

# **Identifying Metadata on Soviet Military Maps: An Illustrated Guide**

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## **ABSTRACT**

In the aftermath of the dissolution of the Soviet Union, the commercial availability of previously classified Soviet military mapping has revealed the vastness of a global mapping project, previously unknown to the rest of the world, comprising detailed topographic maps and city plans at several scales. Although numerous libraries and archives around the world have acquired these maps, and continue to do so, difficulties in interpreting the metadata of each sheet have led to errors and inconsistencies in the cataloguing of the maps, potentially hindering their accessibility. This paper focuses on approaches to identifying metadata on the maps and will present some illustrated examples as a guide. It is hoped that such assistance in the interpretation of these maps in general will also be of use to cataloguers.

## **INTRODUCTION**

Throughout the Cold War, the General Staff of the Soviet military undertook an extensive, standardised and highly detailed mapping programme covering the globe. Although produced in secrecy, the years following the collapse of the USSR saw maps from this previously inaccessible series become commercially available, principally from commercial enterprises within former Soviet republics. The maps range in scale from reference maps at 1:15,000,000 to regional maps at 1:2,500,000, 1:1,000,000, 1:500,000 and 1:200,000, with selected areas (including much of Europe) also mapped at 1:100,000 and 1:50,000 (Watt 2005; Kent and Davies 2013). Topographic maps at larger scales were reserved for areas within the Soviet Union, and were produced by a sister civilian organisation, the Chief Administration of Geodesy and Cartography (GUGK). However, urban areas, both within and outside the Soviet Union, were the subject of a separate series of military city plans, predominantly at the scales of 1:25,000 and 1:10,000, although some examples are known at 1:15,000 and 1:5,000. Over 2,000 such city plans are known to exist (Davies and Kent 2017) and, along with maps from the topographic series, have become very popular acquisitions for numerous libraries and public collections around the world.

Although the procurement of Soviet mapping by libraries is a promising first step in facilitating the accessibility of this relatively untapped source of geospatial data, identifying the metadata on the maps presents cataloguers with several difficulties, some of which become particularly problematic when such cataloguing is not carried out by those familiar with the Russian language. Toponyms, including those used in the titles of city plans, are transliterated phonetically from the native language of the locality being mapped. Therefore, cataloguers need a grasp of the Cyrillic alphabet if a further conversion (e.g. into the Latin alphabet) is required in the cataloguing process. Identifying the production date of the plans can also be problematic, with edition, printing, source material and coordinate system dates all frequently appearing in marginalia of the map sheets and potentially leading to confusion if cataloguers are unfamiliar with their layout. Even basic metadata, such as the name of the organisation responsible for producing the map, can also be subject to confusion, with terms such as Soviet Union, USSR, Soviet Army, General Staff and Military Topographic Directorate all providing accurate descriptions of the responsible entity, albeit with varying precision. The fact

that each of these names can be also presented in Russian or phonetic forms, or in any other language, adds complexity to the cataloguing process.

Perhaps the most significant barrier to accessibility is the use of varying methods for identifying and presenting this metadata, not only between the catalogues of different institutions, but also within catalogues. It is hoped that by highlighting these issues and outlining the layout of various types of Soviet map sheets, cataloguers will be better equipped to accurately and consistently identify the relevant metadata.

## **KEY ELEMENTS OF METADATA ON SOVIET MILITARY MAPS**

### **Nomenclature and Titling**

The nomenclature used on Soviet topographic maps is directly derived from the system used by the International Map of the World (IMW) at the scale of 1:1,000,000 (see Figure 1). This system is explained in detail by Soviet topographic mapping manuals (e.g. Military Topographic Directorate 1966), Psarev (2005), and by Davies and Kent (2017), all of which form the basis of the following summary.

**Fig. 1** Diagram showing the gridding of Soviet map sheets according to the system adopted by the International Map of the World showing the division of 1:1,000,000 sheets into four 1:500,000 sheets and their further subdivision into 36 1:200,000 and 144 1:100,000 sheets.

Bands of latitude, spanning 4°, are expressed by (Latin) letters from A–U in each hemisphere, while 6° longitudinal zones are numbered 1–60, beginning at the 180<sup>th</sup> meridian. For example, the 1:1,000,000 Soviet topographic sheet covering the central part of Great Britain is numbered N-30. Each 1:1,000,000 sheet is divided into four sheets at 1:500,000 (each of which covers an area of 2° latitude by 3° longitude), with one of the first four letters of the Cyrillic alphabet (А, Б, В, Г) appended to the 1:1,000,000 nomenclature to denote the appropriate part of that sheet (in left-to-right, top-to-bottom order). For example, N-30-Б, refers to the top-right quarter of N-30. Each 1:1,000,000 sheet is also divided into 36 sheets at 1:200,000 (each of which covers an area of 40' latitude by 1° longitude), which are numbered (from top-left to bottom right) using Roman numerals (I to XXXVI). These Roman numerals are appended to the relevant 1:1,000,000 sheet number, for example N-30-XXIV. Similarly, 1:1,000,000 sheets are also divided into 144 sheets at 1:100,000 (numbered 1–144 in the same order), with this number appended to the relevant 1:1,000,000 sheet number (for example, N-30-105). Each 1:100,000 covers an area of 20' latitude by 30' longitude.

Upper-case Cyrillic letters are appended to 1:100,000 nomenclature to denote 1:50,000 sheets (А, Б, В, Г), for example N-30-105-Б. A further lower-case letter is added to this to denote 1:25,000 sheets (а, б, в, г), for example, N-30-105-Б-г. Deviations are only made from this system north of the 60<sup>th</sup> parallel; between the 60<sup>th</sup> and 76<sup>th</sup> parallels, laterally adjacent sheets are merged to form a double sheet, whereas quadruple sheets are produced for areas north of the 76<sup>th</sup> parallel.

All Soviet topographic sheets also have a toponymical title. This is usually the name of the largest or most important city included in the map. On smaller scale maps, which may include multiple large cities, the one nearest the centre of the map area is usually selected. Countries, regions and other administrative areas covered by each topographic map sheet are stated in the top-left corner.

The extents of city plan sheets are not dictated by the IMW grid system but instead are centred on urban areas. They are therefore titled only with name of the relevant city. However, the nomenclature of the 1:100,000 sheet(s) which include the area covered by the city plan is included in brackets under the title, with the exception of plans pre-dating the 1950s.

### **Dates**

Soviet maps at all scales usually include more than one year in their marginalia, which can cause issues for cataloguers who are unable to interpret the accompanying text. The principal date on each map is the edition date, which appears at the top of each map, either under the title or in the top-right corner (or top-left corner before the 1950s). Many maps will also include the text 'Coordinate System 1942' (Система координат 1942), referring to the Pulkovo 1942 datum used in Soviet military mapping from 1946 onwards. The inclusion of '1942' is therefore not relevant to the age of the map or its source materials. A print code is included in the bottom-right corner of map sheets, indicating the relevant map series (and scale), job number, month and year of printing (which may sometimes differ from the edition date) and the factory in which the map was produced. The map series (and scale) are indicated in the print code by a prefix letter as follows:

Ж 1:1,000,000 topographic map  
Е 1:500,000 topographic map  
Д 1:200,000 topographic map  
Г 1:100,000 topographic map  
В 1:50,000 topographic map  
Б 1:25,000 topographic map  
А 1:10,000 topographic map  
З 1:2,000,000 and 1:4,000,000 aeronavigation chart  
И 1:10,000 and 1:25,000 city plan

The factory in which the map was printed is indicated by a suffix letter as follows:

Б (unknown)  
В (unknown)  
Д Dunayev (Moscow)  
Е (unknown)  
И Irkutsk  
К Kiev  
Л Leningrad (now St Petersburg)  
Ср Sverdlovsk (now Ekaterinburg)  
СрТ Saratov  
Т Tashkent  
Тб Tblisi  
Хб Khabarovsk

All other dates on the plans are preceded by explanatory text, including 'Compiled' (Составлено), 'Re-printed in' (Повторно отпечатано в) or 'Compiled from maps published in' (Составлено по карте издания). On earlier sheets, particularly before the 1970s, the compiler(s) and/or editor of the sheet are named e.g. 'Technical compiler' (Составили ст техники) and 'Editor' (Редактор). Where present, this information is located below the print code at the bottom-right of the sheet.

From 1963 onwards, a separate coordinate system, SK-63, was used for maps produced by GUGK for non-military purposes. The origin of SK-63 coordinates is slightly offset from the 1942 datum, resulting in a different arrangement of sheet lines. Maps were produced at 1:100,000, 1:25,000 and 1:10,000 using the SK-63 datum but contained no coordinates, removing the possibility of precisely locating a point on the map. The nomenclature of the SK-63 system also differed, with 1:100,000 sheets numbered by row and column (e.g. 45-24) within discrete zones, rather than the IMW system. Objects of military sensitivity were removed from maps using the SK-63 datum (E. Šleitytė-Vilūnienė, *pers. comm.*, March 27, 2015).

## Author

Although general terms, such as ‘Soviet Union’, ‘USSR’ and ‘Red Army’, can be used to accurately describe the author or producer of Soviet maps, marginalia typically include a more precise indication of the map’s origin. On military maps at scales larger than 1:1,000,000 and on city plans, the term ‘General Staff’ (Генеральный штаб) is usually placed above the title at the centre-top of the sheet. More precisely still, it was the Military Topographic Directorate of the General Staff which was responsible for cartographic outputs, although this full term is not given on the sheets themselves.

Civil maps and plans of Soviet territory were produced under the jurisdiction of the Chief Administration of Geodesy and Cartography (GUGK or Главное управление геодезии и картографии) and therefore do not include the ‘General Staff’ label. Though its role largely remained the same, the civil body was renamed several times early in the Soviet era, known originally as the Higher Geodetic Administration (1919–1926) and latterly the Geodetic Committee (1926–1928), the Chief Geodetic Committee (1928–1930), the Chief Geodetic Administration (1930–1932), the Chief Geological-Hydrological-Geodetic Administration (1932–1935), the Chief Administration of State Survey and Cartography (GUGSK) (1935–1938); finally settling on the Chief Administration of Geodesy and Cartography (GUGK) (1938–1991) (Postnikov 2002).

## Other Metadata and Marginalia

Scales on Soviet military maps are expressed using a ratio, a statement, and a scale bar, all of which follow conventional, recognised formats, and are usually placed in the centre of the bottom of each sheet. Topographic maps, particularly those at smaller scales, also incorporate diagrams indicating the adjacent sheets at the same scale and a schematic map denoting national boundaries of the area covered. Magnetic declination is also depicted with a diagram and on larger-scale topographic maps, a profile indicating gradients of slope is also included. Each 1:200,000 map has a written description on the back of each sheet explaining the military geology of the area and incorporate a schematic map of the surface geology. Soviet City plans have a *spravka* (Справка) a description of the urban subject of the map and its environs. Where space does not permit on the map itself, the *spravka* is printed in a separate booklet, along with a street index and list of important sites.

Providing they are intact, it is possible to determine the number of colour plates used in the printing of the Soviet map sheets by examining the vertical colour bar which is usually placed in the lower half of the left-hand margin. A typical topographic map sheet may use from six to ten colours, while city plans often utilize up to 12 colours. The accuracy of registration of the printing plates can be determined by examining the ticks around the outer edges of the map sheet, if they have not been trimmed off.

## EXAMPLES OF SOVIET MAPS

The following examples serve to illustrate the locations of useful metadata found on various Soviet sheets, with a view to facilitating their cataloguing and improving accessibility for users. The locations of metadata on each map sheet within a Soviet map series were standardised by production manuals which thoroughly and precisely set out where each item should be placed. Although these layouts vary by series, scale and the age of the map, as the map production manuals were periodically updated, the consistency with which the key metadata are stated and positioned on the maps is helpful to those tasked with cataloguing or interpreting the maps. One need only be familiar with common layouts and a few commonly used Russian terms to reliably extract metadata with accuracy and it is possible to identify sheets should some of the metadata be missing. Nevertheless, variations do currently exist between, and even within, some library catalogues and this lack of consistency poses a potential barrier to the accessibility of the maps which, in turn, limits the scope of potential applications of the rich geographic data they provide. It is hoped that, by clarifying the nature of

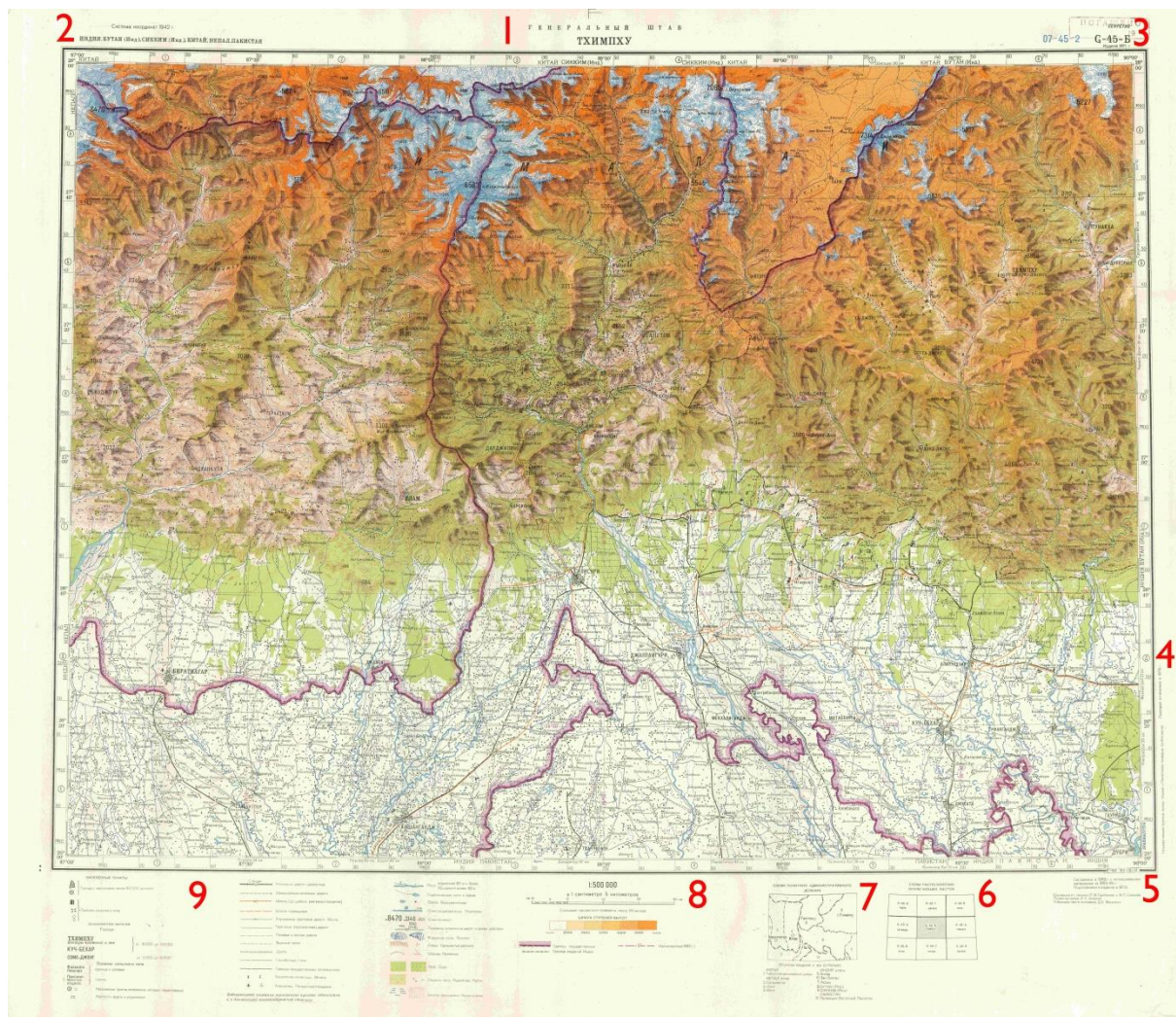
Soviet cartographic metadata in the examples shown here, the scope for misinterpretation and inaccurate cataloguing can be reduced.



1. **Title** – Murmansk – Мурманск
2. **Countries shown on the map** – СССР. РСФСР. Норвегия. Финляндия – USSR. RSFSR. Norway. Finland.
3. **Nomenclature** – Based on IMW Sheets  
**Edition date** – Издание 1968 г. – Edition 1968
4. **Print Code** – Series, Job number, month of printing (Roman numerals), year of printing (last 2 digits), factory (Ж 40 I 82 Л – 1:1,000,000 Topographic Series, Job 40, January 1982, Leningrad)  
**Compilation and drafting dates** – 1967 and 1968 respectively
5. **Schematic diagram of adjacent sheets** – showing names and nomenclature
6. **Schematic diagram of political-administrative boundaries** – including a list of the relevant countries and regions
7. **Scale** – 1:1,000,000
8. **Legend**

**Fig. 2** Soviet 1:1,000,000 topographic map of Murmansk, Russia (1968), annotated to show the locations of key metadata

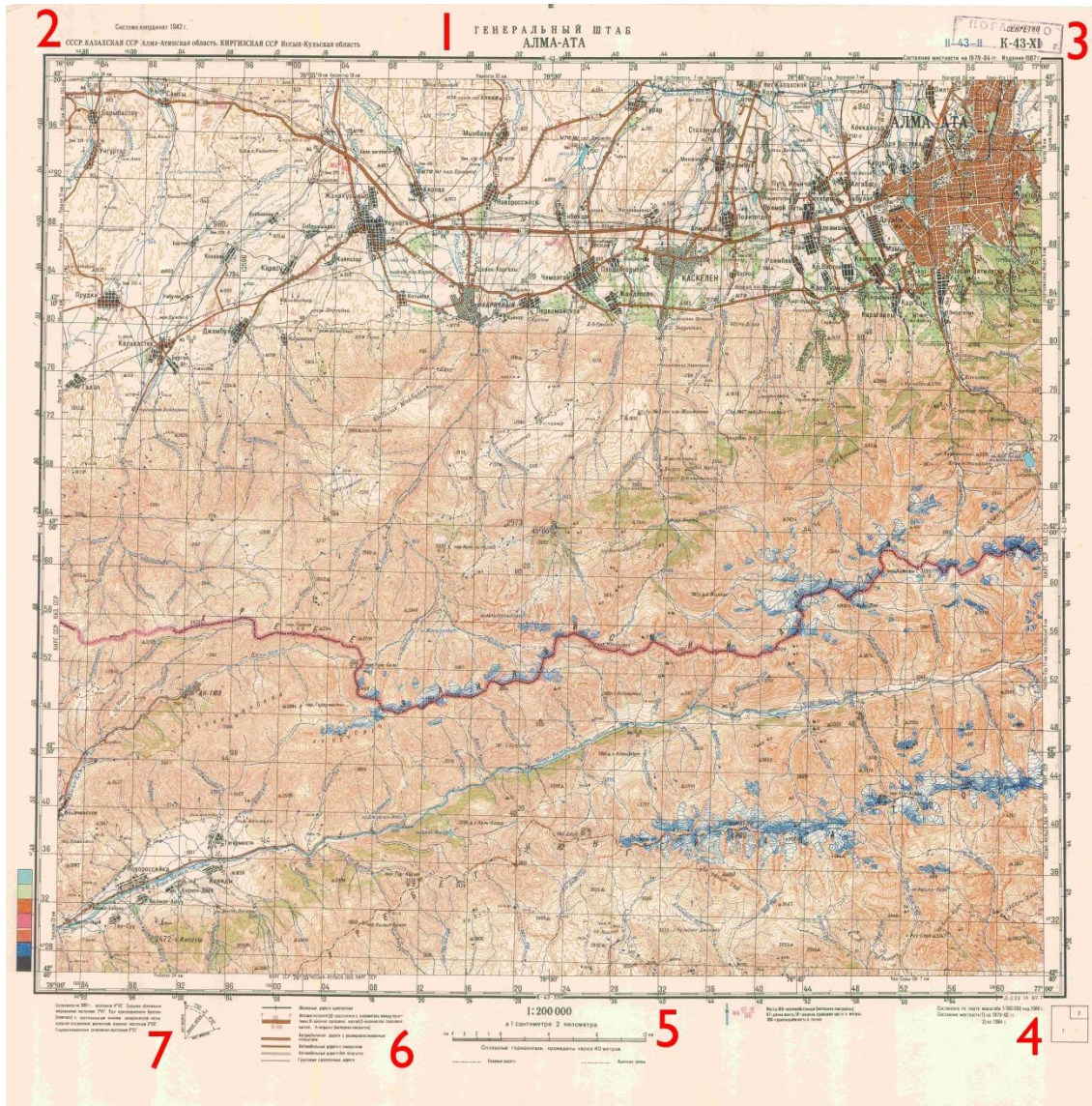




1. **Producer** – Soviet Union. General Staff (Генеральный штаб, General'nyy shtab)  
**Title** – Thimphu – Tkhimpkhu – Тхимпху
2. **Coordinate System** – Система координат 1942 – Coordinate System 1942 (Pulkovo 1942)  
**Countries and regions shown on the map** – Индия. Бутан (Инд). Сикким (Инд). Китай. Непал. Пакистан. – India. Bhutan (Ind.). Sikkim (Ind.). China. Nepal. Pakistan.
3. **Former classification** – секретно – secret  
**Nomenclature** – Based on IMW Sheets  
**Edition date** – Издание 1971 г. – Edition 1971
4. **Reprint date** – Повторно отпечатано в 1976 г. – Re-printed in 1976
5. **Print Code** – Series, Job number, month of printing (Roman numerals), year of printing (last 2 digits), factory (E 64 XII 76 И – 1:500,000 Topographic Series, Job 64, December 1976, Irkutsk)  
**Compilation, source material and drafting dates** – 1969, 1965-69 and 1970 respectively
6. **Schematic diagram of adjacent sheets** – showing names and nomenclature
7. **Schematic diagram of political-administrative boundaries** – including a list of the relevant countries and regions
8. **Scale** – 1:500,000
9. **Legend**

**Fig. 3** Soviet 1:500,000 topographic map of Thimphu, Bhutan (1971), annotated to show the locations of key metadata

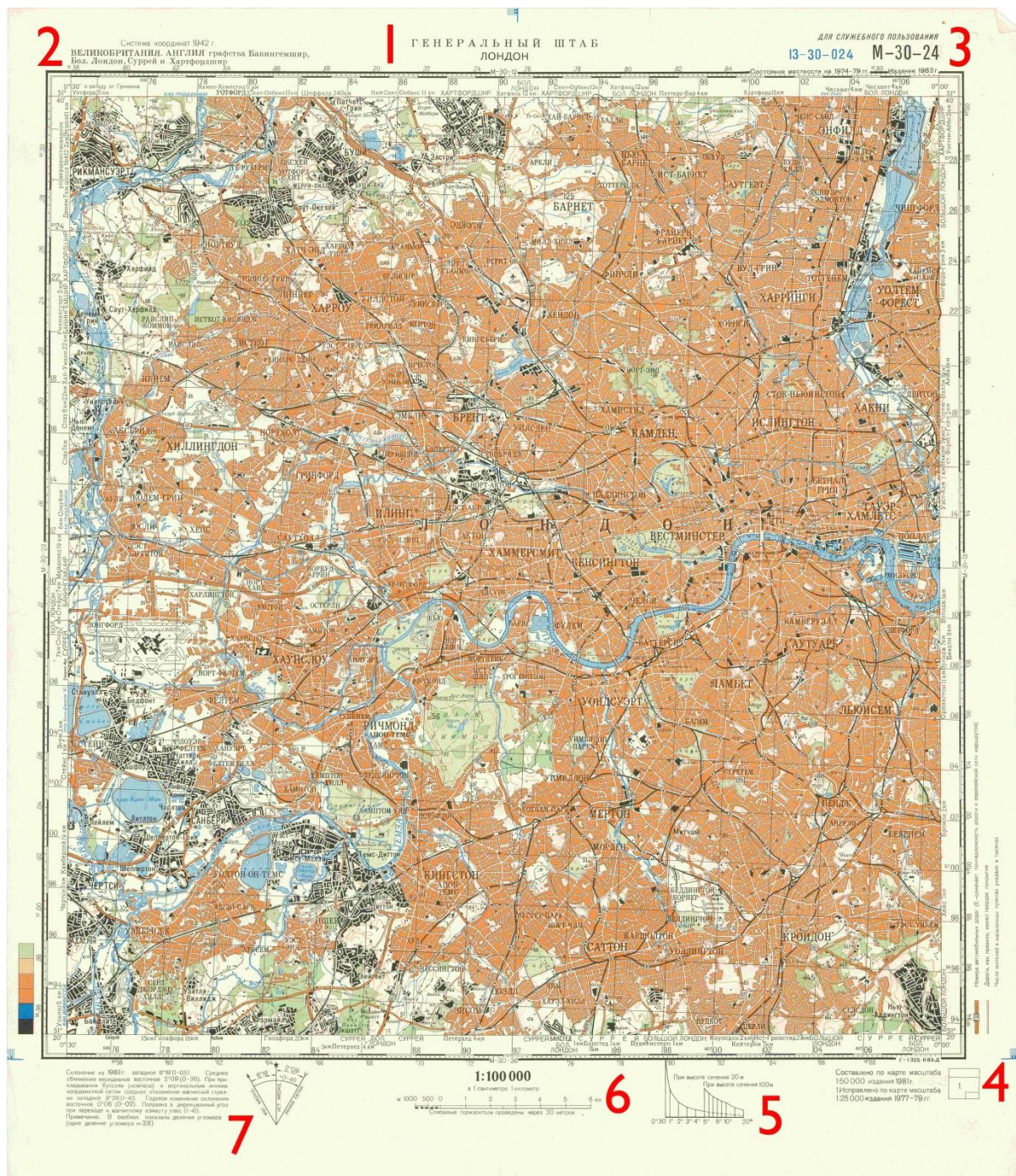




1. **Producer** – Soviet Union. General Staff (Генеральный штаб, General'nyy shtab)  
**Title** – Alma-Ata – Алма-Ата
2. **Coordinate System** – Система координат 1942 – Coordinate System 1942 (Pulkovo 1942)  
**Countries and regions shown on the map** – СССР. Казахская ССР Алма-Атинская область. Киргизская ССР Иссык-Кульская область. – USSR. Kazakh SSR Alma-Ata region. Kyrgyz SSR Issyk-Kul region.
3. **Former classification** – секретно – secret  
**Nomenclature** – Based on IMW Sheets  
**Date of information shown on the map** – Состояние местности на 1979-84 гг. – The state of the area between 1979-84  
**Edition date** – Издание 1987 г. – Edition 1987
4. **Print Code** – Series, Job number, month of printing (Roman numerals), year of printing (last 2 digits), factory (Д 223 IX 87 Т – 1:200,000 Topographic Series, Job 223, September 1987, Tashkent)  
**Compilation and source material dates** – with diagram showing which dates apply to which parts of the map
5. **Scale** – 1:200,000
6. **Legend**
7. **Magnetic variation notes** – with diagram

**Fig. 4** Soviet 1:200,000 topographic map of Alma-Ata (Almaty), Kazakhstan (1987), annotated to show the locations of key metadata



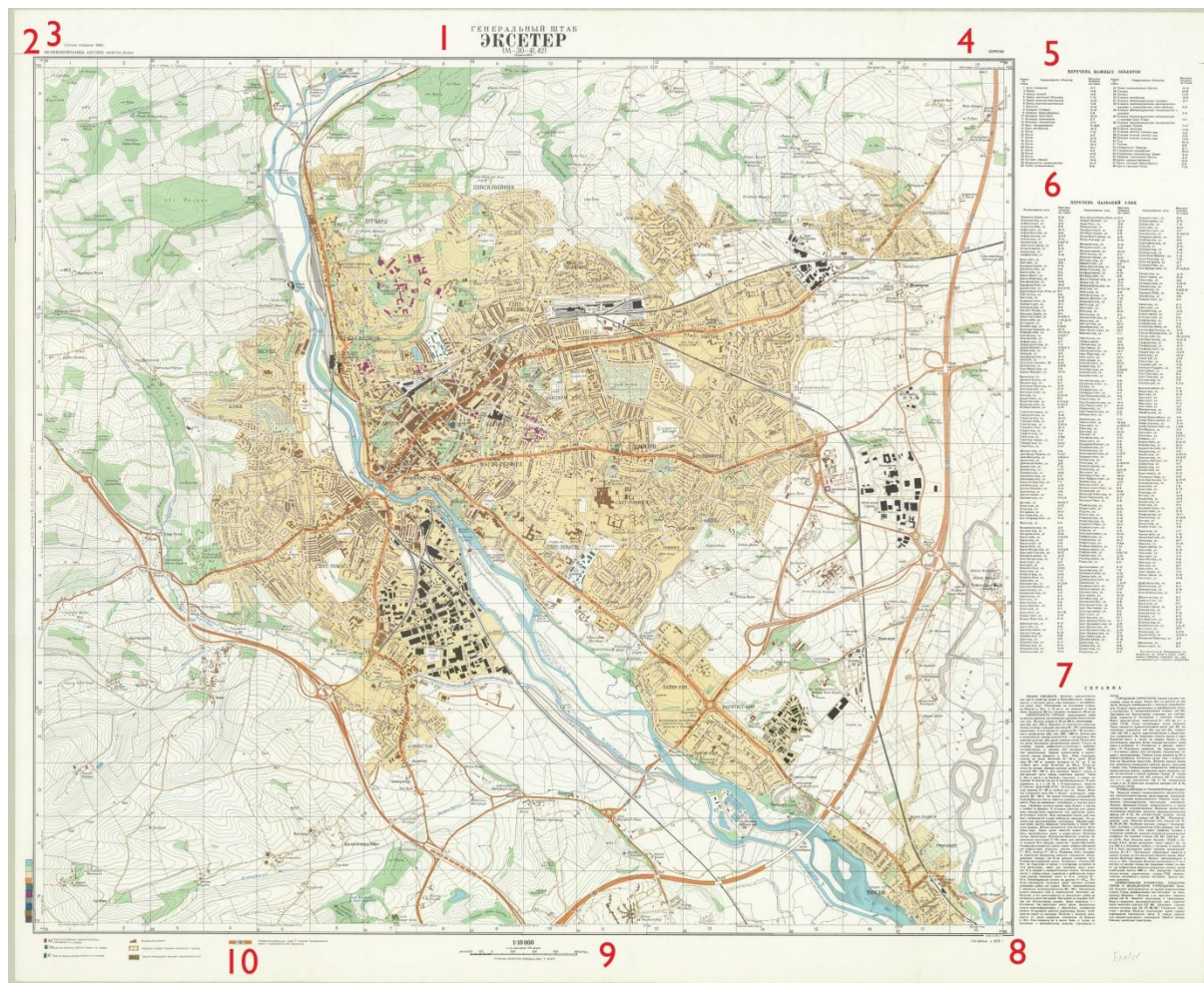


1. **Producer** – Soviet Union. General Staff (Генеральный штаб, General'nyy shtab)  
**Title** – London – Лондон
2. **Coordinate System** – Система координат 1942 – Coordinate System 1942 (Pulkovo 1942)  
**Countries and regions shown on the map** – Великобритания. Англия графства Бакингемшир, Боль. Лондон, Суррей и Хартфордшир – Great Britain. England county Buckinghamshire, Greater London, Surrey and Hertfordshire.
3. **Former classification** – для служебного пользования – for official use  
**Nomenclature** – Based on IMW Sheets  
**Date of information shown on the map** – Состояние местности на 1974-79 гг. – The state of the area between 1974-89  
**Edition date** – Издание 1983 г. – Edition 1983



4. **Print Code** – Series, Job number, month of printing (Roman numerals), year of printing (last 2 digits), factory (Г 1325 II 83 Д – 1:100,000 Topographic Series, Job 1325, February 1983, Dunayev, Moscow)  
**Compilation and source material dates** – with diagram showing which dates apply to which parts of the map
5. **Cross section graph**
6. **Scale** – 1:100,000
7. **Magnetic variation notes** – with diagram

**Fig. 5** Soviet 1:100,000 topographic map of London, UK (1983), annotated to show the locations of key metadata



1. **Producer** – Soviet Union. General Staff (Генеральный штаб, *General'nyy shtab*)  
**Title** – Exeter – Ekseter – Эксетер  
**Nomenclature** – Based on IMW Sheets  
**Edition date** – Издание 1982 г. – Edition 1982
2. **Country and Region** – Великобритания. Англия графство Девон – Great Britain. England county Devon
3. **Coordinate System** – Система координат 1942 – Coordinate System 1942 (Pulkovo 1942)
4. **Former classification** – секретно – secret
5. **List of important sites** – Перечень важных объектов (numbers correspond with numbered buildings on the plan)
6. **List of street names** – Перечень названий улиц (with grid references)
7. **Reference** – Справка (description of the settlement)

8. **Print Code** – Series, Job number, month of printing (Roman numerals), year of printing (last 2 digits), factory (И 23 IX 82 Л – City Plan, Job 23, September 1982, Leningrad)
9. **Scale** – 1:10,000
10. **Legend**

**Fig. 6** Soviet 1:10,000 plan of Exeter, UK (1982), annotated to show the locations of key metadata

## CONCLUSION

The increasing availability of Soviet military mapping over the last two decades has seen their unprecedented use as sources of geospatial information, particularly as their acquisition by libraries around the globe continues to grow. Nevertheless, the difficulties posed by their unfamiliar format and language (especially for non-Russian-speakers) presents a significant obstacle to their accessibility and application. By offering an illustrated guide to locating and identifying key metadata on typical Soviet map sheets of different series and scales, this paper has focused on knowing what to look for when encountering or cataloguing this valuable and continually emerging resource.

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Martin has worked as an Instructor in Geography at Canterbury Christ Church University since 2014, alongside his ongoing PhD research into Soviet military cartography. In 2015, Martin was awarded the British Cartographic Society's Ian Mumford Award for excellence in original cartographic research. Martin is a member of the British Cartographic Society and is Reviews Editor and Editorial Assistant of *The Cartographic Journal*.

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