

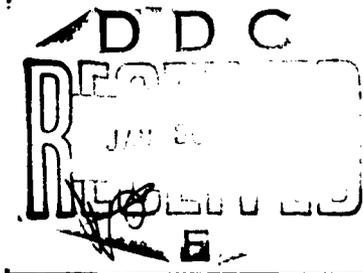
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AD-A048996

FOREIGN TECHNOLOGY DIVISION



ORIENTATION ON THE GROUND



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EDITED TRANSLATION

FTD-ID(RS)T-0982-77

15 July 1977

MICROFICHE NR: *FTD-77-C-000874*

ORIENTATION ON THE GROUND

English pages: 10

Source: Starshina Serzhant, nr 1, 1971,
PP. 16-17

Country of origin: USSR

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Requester: FTD/PDXA

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PREPARED BY:

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WP-AFB, OHIO.

U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, shch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere.
 When written as ë in Russian, transliterate as yë or ë.
 The use of diacritical marks is preferred, but such marks may be omitted when expediency dictates.

GREEK ALPHABET

Alpha	A	α	•	Nu	N	ν
Beta	B	β		Xi	Ξ	ξ
Gamma	Г	γ		Omicron	Ο	ο
Delta	Δ	δ		Pi	Π	π
Epsilon	E	ε	•	Rho	Ρ	ρ ϑ
Zeta	Z	ζ		Sigma	Σ	σ Ϻ
Eta	H	η		Tau	Τ	τ
Theta	Θ	θ	•	Upsilon	Υ	υ
Iota	I	ι		Phi	Φ	φ ϕ
Kappa	K	κ	•	Chi	Χ	χ
Lambda	Λ	λ		Psi	Ψ	ψ
Mu	M	μ		Omega	Ω	ω

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English
sin	sin
cos	cos
tg	tan
ctg	cot
sec	sec
cosec	csc
sh	sinh
ch	cosh
th	tanh
cth	coth
sch	sech
csch	csch
arc sin	\sin^{-1}
arc cos	\cos^{-1}
arc tg	\tan^{-1}
arc ctg	\cot^{-1}
arc sec	\sec^{-1}
arc cosec	\csc^{-1}
arc sh	\sinh^{-1}
arc ch	\cosh^{-1}
arc th	\tanh^{-1}
arc cth	\coth^{-1}
arc sch	sech^{-1}
arc csch	csch^{-1}
—	
rot	curl
lg	log

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.

ORIENTATION ON THE GROUND

Author Unknown

To orient oneself means to determine one's position on the ground in relation to the directions to the horizon or surrounding objects and to select the required direction for movement or action.

The directions to the horizon are determined from: a)
compass;

b) heavenly bodies; c) from the characteristic features of
local objects.

Determining magnetic azimuths from a compass. Stand facing the object to which the azimuth is being determined, orient the compass and, by turning the lid place the sighting device with its slot toward the observer and with the front sight toward the object (pocket). Take a reading on the limb opposite the indicator on the front sight - this will also be the magnetic azimuth (Fig. 1). To determine the direction along an assigned magnetic azimuth on the ground, we should place the indicator of the compass' front sight on the reading on the limb which corresponds to the assigned azimuth. Then, holding the compass horizontally with the slot of the sight toward the observer, turn it so that the northern end of the magnetic needle is placed opposite the zero division on the limb. An extension of the slot - front sightline is the direction along the assigned azimuth.

Orientation from the sun. In the middle latitude the sun rises in the summer in the northeast and sets in the northwest; in the winter it rises in the southeast and sets in the southwest and rises exactly in the east and sets exactly in the west only twice a year (approximately 21 March and 23 September).

Determination of the north-south direction from a watch and sun. The watch is set for local time and, turning in a horizontal plane, the hour hand is directed at the sun (the minute and second hands are not considered). The bisector of the angle between the hour hand and

the direction to the number 12 on the dial indicates approximately the north-south direction (Fig. 2), in which regard prior to noon south will be to the right of the sun and afternoon - to the left.

Orientation from the characteristic features of local objects. Determination of the directions to the horizon from the special signs of local objects is less reliable than from the sun and, even more, from a compass; therefore, it should be used cautiously and wisely, backing it up with orientation by other methods.

In a zone of temperate climate, the directions to the horizon are easily determined from the bark and moss (lichens). On birch, the bark is lighter and more elastic on the southern side than on the northern (even in the middle of a sparse forest). After a rain, the trunks of pine become darkened from the sun (the so-called "secondary bark" which is formed earlier on the shade side of the trunk swells and becomes darker). Moss and lichens on trees, rocks, and structures are concentrated primarily on the northern side. Grass on the northern outskirts of clearings is thicker than on the southern and the converse is true on lone trees, stumps, poles, and large rocks; grass grows more thickly to the south of them and is preserved longer in the hot time of the year to the north.

Opening rides in large forestry enterprises are usually cut

along north-south and east-west lines. The blocks are numbered from west to east and from north to south and the numbers are marked on block poles which are placed at the intersections of the rides. A line between two adjacent edges with the smallest numbers indicates the direction to the north (Fig. 3). In Germany and Poland, the numbering of the blocks is conducted from east to west.

Ant hills are almost always located to the south of the nearest trees, stumps, and bushes. The southern side of an ant hill is more gently sloping than the northern side.

Nests of mason bees are located on the southern side of a rock or wall.

During the ripening period fruits and berries acquire their coloring on the southern side earlier. The blossoms of sunflower and bur marigold face the sun and turn with its motion across the sky (on rainy days they are not directed to the north).

In the winter, the snow sticks to structures more on the northern side and melts more rapidly on the southern side. In depressions, the sun melts more rapidly on the northern side, and on hillocks and mounds - on the southern slope.

At the beginning of spring, snow melts more rapidly at the southern side of rising objects (rocks, structures, trees, etc.) than on the northern side, forming craters. Various religious structures may serve as good reference points: churches, mosques, synagogues, and so forth. The altars of orthodox and Lutheran churches face the east. The lowered edge of the lower cross piece on the cross on the dome faces the south and the raised edge - the north. The altars of Catholic churches are on the western side of the building. The doors of mosques and synagogues in the European part of the USSR face approximately north. Idol temples, pagodas, and Buddhist monasteries have their facades facing south. Exits from nomad tents are made on the south.

It is useful to know the specific features of the natural region in which you operate which are necessary for orientation.

The directions to the horizon, for example, can easily be determined from the direction of the winds which prevail on given terrain. For example, in the Karakum the sand dunes move to the southeast in the spring and summer and to the northwest in the fall and winter. Here, it is useful to know that the concave part of the sand dune faces the wind (Fig. 4).

Correct orientation can be aided by knowledge of the local

features of the vegetation for various types of plant life. Plants of damp places (moss, whortleberry, mountain cranberry, crowberry) inhabit the northern slopes of dunes south of Liepaja while xerophilous plants grow on the southern slopes (reindeer moss, heather). In the Southern Urals, in the zone of the forest steppe, the southern slopes of mountains are rocky and overgrown with grass while the northern slopes are covered with small islands of birch forest. In the southern part of the Buguruslanskiy rayon, meadows are scattered on the southern slopes and forests on the northern slopes. In the basin of the Verkhnyaya Angara River, steppe sections are located on the southern slopes of mountains while the northern slopes are covered with taiga forest. Pine grows on the southern slopes in the mountains of the Western Caucasus and on the northern slopes - beech, spruce, and fir. In the western part of the Northern Caucasus, beech adorns the northern slopes and oak - the southern. In the southern part of Osetia spruce, fir, yew, and beech grow on the northern slopes and pine and oak on the southern. In the Far East, in the area of Ussuriysk Amur cork is encountered almost exclusively on the northern slopes and oak on the southern. On the western slopes of Sikhote-Alin' pine forest grows and on the eastern slopes - mixed. In the Transbaykal, at the heat of the summer permafrost is observed at a depth of 10 cm on the northern slopes while it is usually at a depth of 2-3 meters on the southern slopes.

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The number of special signs from which one can orient himself is not limited by what is indicated above; there are many more of them. Each soldier should develop a sense of observation for himself and should learn to note and remember the characteristic details of the terrain and analyze the topographic situation.

Table. Typical position of the sun in the middle latitude (during the hours of local time).

Key: (1) Direction to the horizon, (2) Spring, (3) Summer, (4) Fall, (5) Winter, (6) east, (7) southeast, (8) southwest, (9) west.

Стороны горизонта (1)	(2) Весной	(3) Летом	(4) Осенью	(5) Зимой
восток (6)	7	5	7	9
юго-восток (7)	10	9	10	11
юго-запад (8)	18	17	18	15
запад (9)	19	21	19	17

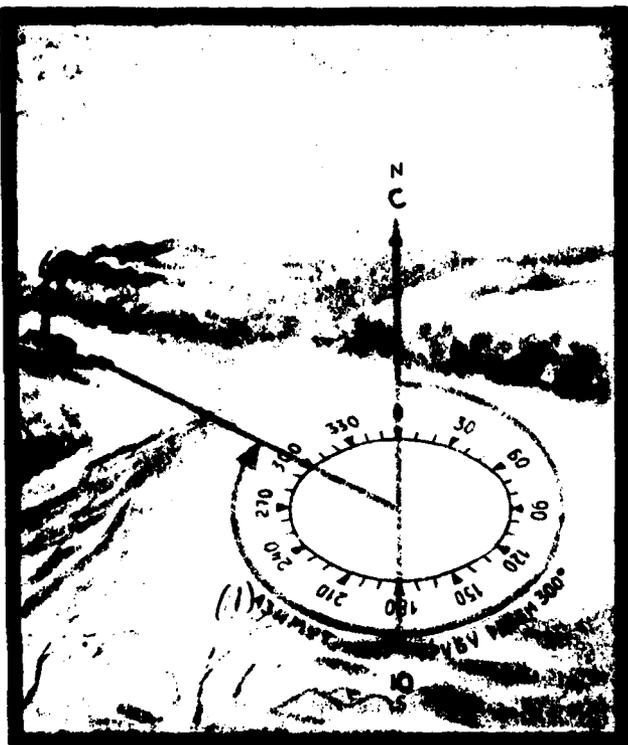


Fig. 1.

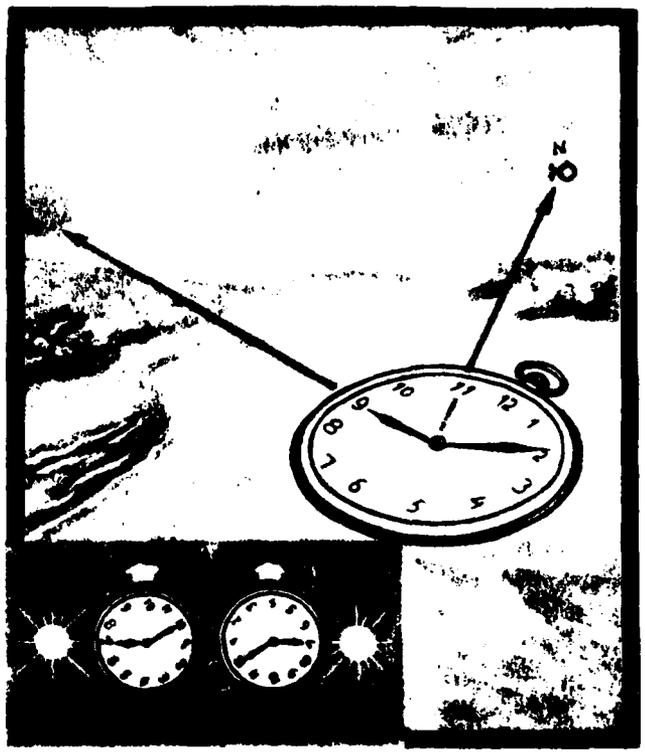


Fig. 2.

Fig. 1. Key: (1) Azimuth to smokestack equals 300°.

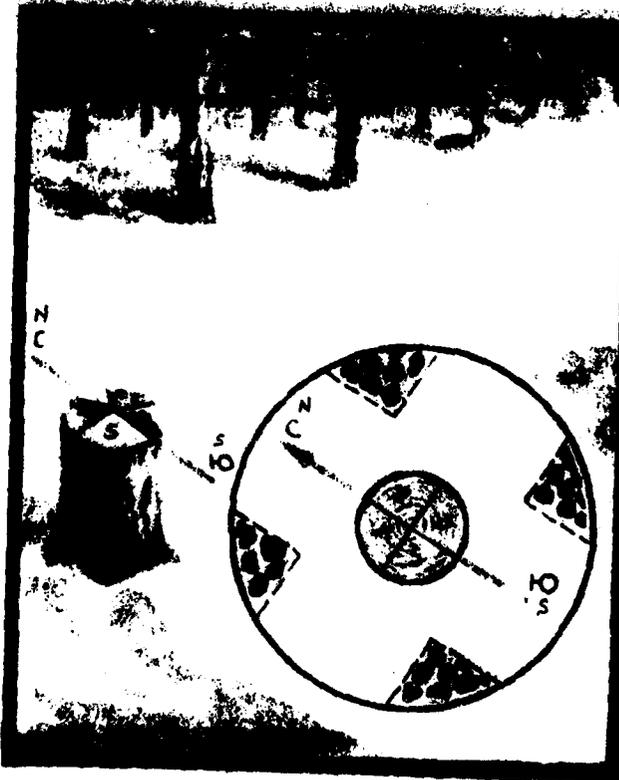


Fig. 3.



Fig. 4.

Fig. 4. Key: (1) Wind.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER FTD-ID(RS)T-0982-77	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) ORIENTATION ON THE GROUND		5. TYPE OF REPORT & PERIOD COVERED Translation
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Foreign Technology Division Air Force Systems Command U. S. Air Force		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 1971
		13. NUMBER OF PAGES 10
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) 08		

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