GERMAN GRID SYSTEM

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The Germans have mapped the greater part of Europe, and in addition have copied maps of other countries and converted them to their own use. German cartography is extremely painstaking and accurately detailed. Basically, the principles of the German grid are similar to the U. S. system. Main differences are the use of the metric system and different methods of determining declination, relief, etc. Knowledge of the system will be of value to personnel having access to captured documents, situation maps, overlays, etc., in regard to interpretation, declination, and orientation with their own maps.

TYPES OF MAPS

Principal military maps used by the *Wehrmacht* are the (1) *Deutscher Motorfahrer* series, 1:300,000, size 2º × 1º, strategic road maps covering most of Europe; (2) *Reichskarte* series, 1:100,000, size 30′ × 15′, hachured federal maps covering greater Germany; (3) *Kartenblatt* series, 1:50,000, size 30′ × 15′, contoured maps of the Reich; (4) *Messtischblatt* series, 1:25,000, size 10′ × 6′, contoured maps covering most of Germany.

Other types used are 1:1,000,000 strategic (size 6º × 4º) and 1:10,000 tactical maps. The Germans also use many French maps which have been converted to their military use.

Marginal information on German maps of tactical scale usually includes the dates of survey, publication, and revision; the name of the publishing agency, and the index of the political boundaries within the map, province, district, etc.; the name and numbers of the sheet; names and numbers of adjacent sheets, found in the borders of the map; the representative fraction; graphic scales in meters, kilometers, and a stride (*Schritt*) scale (80 centimeters, or approximately 32 inches—about one U. S. pace); the grid interval in centimeters; the geographic coordinates of the corners of the sheet; a coordinate square of appropriate scale for the map; an isogonic diagram plus the date of the diagram, information for the annual magnetic change; a conversion table for degrees to mils; a mark point and scale for orienting the map; and a legend of the conventional signs and symbols used on the map.

SCALE

The representative fraction is usually 1:25,000, 1:50,000, or 1:100,000. An accurate index to ground distance is offered by metric measurement on maps of these scales: 10 millimeters = 1 centimeter; 100 centimeters = 1,000 millimeters = 1 meter; 1,000 meters = 100,000 centimeters = 1,000,000 millimeters = 1 kilometer. Thus: on map RF 1:100,000, 1 cm MD = 1 km GD; RF 1:50,000, 1 cm MD = ½ km GD ∴ 2 cm MD = 1 km GD; RF 1:25,000, 1 cm MD = ¼ cm GD ∴ 4 cm MD = 1 km GD.

COORDINATES

Modern German maps use the same geographic degree system as the U. S.: latitude is measured north and south from the equator and longitude east and west from the Greenwich meridian. One degree equals 60 minutes, and one minute equals 60 seconds. Segments of one-minute interval are found around the borders of many maps to facilitate the reading of geographic coordinates.

On some older maps the prime meridian is taken from Ferro, the westernmost point or part of the Canary Islands. Ferro is 17º 40′ west of Greenwich. In the event that any maps happen to use Berlin as the longitudinal origin, the German capitol is 13º 21′ 51″ east of Greenwich.

Coordinates are read right and up as in our own system, the main difference being the use of a comma instead of a decimal in writing the coordinate reference. On maps containing parts of two adjacent zones, the incidence may be determined from the designation of the critical grid lines. See Fig. 3.

The Military Grid System (*Gaus Gitternetz*) of Germany consists of seven grid zones, each 3º wide, numbered consecutively 2 to 8, with no overlap as in the U. S. system (see Fig. 1). Grid interval is either 1 km or in multiples of 5 km. The central meridians of these zones are respectively, 6º,

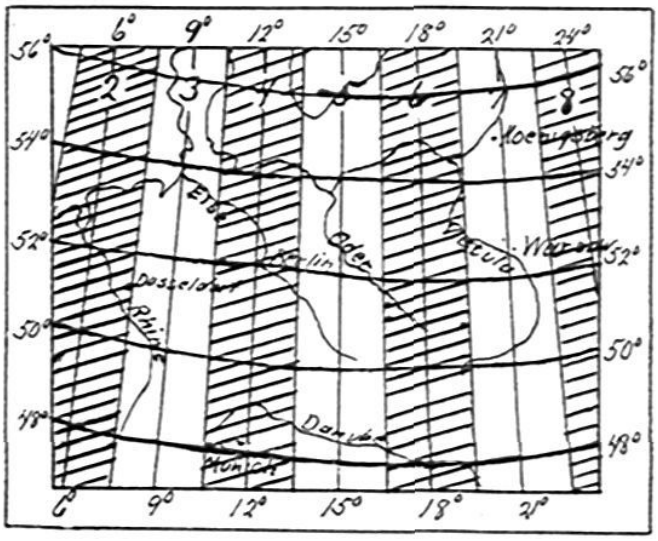

Figure 1. Zones

9º, 12º, 15º, 18º, 21º, and 24º east of Greenwich.

The designation of the central meridian (mark gridline) of each zone is arbitrarily given the value of 500,000 meters

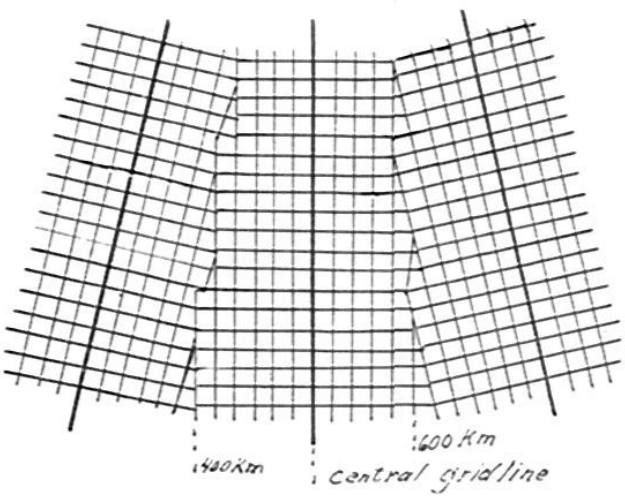

Figure 2. Grid Coverage

(Fig. 2). Each zone is approximately 200 kilometers in width. Thus the grid designations on the eastern edge of a zone are approximately 600,000 meters and on the western edge about 400,000 meters.

At critical intervals the vertical gridlines are designated by four figures. The first figure is the number of the grid zone; the next three are the grid reference to the nearest kilometer (Fig. 3). Maps on the edges of the zones will contain parts of two adjacent zones, with the respective grids designated as such (Fig. 3). On the borders of the map tick marks are found as a means of designating where the regular grid intervals would be if projected into the adjacent zone. This would be necessary if the map were to be used as a firing chart, necessitating the extension of a true grid from one zone throughout the map (see Fig. 4). With this non-overlapping system the actual map distortion on maps of 1:25,000 scale is only 3.2 meters GD or .13 millimeters MD, and on maps of scale 1:100,000 29 meters GD or .3 millimeters MD.

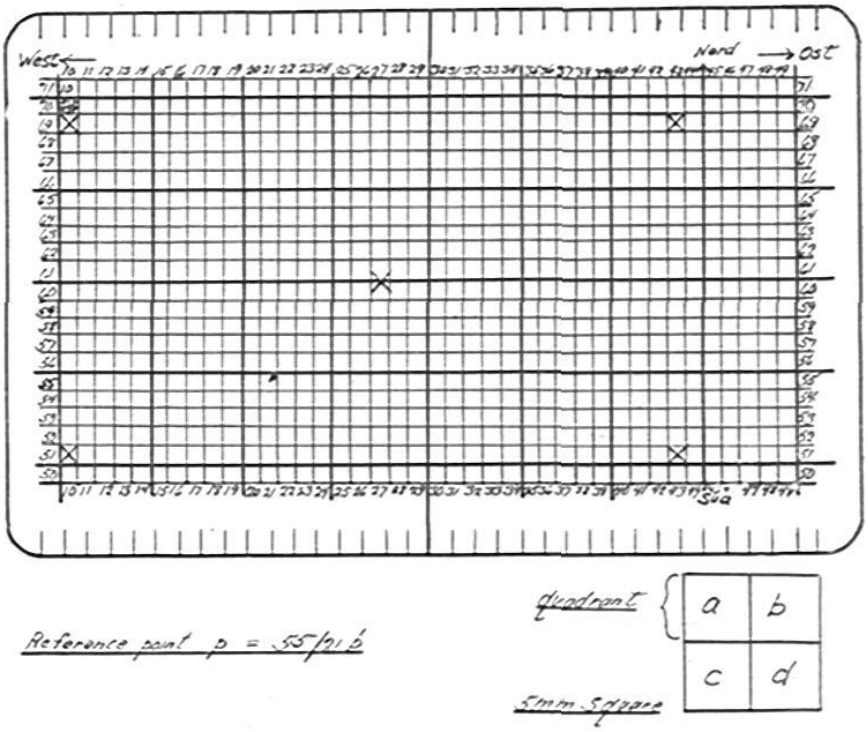

Figure 5. Map Template

The German map template (*Zielgevierttafel*) made of transparent celluloid, is divided into channels 5 - mm square, numbered 10 to 49 horizontally and from 50 to 71 vertically. Each 5-mm square (*Zielgeviert*) is subdivided by inspection into quadrants lettered a, b, c, d (Fig. 5). There are five x's or reference points on the template, one in each corner and one in the center. These reference points (*Festpunkt*) are known as reference points NW, SW, NE, and SE, or upper right, lower right, upper left, and lower left.

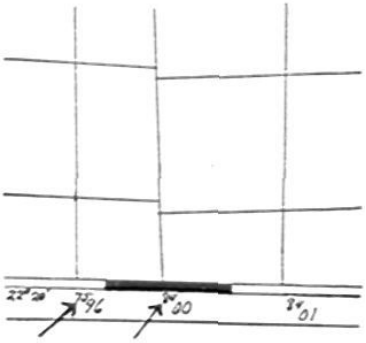

Figure 3. Map Overlap

To designate a point, place a specified template point over a specified map point and orient the edges of the template with the borders of the map; Then read the coordinates of the desired position up and right. A typical coordinate (point p, Fig. 5) would be expressed as 55/21b.[1] This method approximates the use of our M1 or M2 template.

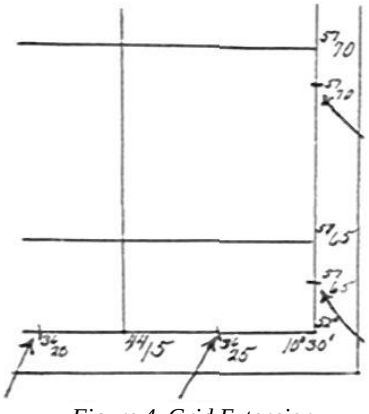

Figure 4. Grid Extension

The German thrustline (*stooslinie*) system consists of a line drawn through a point of origin, in a specified direction or to a designated point. The point of origin is given an arbitrary value in cm.

To use the system, draw a line at right angles from the thrustline to the point in question. Then measure along the thrustline in cm from the point of origin to the perpendicular. If the perpendicular is in advance of the point of origin, add

[1]In using the map template, the book *Deutsche Schutzen Kompanic* states that coordinates are read up and right. This differs from our normal procedure. Note that either method would give the same designation if the proper letter of the quadrant were given. Military grid coordinates are read right and up, whereas the method used for the template is up and then right.

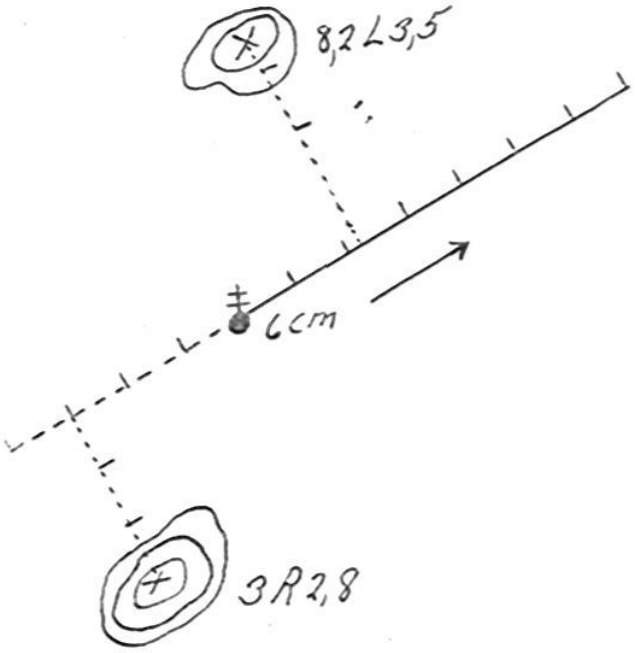

Figure 6. Thrustline

the distance in cm to the arbitrary value of the reference point. If the perpendicular is in rear of the reference point, subtract the distance in cm from the value of the point of origin. Then measure the distance along the perpendicular in cm to the point in question. Always face in the direction of advance and turn right or left at the perpendicular (see Fig. 6). German words for "right" and "left" are *rechts* and *links*. Thrustline coordinates are written as follows: 8,2L3,5 or 3R2,8.

On many maps a coordinate square (*Planseiger*) is printed to scale in the margin for the grid system on the map.

AZIMUTH

Most German maps' borders are coincident with true north. For this reason, declination information is usually given from Grid North.

Isogonic Diagram (Nadelabweichung)

Grid magnetic information is interpreted from an isogonic diagram found in the margin of the map (Fig. 7). To use the diagram, interpolate between the isogonic lines (on the diagram) at the coordinates of the desired position. Then, taking the annual magnetic increase or decrease, figure the proper declination for the present time, taking into consideration the date of the isogonic diagram.

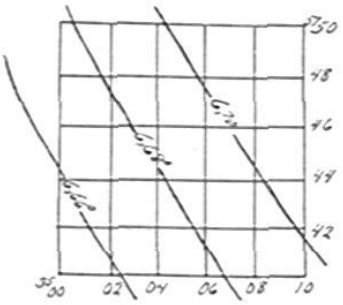

Figure 7. Isogonic Diagram

Conversion Table

The mil system is used by small infantry units as well as artillery units. Declination information is given in degrees and decimal parts of degrees in the isogonic diagram; a conversion table for degrees and mils is usually found in the margin of the map (Fig. 8).

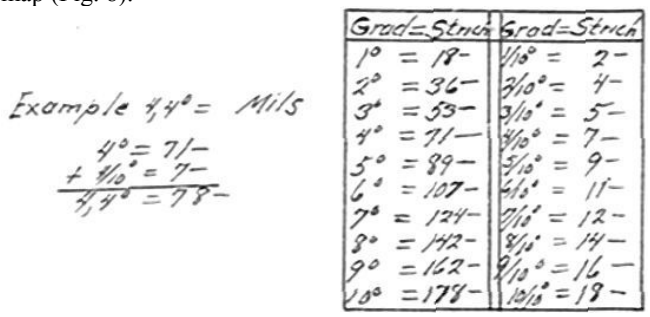

Figure 8. Conversion Table

Compass (Marschkompass)

All types of units use the German march compass for tactical maneuvers. Two luminous marks are found in the face of the compass, one on each side of the North letter. They are used to set off an approximate declination for the different sections, west and east, of Germany proper. The compass is graduated counterclockwise in mils. Thus, the values of the cardinal distances are N 6400, S 3200, E 4800, and W 1600 mils. A conventional type degree compass is also used, but the mil compass is most frequently encountered.

Orienting Point (Marschkompass Punkt)

German maps may be oriented by the use of a point (*M Punkt*) on the top of the map and a degree scale on the bottom. To orient

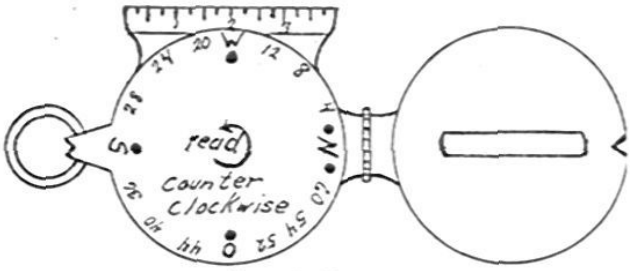

Figure 9. Compass

the map, determine the declination of the desired point from the isogonic diagram. Then draw a line from the *M* point to the appropriate declination number on the scale on the bottom of the map. A plus sign represents an east (and a minus sign a west) declination (Fig. 10). To orient, place a compass on the map and adjust until the north-south compass line, magnetic needle, and the declination line drawn on the map are all in coincidence.

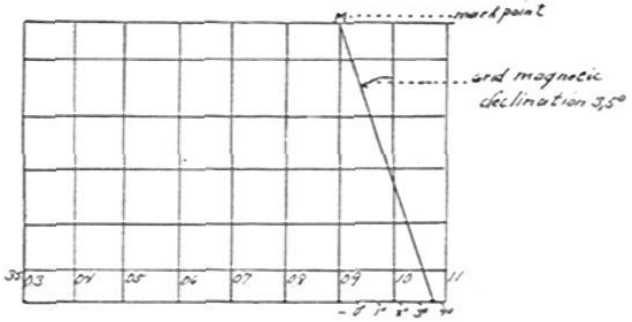

Figure 10. Map Orienting Diagram

TOPOGRAPHY

Relief is shown by means of contours, form lines, hachures, colors, shading, trigonometric points, and spot heights. Nearly all German tactical maps are contoured, while most strategic maps are hachured. Short hachures close together indicate

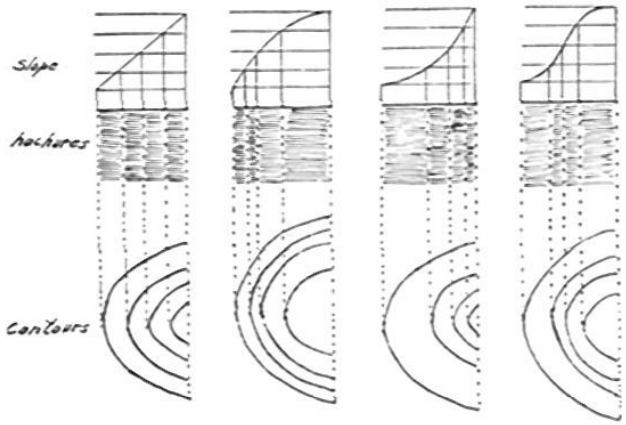

Figure 11. Hachures

steep slope, while long thin hachures indicate gentle slope (Fig. 11). On many maps, tiny arrows are used to indicate direction of slope and flow of water.

SIGNS AND SYMBOLS

German conventional signs and symbols conform generally to those of other nations, inasmuch as all are ideographic pictures of the objects they are intended to portray. Examples of German military symbols, abbreviations, and terms may be found in FM 30-22, or the MID book of German Military Symbols.