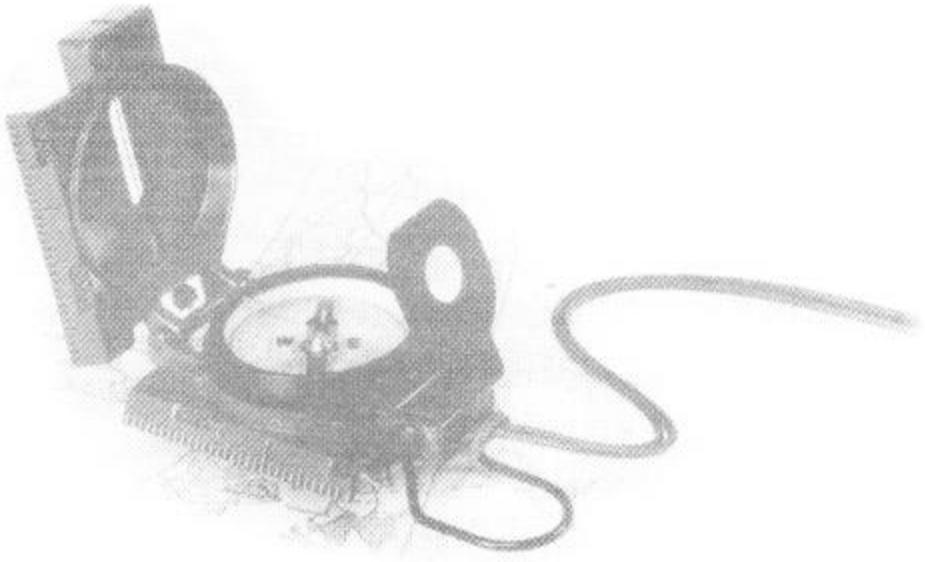
INSTRUCTIONAL BOOKLET

$1.95

FOR MILITARY LENSATIC, MAGNETIC COMPASS

THE OFFICIAL MILITARY PRECISION COMPASS

★ LENSATIC ★



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CAMMENGA

FAX (616) 392-9432

100 ANILINE AVE.
HOLLAND, MICHIGAN 49424

PHONE (616) 392-7999

CAMMENGA & ASSOCIATES, INC.

INSTRUCTIONAL BOOKLET

FOR MILITARY LENSATIC, MAGNETIC COMPASS

CONTENTS

A. INTRODUCTION

THE INSTRUCTIONS IN THIS BOOKLET ARE FOR THE LENSATIC, MAGNETIC COMPASS CURRENTLY BEING DISTRIBUTED BY THE US ARMY AND TROOP COMMAND. THIS COMPASS IS KNOWN THROUGHOUT THE WORLD FOR ITS PRECISION, RELIABILITY, VERSATILITY, RUGGEDNESS AND MUCH MORE. IT HAS HELPED TO SAVE LIVES IN TIME OF WAR AND PROVIDED MANY WITH RECREATIONAL AND COMMERCIAL USEFULNESS IN TIMES OF PEACE.

THE LENSATIC COMPASS IS USED TO DETERMINE "AZIMUTHS" OR "COMPASS BEARING" (HORIZONTAL ANGLES). IT IS ALSO USED TO FOLLOW A COURSE OVER THE GROUND, ORIENT OR SET A MAP, AND DETERMINE POSITION OF OBJECTS IN RELATION TO A MAP.

B. PARTS OF THE LENSATIC COMPASS (FIGURE 1)

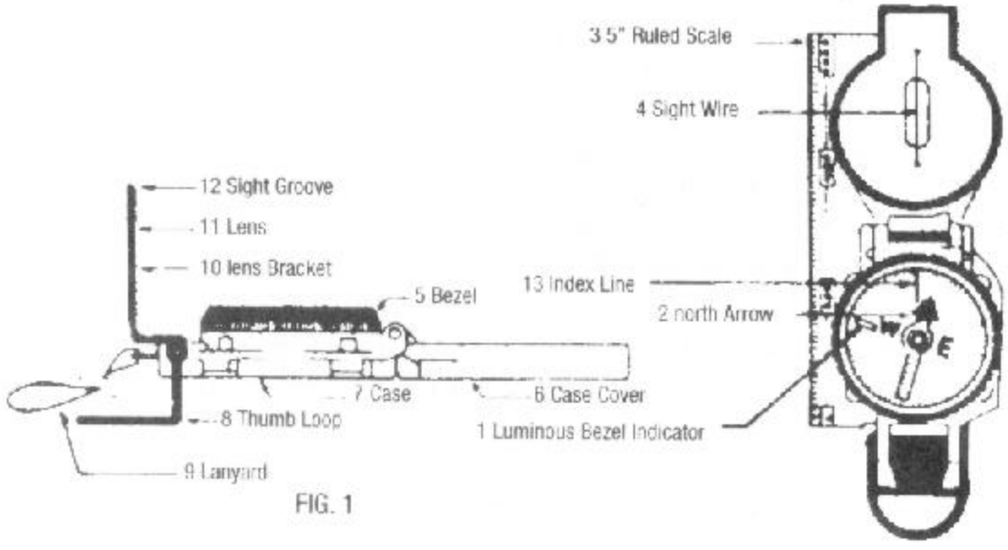


FIG. 1

1. LUMINOUS BEZEL INDICATOR: USED TO MARK A COURSE DIRECTION DURING DAY OR NIGHT.
2. **N**-ARROW OF DIAL: LOCATES MAGNETIC NORTH. THE DIAL IS DIVIDED INTO TWO SCALES,

   a. OUTER - (BLACK PRINTING) GRADUATED IN MILS.
      - 6400 MILS TO A CIRCLE
      - DISTANCE BETWEEN BLACK MARKS = 20 MILS
      - DISTANCE BETWEEN BLACK NUMERALS = 200 MILS
      - **N**=64(6400), **E**=16(1600), **S**=32(3200), **W**=48(4800).

   b. INNER-(RED PRINTING) GRADUATED IN DEGREES
      - 360 DEGREES TO A CIRCLE
      - DISTANCE BETWEEN RED MARKS = 5 DEGREES
      - DISTANCE BETWEEN RED NUMERALS - 20 DEGREES
      - **N**-0, E=90, **S**=180, **W**=270 DEGREES
3. 5-INCH RULED SCALE (120 MILLIMETERS): GRADUATED AT A RATIO OF 1:50,000. DISTANCE ON A 1:50,000 SCALE MAP CAN BE MEASURED (WITH THE STRAIGHT EDGE) UP TO 6000 METERS 3.7 MILES). THE STRAIGHT EDGE IS USEFUL FOR MEASURING DISTANCES, ORIENTING A MAP AND ALIGNING BEARINGS.

NOTE: THE MAP SCALE INDEX IS USUALLY FOUND IN THE MARGINAL INFORMATION; HOWEVER, THE CORRESPONDING GROUND DISTANCES OF SOME COMMONLY USED MAP SCALES ARE SHOWN BELOW:

SCALE	DISTANCE ON MAP	DISTANCE OVER GROUND
1:10,560	6"	1 MILE
1:225,000	1"	APPROX. 2000 FT.
	2.5"	1 MILE
	4 CM	1 KM
1:31,680	2"	1 MILE
1:50,000	1.25"	1 MILE
	2 CM	1 KM

4. SIGHT WIRE: USED (ALONG WITH THE SIGHT GROOVE (12) OF THE LENS BRACKET (10) TO SET COURSE OVER THE GROUND; OR DETERMINE AN AZIMUTH (BEARING, DIRECTION) BY SIGHTING ON PROMINENT TERRAIN FEATURES AND READING THE COMPASS DIAL THROUGH THE LENS (11).
5. BEZEL: CONTAINS THE LUMINOUS BEZEL INDICATOR (1). HAS A SERRATED EDGE AND ROTATES WITH A DISTINCT CLICKING ACTION. EACH CLICK MOVES THE LUMINOUS BEZEL INDICATOR OVER A 3 DEGREE ARC.
6. CASE COVER: CLOSES TO PROTECT THE COMPASS AND REDUCE CARRYING SIZE. WHEN OPENED WIDE (FIG. 1A, IT CAN BE USED AS A STRAIGHT EDGE OR RULER. WHEN PERPENDICULAR AS IN FIG. 2A, THE SIGHT WIRE (4) IS USED TO SET COURSE.
7. CASE: CONTAINS AND PROTECTS THE DIAL ASSEMBLY.
8. THUMB-LOOP: LOCKS THE COMPASS IN THE CLOSED POSITION (FIG. 2B,C). WHEN OPENED AS IN FIG. 2A, IT FACILITATES HOLDING THE COMPASS TO A SET COURSE TO DETERMINE AN AZIMUTH. (FIG. 3).
9. LANYARD: A LOOP OF BRAIDED NYLON CORP TO SECURE THE COMPASS AROUND THE NECK AND EASE ACCESS TO IT WHEN CARRIED IN A SHIRT POCKET.

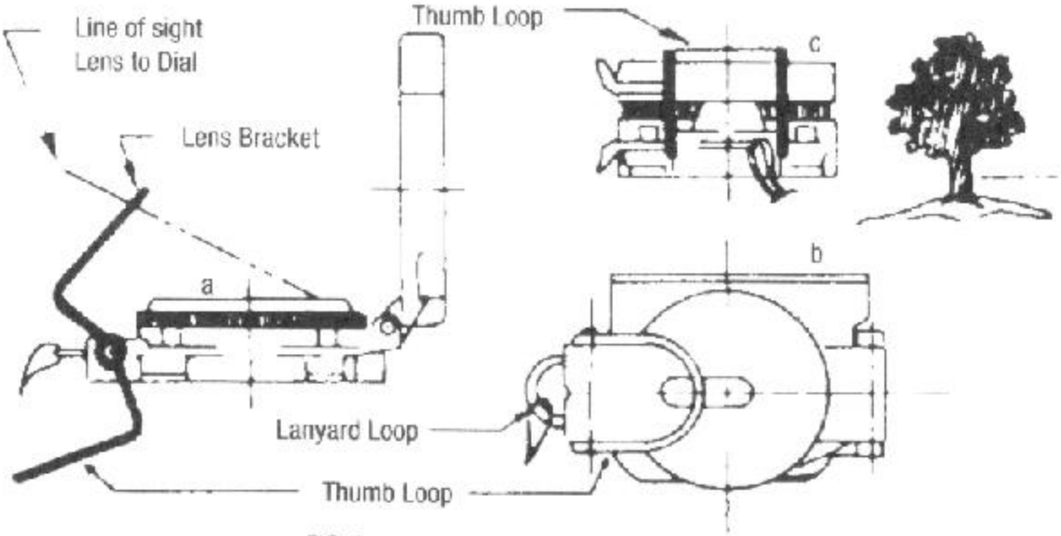


FIG. 2

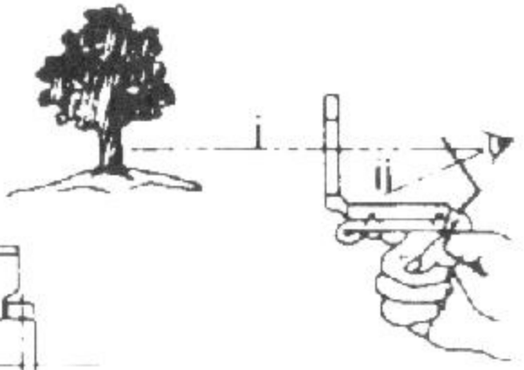


FIG. 3

10. LENS BRACKET: WHEN PUSHED ALL THE WAY DOWN IT LIFTS THE DIAL OFF THE PIVOT. WHEN THE COMPASS IS NOT BEING USED, IT IS IMPORTANT TO RAISE THE DIAL IN ORDER TO PREVENT DAMAGE TO THE PIVOT (POINT ON WHICH THE DIAL BALANCES).
11. LENS: HIGH QUALITY MAGNIFIER (ABOUT 2.5 INCH FOCAL LENGTH) TO READ THE COMPASS DIAL WHEN POSITIONED ABOUT 30 DEGREES OFF PERPENDICULAR. HANDLE CAREFULLY WITH CLEAN TISSUE. CAUTION: CLOSE LENS BRACKET AGAINST BEZEL GLASS BEFORE CLOSING HINGED COVER.
12. SIGHT GROOVE: USED TO SET A COURSE OVER THE GROUND TO DETERMINE AN AZIMUTH WHEN IT IS USED ALONG WITH THE SIGHT WIRE (4), THE INDEX LINE (13) AND THE DIAL (2).
13. INDEX LINE: BLACK LINE ETCHED ON THE CRYSTAL OVER THE DIAL. USED TO READ AN AZIMUTH.

C. SIGHTING AN AZIMUTH (TAKING A COMPASS BEARING)

1. OPEN THE LENSATIC COMPASS AS SHOWN IN FIG. 2A.
   a. COVER SHOULD BE PERPENDICULAR (90 DEGREES) TO THE CASE.
   b. LENS BRACKET SHOULD BE TILTED ABOUT 30 DEGREES FROM PERPENDICULAR. BE SURE THE DIAL FLOATS FREELY.
2. SIGHT THE LENSATIC COMPASS.
   a. INSERT THUMB THROUGH THUMB LOOP (FIG. 3).
   b. HOLD THE COMPASS LEVEL ON THE PLATFORM FORMED BY THE THUMB AND BENT INDEX FINGER (FIG. 3).
   c. RAISE THE COMPASS TO EYE LEVEL (FIG. 3).
   d. ALIGN THE CENTER OF THE SIGHTING GROOVE IN THE LENS BRACKET WITH THE SIGHT WIRE AND A DISTANT OBJECT (DOTTED LINE i, FIG. 3).
3. WITHOUT MOVING YOUR HEAD, OR THE COMPASS, READ THE AZIMUTH THROUGH THE LENS OF THE LENS BRACKET, (DOTTED LINE ii, FIG 3). THE AZIMUTH, IN DEGREES IS THE RED MARK ON THE DIAL LYING DIRECTLY UNDER THE BLACK INDEX LINE OF THE COMPASS CRYSTAL AND IN MILS THE BLACK MARK ON THE OUTER PERIMETER OF THE DIAL.

D. TO SET A COURSE (FOLLOW A BEARING)

1ST METHOD

a. WITH THE LENSATIC COMPASS OPENED WIDE (FIG. 1B) AND HELD LEVEL, TURN IT HORIZONTALLY UNTIL THE AZIMUTH IS DIRECTLY UNDER THE BLACK INDEX LINE. *EXAMPLE: YOU WANT TO FOLLOW A BEARING OF 120 DEGREES. POSITION THE 120 DEGREE MARK UNDER THE INDEX LINE.*

B. HOLDING THE LENSATIC COMPASS IN THIS POSITION, ROTATE THE BEZEL UNTIL THE LUMINOUS INDICATOR IS OVER THE **N** ARROW OF THE DIAL. THE DIRECTION INDICATED BY THE OPEN COMPASS IS THE DESIRED COURSE. AS LONG AS THE BEZEL IS NOT ROTATED, THE COURSE CAN BE CHECKED BY TURNING THE OPEN COMPASS SO THAT THE LUMINOUS BEZEL INDICATOR IS DIRECTLY OVER THE **N** ARROW OF THE DIAL.

2ND METHOD

a. TURN THE FULLY OPENED LENSATIC COMPASS AND ROTATE THE BEZEL TO ALIGN THE LUMINOUS BEZEL INDICATOR, THE BLACK INDEX LINE AND THE **N** ARROW OF THE DIAL.
b. SUBTRACT THE NUMBER OF DEGREES, IN YOUR DESIRED AZIMUTH, FROM 360 DEGREES.
c. KEEPING THE **N** ARROW UNDER THE INDEX LINE, TURN THE LUMINOUS BEZEL INDICATOR TO THIS RESULT. *EXAMPLE: YOU WANT TO FOLLOW A COURSE OF 120 DEGREES. SUBTRACT 120 DEGREES FROM 360 DEGREES, LEAVING 240 DEGREES. KEEPING THE **N** ARROW UNDER THE INDEX LINE, ROTATE THE BEZEL UNTIL THE LUMINOUS BEZEL INDICATOR IS OVER 240 DEGREES.*
d. TURN THE COMPASS UNTIL THE **N** ARROW LIES DIRECTLY UNDER THE LUMINOUS BEZEL INDICATOR. THE DIRECTION INDICATED BY THE OPEN COMPASS COVER POINTS THE DESIRED COURSE.

3RD METHOD

a. TURN THE FULLY OPENED COMPASS AND ROTATE THE BEZEL TO ALIGN THE LIGHTS IN THE COVER WITH THE LUMINOUS BEZEL INDICATOR.
b. ROTATE THE BEZEL COUNTERCLOCKWISE TO THE AZIMUTH DESIRED. EACH DISTINCT CLICK OF THE BEZEL REPRESENTS 3 DEGREES. *EXAMPLE: YOU WANT TO FOLLOW A COURSE OF 120 DEGREES. DIVIDE 120 BY 3. THE RESULT IS 40: THEREFORE, ROTATE THE BEZEL 40 CLICKS COUNTERCLOCKWISE.*
c. TURN THE COMPASS UNTIL THE **N** ARROW LIES DIRECTLY UNDER THE LUMINOUS BEZEL INDICATOR. THE DIRECTION INDICATED BY THE LIGHTS IN THE COMPASS COVER POINTS THE DESIRED COURSE.

E. PROCEEDING ALONG AN AZIMUTH

1. WITH YOUR LENSATIC COMPASS POINTING ALONG A DESIRED AZIMUTH, SELECT AN EASILY IDENTIFIED OBJECT THAT IS IN LINE WITH THE SIGHTING GROOVE OF THE LENS BRACKET AND THE SIGHT WIRE (FIG. 3). THIS "STEERING MARK" SHOULD BE DISTINCT FROM SURROUNDINGS, IT SHOULD BE VISIBLE AT ALL TIMES ALONG THE ROUTE AND SHOULD BE IDENTIFIABLE WHEN REACHED. THE GREATER THE DISTANCE TO A STEERING MARK, THE FEWER STEERING MARKS YOU WILL NEED TO REACH YOUR GOAL.
2. IF YOUR STEERING MARK IS LOST TO VIEW, STOP, RE-SIGHT AND SELECT A NEW STEERING MARK IMMEDIATELY.
3. IF A GOOD STEERING MARK IS NOT IN LINE WITH YOUR DESIRED AZIMUTH, SELECT AN ALTERNATIVE STEERING MARK OFF TO THE SIDE. SEE FIG. 4A.

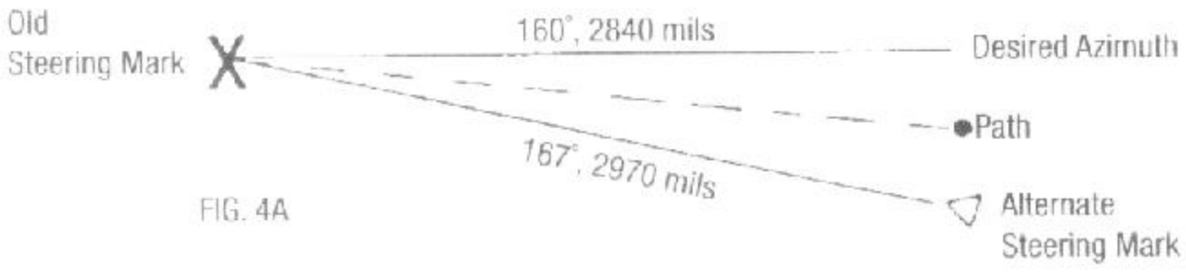


FIG. 4A

a. ESTIMATE THE DISTANCE THE STEERING MARK IS TO THE SIDE OF THE DESIRED COURSE. (160 DEGREES, 2840 MILS). ALTERNATE IS 167 DEGREES, 2970 MILS.

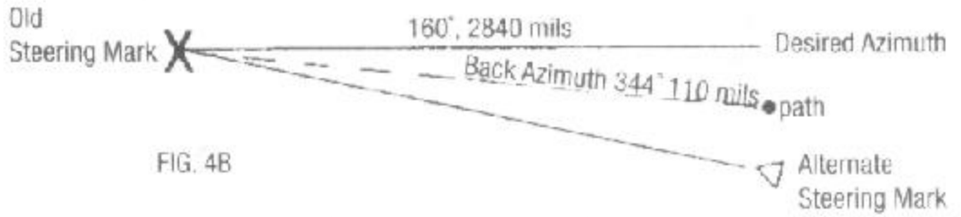


FIG. 4B

b. HEAD FOR THE POINT ON THE TRAVELED PATH THAT IS BESIDE THE ALTERNATIVE STEERING MARK. AT THIS POSITION SIGHT A BACK AZIMUTH TO YOUR OLD STEERING MARK. (A BACK AZIMUTH IS 180 DEGREES AWAY FROM A TRAVELED AZIMUTH. IF TRAVELED AZIMUTH IS LESS THAN 180 DEGREES (3200 MILS), ADD 180 DEGREES AND IF TRAVELED AZIMUTH IS MORE THAN 180 DEGREES, SUBTRACT 180 DEGREES. IN FIG. 4B, THE BACK AZIMUTH IS 344 DEGREES (6110 MILS).

FIG. 4C

c. CORRECT BACK AZIMUTH OF ORIGINAL COURSE IS 340 DEGREES WHICH IS 180 DEGREES PLUS THE TRAVELED AZIMUTH OF 160 DEGREES; THEREFORE, YOU WILL HAVE TO MOVE PERPENDICULARLY UNTIL YOU CAN SIGHT A BACK AZIMUTH OF 340 DEGREES (6040 MILS) WHEN SIGHTING YOUR OLD STEERING MARK. YOU ARE NOW BACK ON YOUR CORRECT ORIGINALLY DESIRED COURSE.

4. IN DARKNESS, THOSE STEERING MARKS THAT ARE CLOSER TOGETHER AND HAVE A DISTINCT SILHOUETTE AGAINST THE SKY.

5. MILITARY EXPERIENCE ADVISES AGAINST FREQUENT UNNECESSARY SIGHTINGS AND WALKING WHILE WATCHING THE COMPASS; HOWEVER, WHEN STEERING MARKS CANNOT BE USED, THE FULLY OPENED COMPASS POINTING THE TRAVEL DIRECTION SHOULD BE HELD IN FRONT OF THE CHEST. (SEE H.-NIGHTTIME USE).

F. ADJUSTING MAP BEARINGS FOR VARIATION - SETTING THE MAP.

IF UNFAMILIAR WITH DECLINATION, REVIEW 3, 4 OF K. (DEFINITIONS).

1ST METHOD - WITH MAGNETIC **N (MN)** ARROW SHOWN (SEE DECLINATION DIAGRAM, FIG. 6, SECTION K).

a. PLACE THE MAP FLAT, AWAY FROM METALLIC OBJECTS.
b. PLACE THE FULLY OPENED LENSATIC COMPASS ON MAP WITH EDGE OF THE SCALE ALONGSIDE THE MAGNETIC **N** ARROW OF THE DECLINATION DIAGRAM. ADJUST THE MAP (WITH COMPASS ON IT) SO THAT THE COMPASS COVER POINTS TO MAGNETIC NORTH (**N** ARROW OF COMPASS IS POINTING DIRECTLY TO INDEX LINE). THE MAP IS NOW ORIENTED TO THE TERRAIN.

2ND METHOD - WITH NO MAGNETIC **N** ARROW SHOWN ON THE MAP.

a. FIND THE MAGNETIC DELINEATION IN THE MAP MARGIN. THIS WILL STATE THE DEVIATION TO BE SO MANY DEGREES E OR W OF TRUE NORTH. EXAMPLE: MAGNETIC DECLINATION 11 DEGREES W MEANS THE **N** ARROW OF THE LENSATIC COMPASS WILL POINT 11 DEGREES WEST OF TRUE NORTH.
b. PLACE THE FULLY OPENED LENSATIC COMPASS ON THE MAP WITH THE EDGE OF THE SCALE ALONGSIDE A NORTH-SOUTH MERIDIAN (LONGITUDINAL LINE, GRID LINE). THE COMPASS COVER SHOULD BE POINTING TOWARD THE TOP OF THE MAP.
c. TURN THE MAP AND THE COMPASS TOGETHER UNTIL THE **N** ARROW OF THE DIAL IS THE SAME NUMBER OF DEGREES E OR W OF THE INDEX LINE AS STATED ON THE MAP. THE MAP IS NOW ORIENTED TO THE TERRAIN.

3RD METHOD - WHEN YOUR POSITION ON THE MAP IS KNOWN.

a. SELECT A PROMINENT TERRAIN FEATURE ON THE GROUND
b. SIGHT AN AZIMUTH FROM YOUR POSITION ON THE GROUND TO THE SELECTED TERRAIN FEATURE.
c. ALIGN THE FULLY OPENED COMPASS ON THE MAP SO THAT THE SCALE EDGE RUNS THROUGH THE SELECTED TERRAIN FEATURE AND YOUR KNOWN POSITION.
d. TURN THE MAP AND COMPASS TOGETHER UNTIL THE AZIMUTH SIGHTED (IN B., ABOVE), LIES UNDER THE INDEX LINE. THE MAP IS NOW ORIENTED TO THE TERRAIN.

G. LOCATING YOUR POSITION ON A MAP BY MEANS OF INTERSECTING AZIMUTHS.

1. ORIENT THE MAP TO THE TERRAIN.
2. SIGHT AN AZIMUTH TO ANY VISIBLE TERRAIN FEATURE THAT APPEARS ON THE MAP.
3. PLACE THE FULLY OPENED LENSATIC COMPASS ON THE MAP WITH THE RULED EDGE RUNNING THROUGH THE TERRAIN FEATURE AND WITH THE COMPASS READING THE SAME AS THE AZIMUTH SIGHTED. DRAW A LINE ALONG THE RULED EDGE
4. PICK ANOTHER VISIBLE TERRAIN FEATURE AND SIGHT ITS AZIMUTH. FOR GREATER ACCURACY THE TWO LINES SHOULD BE APPROXIMATELY RIGHT ANGLES.
5. REPEAT STEP 3.
6. THE POINT OF INTERSECTION ACCURATELY LOCATES YOUR POSITION ON THE MAP.
7. FROM HERE YOU CAN DETERMINE THE AZIMUTH OF BEARING TO ANY TERRAIN FEATURE SHOWN ON THE MAP AS LONG AS YOUR MAP IS ORIENTED.

H. NIGHT-TIME USE:

1. TRY TO DETERMINE A COURSE (AZIMUTH) TO BE FOLLOWED WHILE THERE IS STILL LIGHT.
2. TO SET A COURSE, FOLLOW INSTRUCTIONS IN THE 3RD METHOD UNDER D- TO SET A COURSE.

3. WITH YOUR COURSE DETERMINED, HOLD THE LENSATIC COMPASS OPEN AND LEVEL IN BOTH HANDS, WITH THE INDEX FINGERS OF THE RIGHT HAND ALONG THE SIDE OF THE COMPASS.
4. POSITION THE COMPASS APPROXIMATELY HALFWAY BETWEEN THE CHIN AND THE BELT, KEEPING THE **N** ARROW UNDER THE LUMINOUS BEZEL INDICATOR.
5. PROCEED FORWARD IN THE DIRECTION THAT THE INDEX FINGER IS POINTED.

I. INDUCTION DAMPING:

THE LENSATIC COMPASS IS INDUCTION DAMPED VERSES LIQUID DAMPED INSTRUMENTS (WHICH ARE SUBJECT TO LEAKAGE AND EVENTUAL FAILURE). INDUCTION DAMPING ALLOWS THE DIAL TO SEEK MAGNETIC NORTH AND COME TO A COMPLETE REST IN MUCH LESS TIME THAN A UNIT WITHOUT INDUCTION DAMPING. IT IS A VELOCITY DEPENDENT FORCE; THAT IS, AS THE SPEED OF THE OSCILLATION OF THE DIAL COMES TO REST, THE DAMPING FORCE IS ZERO.

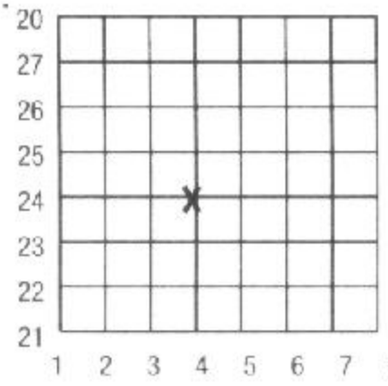
J. GENERAL - THE LENSATIC COMPASS;

- HAS A DIAL BALANCED ON A PRECISION MADE SYNTHETIC SAPPHIRE JEWELED BEARING.
- IS INDUCTION DAMPED BY MEANS OF A COPPER DAMPING SHELL SO THAT DIAL COMES TO REST WITHIN SIX SECONDS.
- HAS A RUBBER CUP SEALING THE COPPER DAMPING SHELL, MAKING THE COMPASS WATERPROOF.
- IS TESTED TO OPERATE AT TEMPERATURE RANGES FROM -50 DEGREES F. TO +160 DEGREES F.
- IS MADE TO MEET RIGID U.S. MILITARY SPECIFICATIONS.
- HAS BEEN USED FOR MANY YEARS BY ARMED FORCES AROUND THE WORLD.
- HAS BEEN JUDGED TO BE THE MOST ACCURATE, DEPENDABLE, RUGGED AND VERSATILE COMPASS THAT IS AVAILABLE.
- BECAUSE OF ITS COMPACT SIZE, LIGHT WEIGHT AND ACCURACY, IS IDEALLY SUITED FOR BOATING, CAMPING, CROSS-COUNTRY SKIING, FISHING, HUNTING AND ORIENTEERING. IMPORTANT - READINGS SHOULD NEVER BE TAKEN NEAR VISIBLE MASSES OF IRON OR ELECTRICAL CIRCUITS, BECAUSE OF THEIR EFFECTS ON THE COMPASS MAGNET. THE FOLLOWING ARE SUGGESTED AS APPROXIMATE SAFE DISTANCES TO INSURE PROPER FUNCTIONING OF THE COMPASS.

a.	HIGH TENSION POWER LINES	55 METERS (60 YARDS)
b.	CAR, TRUCK, CAMPER	18 METERS (20 YARDS)
c.	TELEPHONE LINES, WIRE FENCES	10 METERS (11 YARDS)
d.	SHOTGUN, RIFLE, METAL BOXES, ETC.	0.5 METERS (1.5 FEET)

K. DEFINITIONS

1. ***AZIMUTH*** (BEARING, DIRECTION) - A HORIZONTAL ANGLE IN RESPECT TO NORTH (DEGREES, 6400 MILS). IT IS READ ON THE DIAL OF THE LENSATIC COMPASS IN EITHER DEGREES OR MILS, BY THE NUMBER DIRECTLY UNDER THE BLACK INDEX LINE. EXAMPLE: AZIMUTH OF 90 DEGREES OR 1600 MILS (READ 16) IS DUE EAST.



The Position of A is read 4-24. Read number along the right first and then number from bottom to top.

FIG. 5

2. ***COORDINATES*** - THE NORTH/SOUTH AND EAST/WEST LINES ON A MAP (GRID LINES). POSITIONS ARE DETERMINED ON A MAP BY INTERSECTING COORDINATES. THE LOWER LEFT IS THE ORIGIN AND COORDINATES ARE READ TO THE RIGHT AND THEN UP. EXAMPLE: SEE FIG. 5

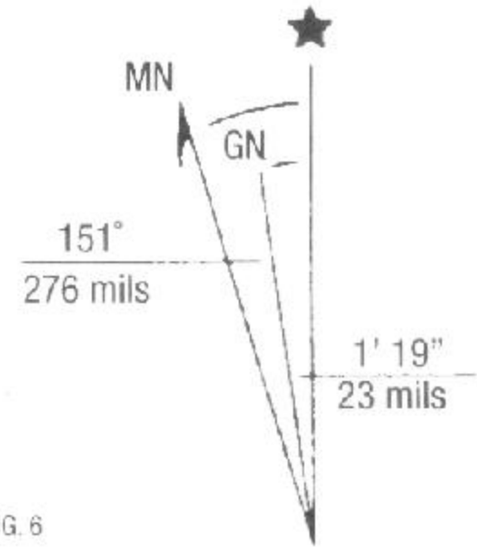


FIG. 6

3. ***NORTH*** - GENERALLY A TOPOGRAPHICAL MAP (A MAP USING CONTOUR LINES TO SHOW ELEVATION AND MAKE POSSIBLE THE IDENTIFICATION OF CANYONS, PEAKS, RIDGES AND OTHER TERRAIN FEATURES) SHOWS THREE NORTHS IN THE DECLINATION DIAGRAM. (FIG. 6)

a. TRUE NORTH - THE ACTUAL POSITION OF THE NORTH POLE OF THE EARTH'S SURFACE. IT IS THE NORTHERLY POINT TOWARD WHICH THE MERIDIANS (NORTH, SOUTH OR LONGITUDINAL LINES) BETWEEN THE POLES ARE DRAWN. MAPS GENERALLY ARE ORIENTED TO TRUE NORTH. (SHOWN IN FIGURE 6 BY A RAY OR LINE TIPPED WITH A STAR).

b. MAGNETIC NORTH AN IRREGULAR AND WAVERING MAGNETIC FORCE WHICH TENDS TO RUN GENERALLY NORTHWARD AND SOUTHWARD, CAUSING A COMPASS TO POINT VARIOUSLY, DEPENDING ON LOCATION. THESE MAGNETIC "POLAR AREAS" ARE MORE THAN 1000 MILES AWAY FROM THE NORTH AND SOUTH POLES AND IT IS IN THESE DIRECTIONS THAT THE COMPASS MAGNET POINTS. (SHOWN IN FIG. 6 BY A RAY TIPPED WITH **MN** AND/OR A SINGLE BARBED SPEAR).

c. ***GRID NORTH*** - THE NORTH INDICATED BY THE MAP MERIDIANS RUNNING LONGITUDINALLY. BECAUSE OF THE EARTH'S CURVATURE, THESE LINES ARE OFTEN PULLED A LITTLE AWAY FROM THE TRUE MERIDIAN IN ORDER TO PROVIDE A STRAIGHT LINE, RECTANGULAR LAYOUT OF COORDINATES. (SHOWN IN FIG. 6 BY A RAY TIPPED WITH GN.)

4. ***MAGNETIC DECLINATION*** - THE HORIZONTAL ANGLE (DIFFERENCE IN DEGREES) BETWEEN MAGNETIC NORTH AND TRUE NORTH. THE MAGNETIC DECLINATION ANGLE VARIES FROM AREA TO AREA AND FROM TIME TO TIME: GENERALLY ABOUT 1' (ONE MINUTE) PER YEAR. (THERE ARE 60 MINUTES TO ONE DEGREE) FIG. 7 SHOWS AN ISOGONIC CHART FOR THE U.S. THIS CHART IS HELPFUL TO UNDERSTAND HOW MAGNETIC NORTH READINGS WILL VARY FROM TRUE NORTH FOR DIFFERENT PARTS OF THE COUNTRY. THIS DECLINATION (VARIATION, ANGULAR DIFFERENCE) WILL BE SHOWN IN THE DELINATION DIAGRAM OR STATED IN THE MARGINAL INFORMATION ON YOUR MAP.

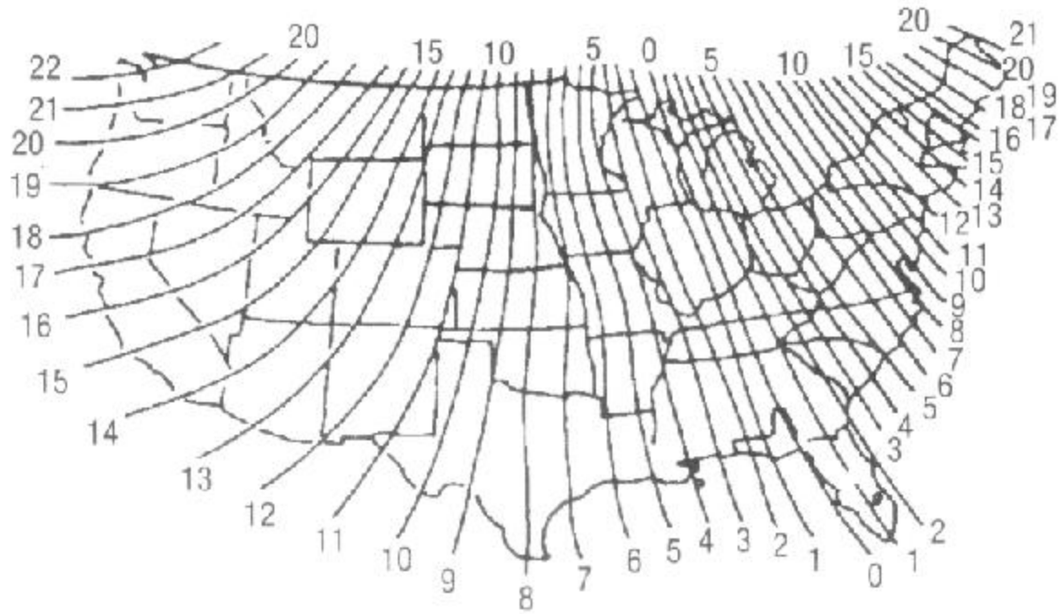


FIG. 7

A. LINES TO THE LEFT OF THE ZERO DECLINATION LINE ON THE ISOGONIC CHART ARE CALLED EASTERLY VARIATION. THE **N** ARROW OF THE LENSATIC COMPASS WILL POINT EAST OF TRUE NORTH.

B. LINES TO THE RIGHT OF THE ZERO DECLINATION LINE OF THE ISOGONIC CHART ARE CALLED WESTERLY VARIATION. THE **N** ARROW OF THE LENSATIC COMPASS WILL POINT WEST OF TRUE NORTH.

C. WHEN THE LENSATIC COMPASS IS USED WITH A MAP OR IN CONJUNCTION WITH MAP BEARING, AN ADJUSTMENT SHOULD BE MADE TO ALLOW FOR THE VARIATION. THIS IS NOT NECESSARY FOR ROUGH COMPASS WORK, IN AREAS WHERE THE VARIATION IS SLIGHT, OR FOR MAPS THAT USE MAGNETIC NORTH TO LOCATE THE LONGITUDINAL GRID LINES (SUCH AS SOME ORIENTEERING MAPS).

APPENDIX

SECTION PAGE