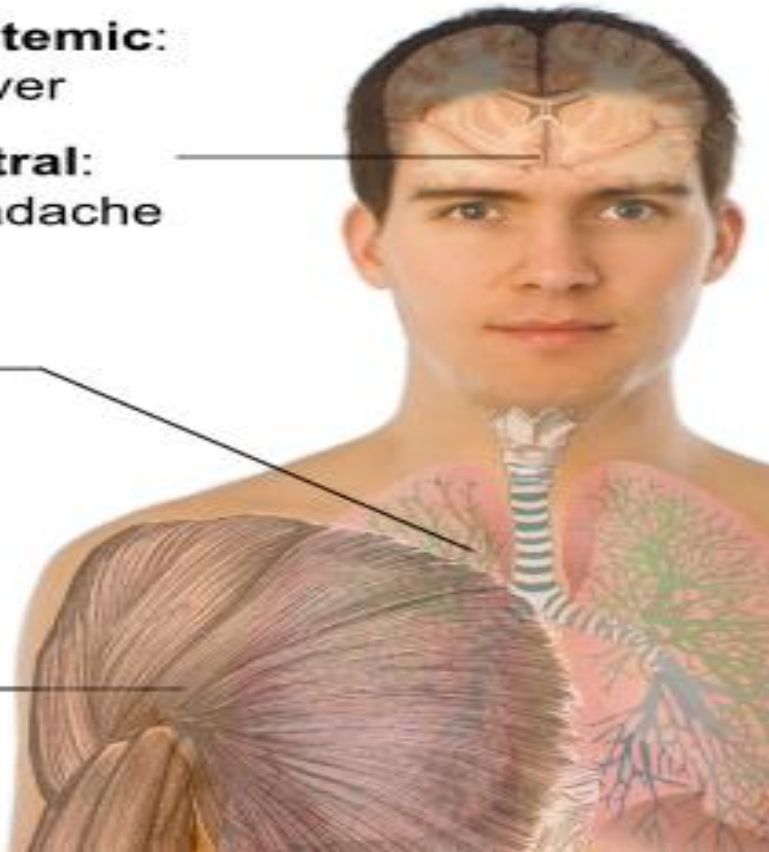
-Headache

Respiratory:

- Cough
- Hemoptysis
- Dyspnea
- Chest pain

Muscular:

-Weakness





Signs and Symptoms



Septicemic:

- Fever, chills, malaise, nausea, vomiting and diarrhea
- Purpura, acrocyanosis and necrosis
- 25% of bubonic plague progress to septicemic plague



Treatment Cont.



- Streptomycin 30mg/kg/day IM in two (2) divided doses for 10-14 days
- Doxycycline 200mg IV initially , followed by 100mg every 12 hours for 10-14 days
- Vigorous fluid resuscitation



Prevention



- Prophylactic vaccination series



Viral Agents



Small pox:

A systemic viral disease caused by the Variola virus. Endemic smallpox was declared globally eradicated in 1980 by the World Health Organization (WHO).



Smallpox



Causes:

- Contact with infected respiratory discharge
- Contact with infectious bed linens or clothing of casualties.
- Contact with drainage from wound.



Smallpox



Signs and symptoms:

- Sudden onset of nonspecific symptoms:
 - Fever
 - Headache
 - Backache that lasts 2-3 days
 - Vomiting
 - Malaise



Smallpox Cont.



- 2-3 days after onset, rash appears
- Starting with face, hands and forearms, then moves to trunk
- Lesions initially appear as macules and will eventually turn to scabs.
- At 14-28 days scabs slough off



Smallpox



- Casualty is infectious throughout the entire term of the disease until the scab separates and falls off.
- All lesions progress simultaneously, unlike Varicella where all stages of lesions may be present at one time.



Smallpox Progression





Smallpox



Treatment:

- Quarantine the casualty and maintain strict sterile procedures.
- Supportive care



Smallpox



Prevention:

- Prophylaxis: Vaccination of Vaccinia virus. Revaccination should be carried out every 10 years.
- There are no routine immunizations of US forces for smallpox. If indicated, senior leadership may direct vaccination.



Biological Toxins



Botulism:

- A biological toxin caused by the bacterium *Clostridium botulinum*.
- The most toxic substance to man.
- Due to its incredible potency and relative ease of manufacture, botulinum toxin is considered a likely threat.



Biological Toxins



Signs and Symptoms:

- Blurred vision
- Dry mouth
- Dysphagia(difficulty swallowing)
- Diplopia(double vision)
- Muscular weakness
- Symmetrical flaccid paralysis(loss of tone and reflexes)
- Respiratory arrest



Biological Toxins



Treatment

- Rest
- Oxygen, if available
- Cricothyroidotomy, if needed
- Mechanical ventilation
- IV and IM administration of trivalent botulinum antitoxin (ABE)



Biological Toxin

Ricin:

- A toxin made from the mash that is left over after processing Castor beans for oil.
- Castor bean processing is a worldwide activity: therefore, the raw materials are readily available.
- The toxin may be either inhaled or ingested.



Signs and Symptoms



Inhalation:

- Acute onset of fever
- Respiratory Distress
- Hypoxia(lack of oxygen)
- Cough
- Malaise(discomfort, weakness, fatigue)
- Myalgia(tenderness in the muscles)
- Pulmonary edema within 18-24 hours
- Death occurs within 36 to 72 hours



Signs and Symptoms Cont.



Ingestion:

- Severe vomiting
- Abdominal cramping
- Diarrhea
- Shock
- Renal failure
- Circulatory collapse



Treatment



- There is NO antitoxin is available
- Give supportive care.
- Isolation is not required





Four (4) phases of Defense or Protective measures against BW agents.



Pre-attack Phase of BW



- Train and inform personnel of possible agents
- Discourage rumors
- Practice good sanitation and hygiene
- Ensure immunizations are up to date



Attack phase of BW



- Aircraft spraying or dropping objects
- Lobbing of low blast shells or bombs
- Smokes and mists of unknown origin
- Dead animals with no visible cause
- You may have a doubling in the number of sickcall illnesses in a 48 hour period



Attack Phase Cont.

- Stop breathing and don protective mask
- Give the alarm
- Remain under cover, and move outside only after cloud has passed or “ALL CLEAR” is sounded
- Cover exposed skin



Post-attack Phase



- Continue to practice an increased level of good health, field sanitation and hygiene discipline
- Keep wounds clean by using soap and water, utilize available first aid
- Don't consume local foods, eat and drink only approved food and water



Post-attack Cont.



- Do not bathe in lakes, ponds and streams
- Do not touch animals, especially dead ones
- Observe BW contamination markers



Decontamination Phase



- Designate an area for the decontamination station
- Establish and operate the station
- Provide personnel for monitoring teams
- Post Nato Biological Warning Markers



NATO Biological Warning Marker



A triangular shaped marker measuring 11" x 8" x 8" with blue background and red letters spelling "BIO"





MANAGE BIOLOGICAL AGENT CASUALTIES





RADIOLOGICAL CASUALTIES





OVERVIEW



- Nuclear Blasts
- Nuclear Injuries
- Levels of Exposure
- Signs and Symptoms
- Treatment
- Personal Protective Measures
- Decontamination



LEARNING OBJECTIVES



Please Read Your
Terminal Learning Objectives
And
Enabling Learning Objectives





FOUR TYPES OF NUCLEAR BURSTS



- High Altitude Burst
- Air Burst
- Surface Burst
- Subsurface Burst



HIGH ALTITUDE BURST



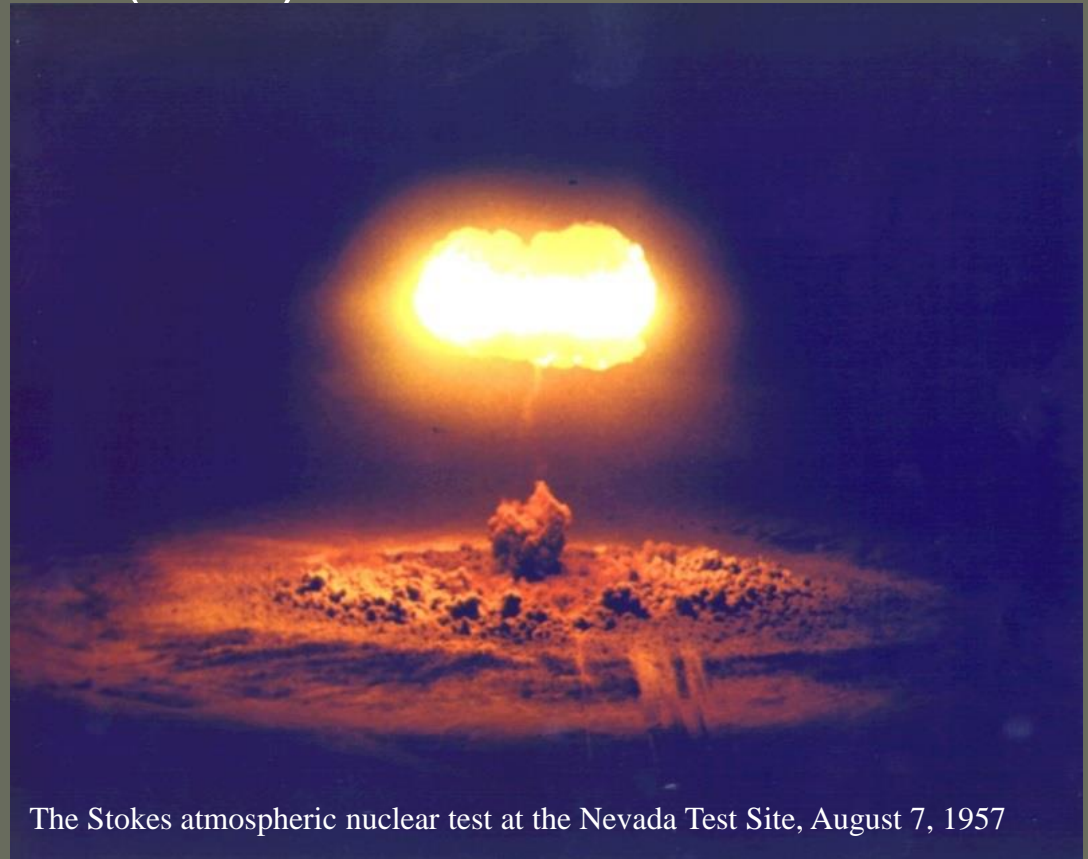
- Detonation at an altitude **above** 100,000 feet (30 Kilometers)
- Much larger fireball, expands more rapidly than other bursts
- Ionizing radiation can travel hundreds of miles before being absorbed



HIGH ALTITUDE BURST



- Severe disruption of communication
 - Electromagnetic Pulse (EMP)
- Degrades/destroys communication, electronic & critical medical equipment



The Stokes atmospheric nuclear test at the Nevada Test Site, August 7, 1957



AIR BURST



- Detonation of a weapon at an altitude **below** 100,000 feet
- Fireball does **NOT** contact the surface of the earth



AIR BURST



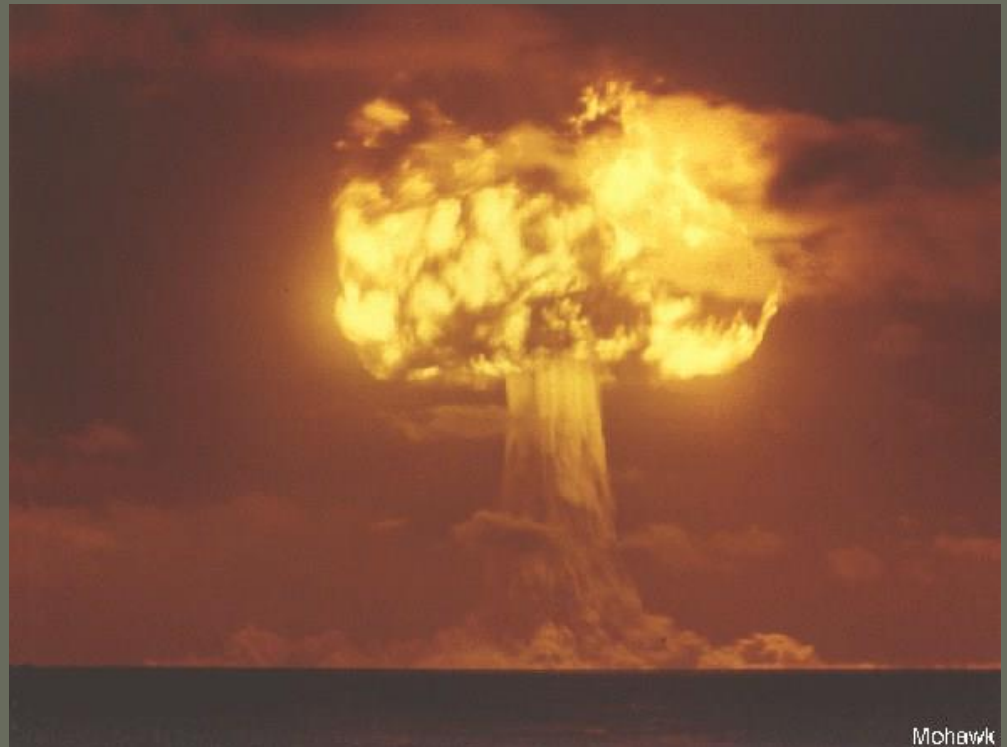
- Cause burns to exposed skin over many square kilometers
- Eye injuries at even greater distances
- Tactically, most likely to be used against ground forces



SURFACE BURST



- Detonation, **on or slightly above** the surface of the earth
- Fireball touches the ground or water surface





SUBSURFACE BURST

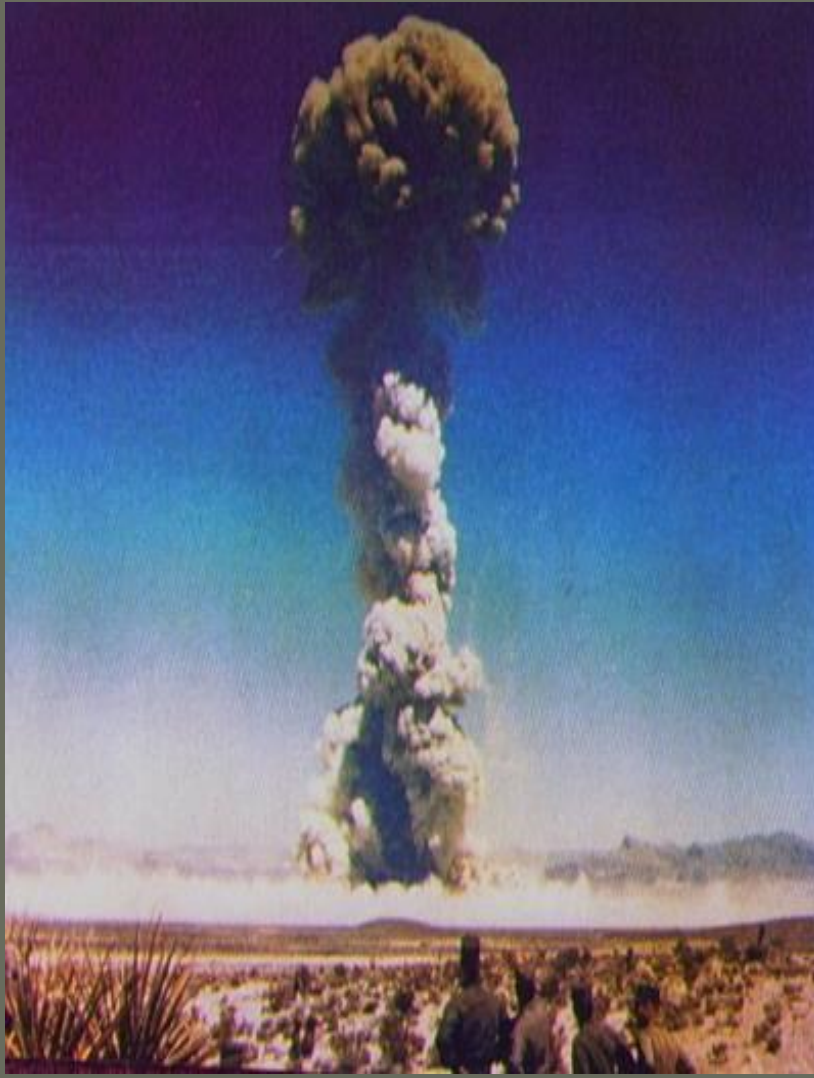


- Detonation **beneath the surface** of land or water
- Causes cratering of the ground





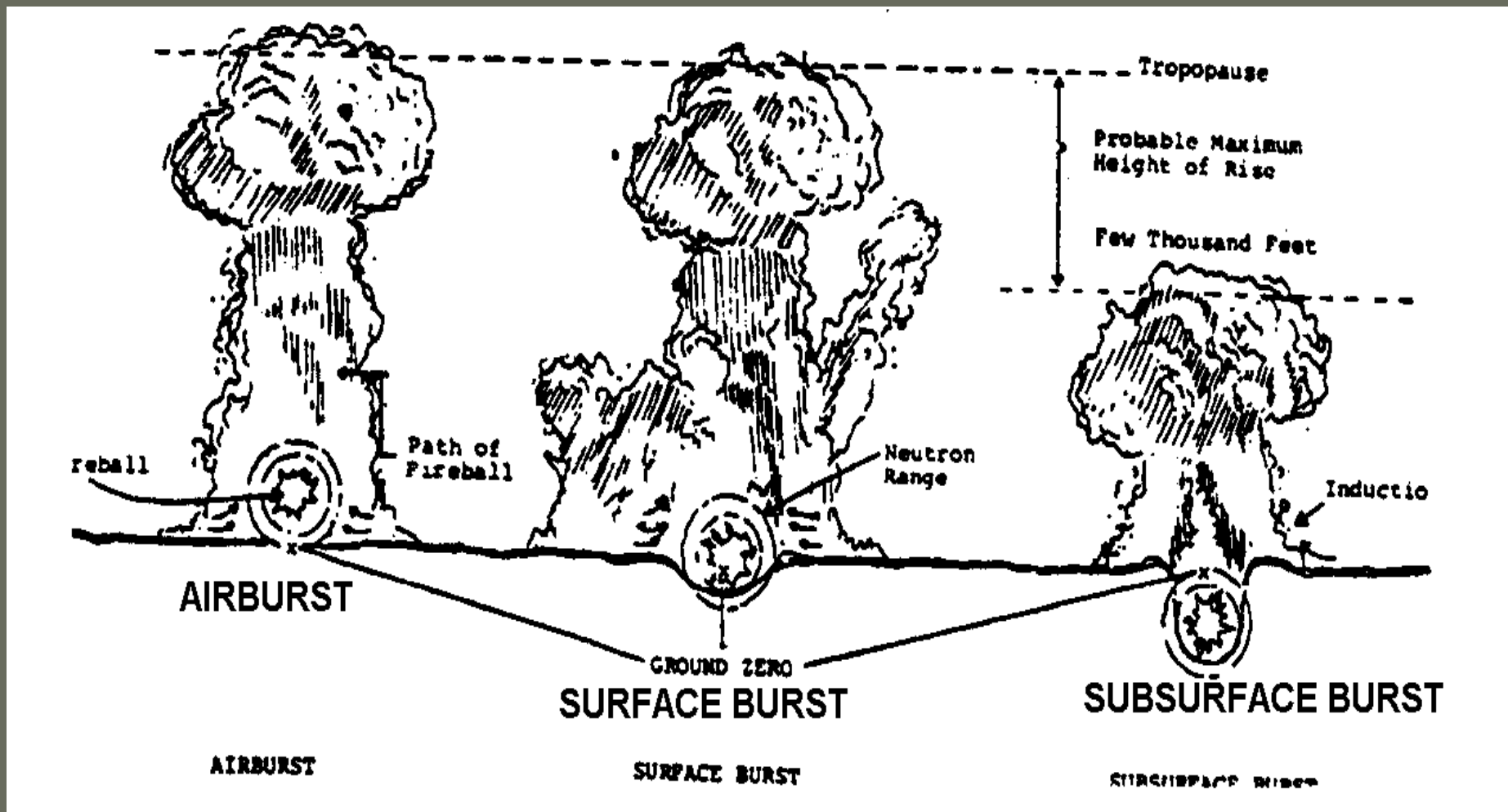
SUBSURFACE BURST



May not penetrate the surface.

If it does the blast, thermal and initial nuclear radiation effects will be present, but less than a surface burst of comparable yield.

Fallout is heavy if burst penetrates.



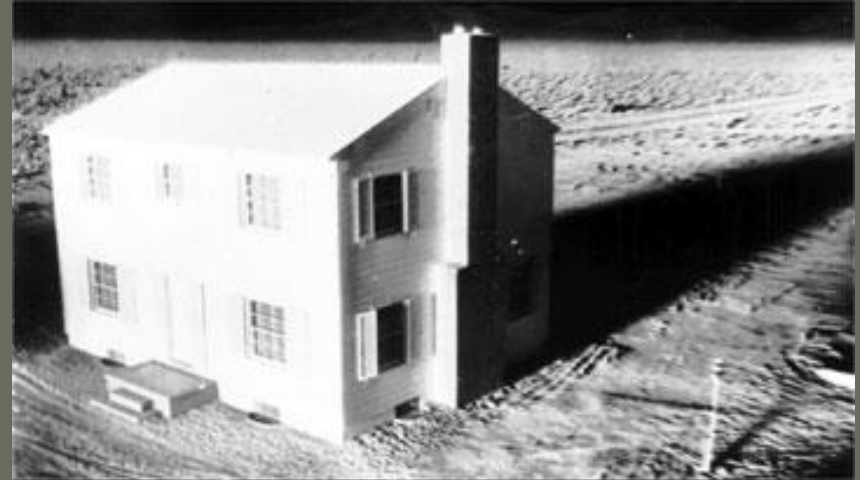




BLAST INJURIES



- Two Types:
 - PRIMARY (Direct)
 - SECONDARY (Indirect)





PRIMARY BLAST INJURIES



- Caused by the direct action of the shock wave upon the body.
- Injuries occur due to over pressure of rapid air expansion.
- If in close proximity, the initial blast wave is usually lethal.
- Sub lethal exposure causes damage to bones, muscle, lungs, GI system and ear drums.



SECONDARY BLAST INJURIES



- Caused by indirect wind forces after the initial blast.
- Injuries occur as a result of debris and bodies thrown against solid objects.
- More injuries are created by indirect blast wind forces, than by the shock wave.



TREATMENT OF BLAST INJURIES



- Blunt Trauma
 - Same as in a non-contaminated environment
- Pressure Trauma
 - Injury is to the lungs
 - 100% O₂, positive pressure if needed
 - If pulmonary embolus is suspected, place the patient on their left side



THERMAL INJURIES



- Two Types:
 - Flash Burns (Direct)
 - Flame Burns (Indirect)





FLASH BURNS



- Results from intense thermal heat released from the fireball
- Exposed skin and extremities facing the explosion will be burned



FLAME BURNS



- Caused by exposure to fires from the environment
- Could be the predominant cause of burns depending on the flammable materials present



EYE INJURIES



- Two Types:
 - Flash Blindness
 - Retinal Scarring



FLASH BLINDNESS



- Results from looking in the **general direction**, but not directly at fireball
- Light swamps the eyes and depletes the pigmentation of the retinal receptors causing blindness



FLASH BLINDNESS



- Temporary –
 - Lasts seconds to minutes during daylight hours
 - Followed by a darkened after image for several minutes
 - Can last 15 to 30 minutes at night



RETINAL SCARRING



- Results from looking **directly at** the fireball
- Relatively uncommon injury
- Can cause blind spots and permanent blindness





DIAGNOSIS



- Radiation Absorbed Dosage (RAD)
 - The method for measuring radiation
 - Diagnosis is based primarily upon the clinical picture presented by the patient



LEVELS OF EXPOSURE



Mild

-Vomiting does not occur by the end of the fourth hour after exposure

Severe

-Vomiting within two hours

Deadly

- Vomiting within the first hour accompanied by explosive diarrhea





SIGNS AND SYMPTOMS



90% of patients exposed to ionizing radiation will exhibit symptoms within 2 - 6 hours of exposure



SIGNS AND SYMPTOMS



- Nausea
- Vomiting
- Diarrhea
- Fatigue
- Anorexia
- Malaise
- Hyperthermia
- Erythema
- Hypotension
- Neurological Dysfunction





TREATMENT



- If NO physical injuries:
 - Supportive in nature
- Treat physical symptoms based on:
 - Life-threatening injuries
 - Burns
 - Blunt Trauma
 - Hemorrhage Control
 - Pressure Trauma
 - S/S as displayed



TREATMENT



- Pain Management
 - Morphine given as 10mg, every 4-6 hours
- Antibiotics
 - 3 times the normal dosage of antibiotics
- Oral antifungal agents
- Recovery time is 8 – 15 weeks





PERSONAL PROTECTION MEASURES



- Drop flat on the ground or to the bottom of your fighting hole, with head toward blast
- Close your eyes; don't look at explosion
- Protect or cover exposed skin by putting hands and arms under or near the body and keeping your helmet on



PERSONAL PROTECTIVE MEASURES



- Keep your head down
- If in a fighting hole
 - cover head with arms, place face against legs, and place fingers in ears
- Stay down until shock wave has passed, and debris has stopped falling
- Don protective mask





DECONTAMINATION PROCEDURES





DECONTAMINATION PROCEDURES



- Decon away from the scene at a decontamination station.
- Early removal of radioactive material will reduce radiation burns, radiation dosage and the chances of inhaling or ingesting radioactive particles.



DECONTAMINATION STEPS



- Spot clean first
- Carefully remove contaminated clothing and garments
- Deposit contaminated clothing and garments in a garbage bag or disposable container
- Bathe or flush contaminated wounds with sterile water



DECONTAMINATION STEPS



- Apply impermeable dressing over any uncontaminated cut, scratch, or wound
- Shower thoroughly with soap and water
- Scrub the entire body with a soft bristle brush
- Repeat procedures again if any contamination remains





RADIOLOGICAL CASUALTIES

