

The new civil-military Topographic Maps of Austria

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Abstract. Economic reasons led to a discussion, if the dualism of a civil and a military edition of the topographic map series in Austria is necessary. There have been no restrictions like secret military information in the military topographic maps therefore the two editions could be merged with compromises on both sides. This article describes the current status of the layout and the content of the official topographic map series 1 : 50 000, 1 : 250 000 and 1 : 500 000 of Austria.

Keywords: Topographic Map, Military Map, Topographic Map Series, Austria, Institute for Military Geography, Federal Office of Metrology and Surveying

1. Introduction

The official topographic mapping in Austria is based on three main scales. By decision of 1959 these map series were the Austrian map 1 : 50 000, 1 : 200 000 and 1 : 500 000, which covered the needs of all governmental users including the military as well as the private sector, but with separated editions for military and private purpose. Responsible for production and edition was in the past and is at present the Federal Agency of Metrology and Surveying. By joining the European Union and the Partnership for Peace (PfP) Programme in 1995 the preconditions in Austrian security policy changed and had therefore an impact on national mapping (Ditz et. al. 2011). The Austrian government agreed to a NATO's proposal to change the official map series from national to international standards. That proposal, by the way presented to all PfP-members and also agreed by the countries, resulted nationally in the change from GAUSS-KRÜGER-projection to UTM-projection and the introduction of a map series 1 : 250 000 for the Austrian Armed Forces instead of the map series

1 : 200 000 (ÖK200), which remained a civil map series and was printed until 2009.

2. The Topographic Maps 1 : 250 000 of Austria

In 2005, considerations started for the first time to bring together the civil map series 1 : 200 000 and the military map series 1 : 250 000 to a civil-military map series for the crisis and disaster management, that was recommended for planning and operation (Wechselberger 2011). The first complete edition of this new map series could be published in 2010.

This map series consists of 12 map sheets, covering an area of $2^{\circ} \times 1^{\circ}$ in an international sheet line system with a sheet designation number derived from the International Map of the World and a name based on the biggest city on the respective map. The projection of the map is based on the international UTM system, the size of the map is 91,2 x 57,9 cm. Margin information is in English and German language.

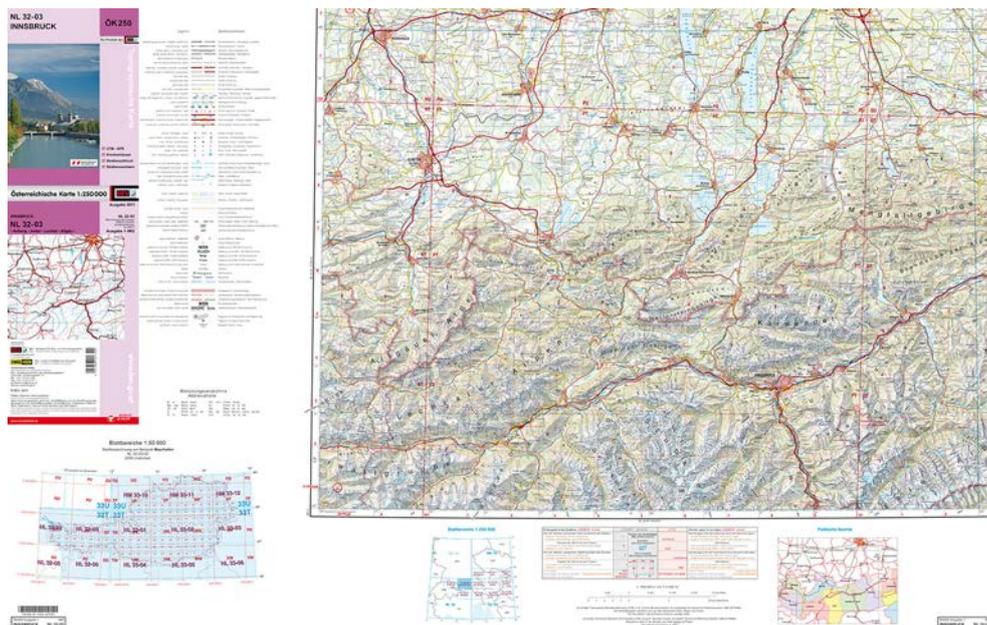


Figure 1. Layout of the Austrian map 1 : 250 000

The layout of the map 1 : 250 000 is not consistent to the layout of the other map series, because this was the first edition of a civil-military map. The

map face is bled-off at the northern and eastern side of the map. The margin of the map contains the map cover in the corporate design colour purple with the sheet designation number, the name of the map, a picture of the eponymous city and the publication and copyright notes. It includes also an overview map of the map sheet with the main lines of communication, a legend, a scale bar with information to reference systems, an example for the UTM position report, overview maps of the sheet line system of the map series 1 : 250 000 and 1 : 50 000 and a map with the political districts of Austria within the map sheet.

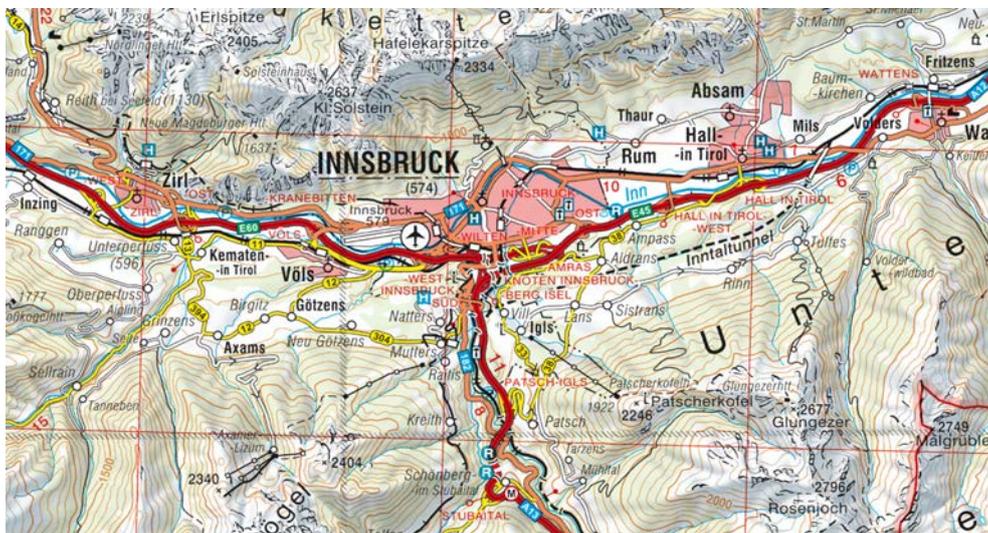


Figure 2. Detail of the Austrian map 1 : 250 000

The map 1 : 250 000 is a topographic overview map with a terrain representation composed of contour lines, rock drawing and hill shading. Further contents are a laminar depiction of settlement, boundaries, water body, lines of communication with road numbers, forest and glaciers, selected individual objects and geographical names of settlement and important geographic objects.

Essential for the purpose of the crisis management is the road classification and the significance of the lines of communication in connection with additional information as widths of roads, points of constriction, restricted loading capacities of bridges and clearance heights as well as exceptional incline.

A 10-km UTM-grid with red lines, 100-km-square identifications in red and graticules with a black line raster representing the sheet line system of the Austrian Map 1 : 50 000 is used.

3. The Topographic Maps 1 : 50 000 of Austria

The topographic maps at the scale of 1 : 50 000 of Austria were historically published as a civil and a military edition with some slight differences in content and map layout. Due to financial restrictions the costs of the production of these two editions had to be reduced. In 2010, the Federal Office of Metrology and Surveying and the Institute for Military Geography started the adaptation of the layout for a civil-military edition of the map series 1 : 50 000. This adjustment could be finished with the production of the first sheet NL32-03-30 Mayrhofen in 2011.

This map series consists of 191 map sheets, each covering an area of 20' x 12' in an international sheet line system with a sheet designation number derived from the International Map of the World and a name based on the biggest city on the respective map. The projection of the map is based on the international UTM system, the size of the map is 81,0 x 57,9 cm. Margin information is in English and German language.

The map face is bled-off at the northern and eastern side of the map. The margin of the map contains the map cover in the corporate design colour blue with the sheet designation number, the name of the map, a picture of the eponymous city and the publication and copyright notes. It includes also an overview map with the adjoining map sheets, an overview map of the sheet line system of the map series 1 : 250 000 and a diagram with the map sheets 1 : 50 000 in the respective map 1 : 250 000.

The design of the layout is contemporary and modern, the outer neatline was omitted and lettering of coordinates was adapted using modern fonts. Within the margin, grey bars are used to structure the contents with headings. The example for the UTM position report was also redesigned using pastel colours. Further information to the actuality, the used map basics, the reference system and the north directions as well as a scale bar and a gradient scale could be found at the bottom of the map.

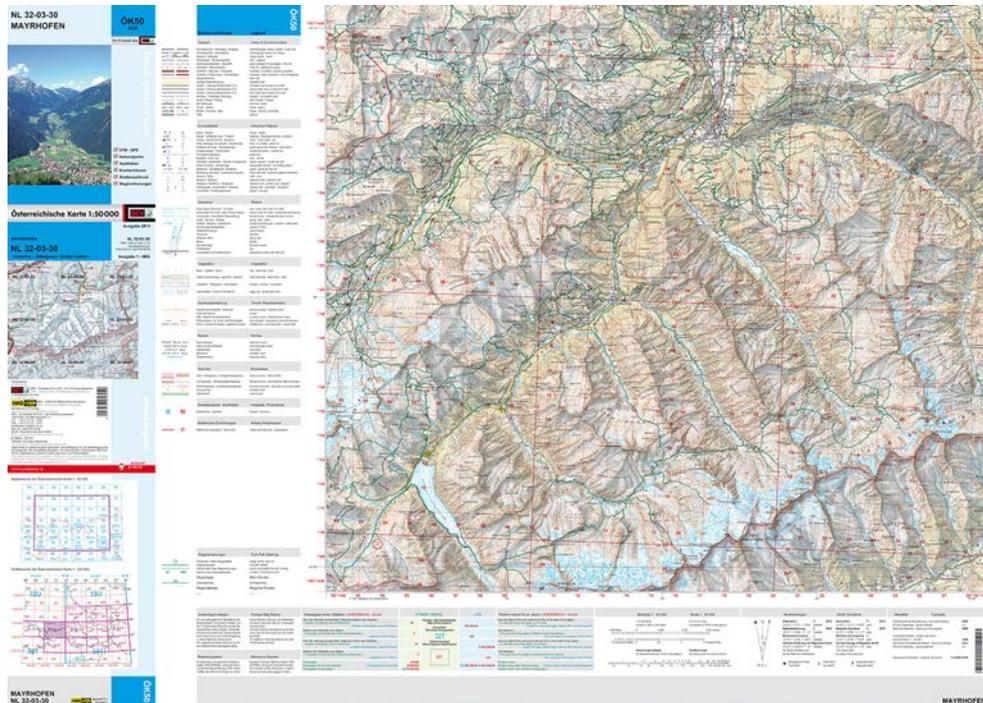


Figure 3. Layout of the Austrian map 1 : 50 000

The map 1 : 50 000 is a topographic map with a terrain representation composed of contour lines, rock drawing and hill shading. Further contents are a individual house representation, boundaries, water body, lines of communication, glaciers and selected vegetation, individual objects and geographical names of settlement and important geographic objects. Additional information like foot path markings, military restricted areas, hospitals and pharmacies are portrayed. A 1-km UTM-grid with red lines and 100-km-square identifications in red is used.

The foreign map basics of Switzerland, Germany and the Czech Republic come from the cartographic models of these countries. Processing is therefore much more efficient and cost-saving and the request for the map design of the adjoining countries to train for a foreign assignment in case of a disaster is fulfilled. Unfamiliar is the laminar depiction of settlement instead of the individual house representation and that symbols, lettering and colours are not consistent to those in the Austrian area. The diverse equidistant of 10 metres in the Czech Republic impair the readability of the map

because the contour lines end at the border. In addition, the use of exonyms in the neighbouring abroad is lost.

The legend on the margin of the map contains only the Austrian symbols, the legend of the used foreign maps can be downloaded from the homepage of the Federal Office of Metrology and Surveying (BEV 2013).



Figure 4. Different foreign map basics of the Austrian map 1 : 50 000 (on the left side Switzerland, in the middle Germany and on the right side the Czech Republic)

4. The Topographic Map 1 : 500 000 of Austria

In 2012 the new topographic map 1 : 500 000 was published as the last scale of the official Austrian topographic map series. It covers the federal territory of Austria and adjacent areas of the neighbouring countries in one sheet (9° 30' to 17° 10' E and 46° 0' to 49° 24' N). It is published in a Lambert Conformal Conic Projection based on the European Terrestrial Reference System 1989 (ETRS89). Margin information is in English and German language. The size of the map is 120,0 x 87,0 cm.

According to the other new topographic map series 1 : 50 000 and 1 : 250 000 the principle rules of the marginal and grid information are taken over. Lettering of coordinates was adapted using modern fonts. The

map face of the new edition is bled-off in the northern and eastern side of the map.

The margin of the map contains the map cover in the corporate design colour red with a picture of the highest mountain of Austria, the publication and copyright notes. It includes also an overview map with important lines of communication. Grey bars with headings are used as a design element. The legend was redesigned and well-structured for a better recognition.

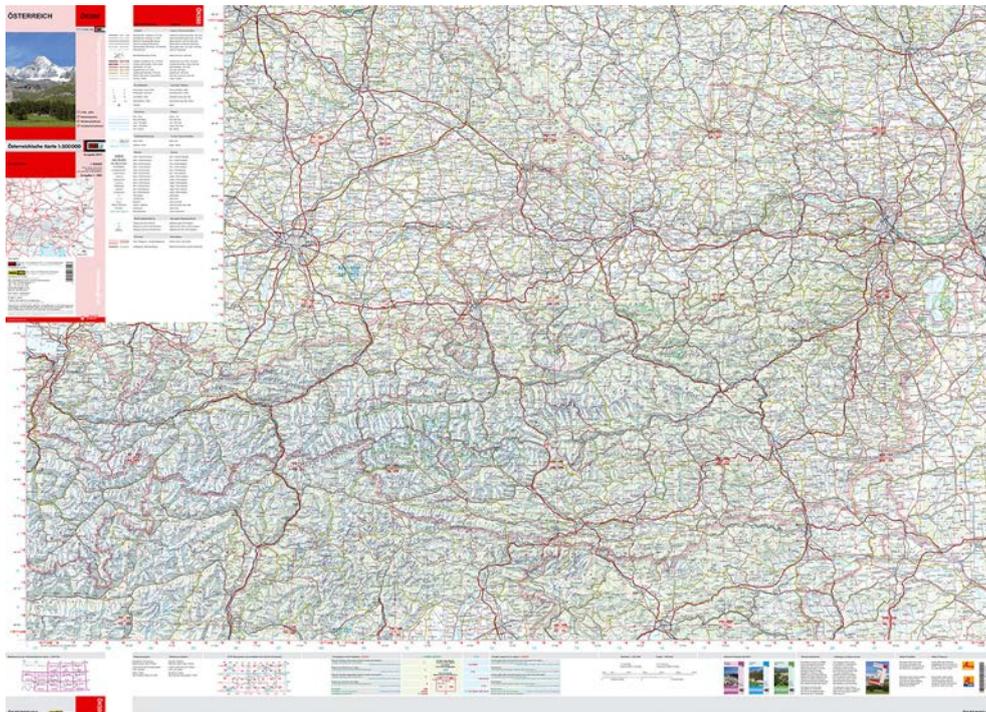


Figure 5. Layout of the Austrian Map 1 : 500 000

At the bottom of the map an overview map of the sheet line system of the map series 1 : 250 000, an overview map explaining the UTM grid (Grid Zone Designations and 100-km-square identification), an example for the UTM position report, information of the reference system, a scale bar and information to further products of the Federal Office of Metrology and Surveying can be found.

The map 1 : 500 000 is a topographic overview map with a terrain representation composed of rock drawing and hill shading. Further contents are a symbolised and a laminar depiction of settlement, boundaries, water

body, lines of communication with route numbers on motorways, forest and glaciers, selected individual objects and geographical names of settlement and important geographic objects. A 10-km UTM-grid with red lines, 100-km-square identifications in red and graticules in blue lines representing the sheet line system of the Austrian Map 1 : 50 000 is used.

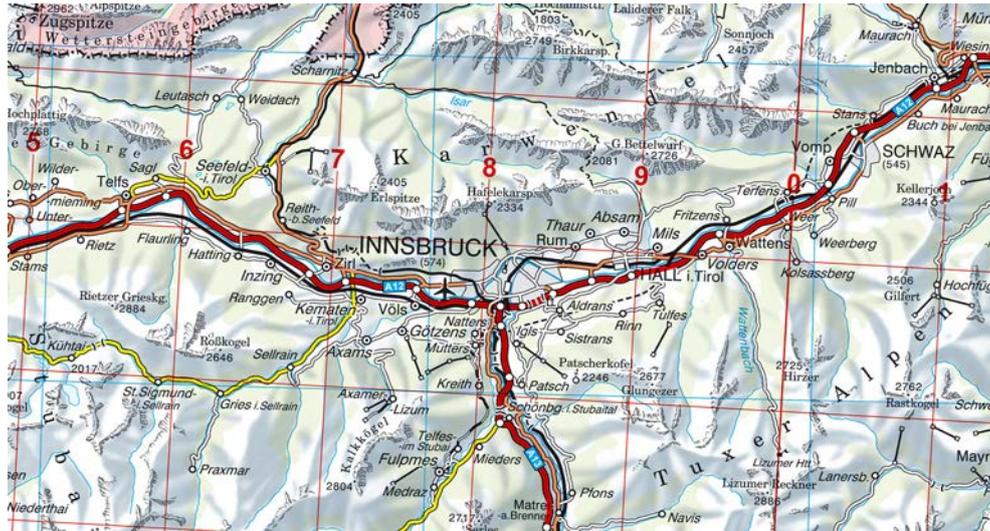


Figure 6. Detail of the Austrian Map 1 : 500 000

The Austrian map 1 : 500 000 is also available as a political edition, printed on demand only. As a thematic map it shows Austria's administrative and judicial districts with their seats. Background map is reduced to grey and blue elements without UTM-grid. Marginal information are scale, reference, legend, publication notes, information about further products and a list of all administrative districts with their index numbers and motor vehicle registration codes.

5. Outlook

Currently 55 sheets (dated 12 April 2013) of the map series 1 : 50 000 have been produced, the outstanding number of sheets will be processed in the next years. An ongoing project will be the adaptation of the layout of the map series 1 : 250 000 to the actual design used for the other scales which will be published in 2014. A further project will be the discussion about a new and modern design for the symbolisation of the map 1 : 50 000.

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Figures 1 - 6

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