

Research Space

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The secret Soviet military mapping of Malta

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THE SECRET SOVIET MILITARY MAPPING OF MALTA

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ABSTRACT

This short paper presents a brief overview of the Soviet global military mapping programme and focuses on its coverage of Malta. It examines the Soviet topographic mapping of the archipelago at various scales (from 1:1,000,000 to 1:50,000), illustrates how the extensive Soviet symbology was used to portray various aspects of the Maltese landscape, and explores some possible source materials.

INTRODUCTION

During the Cold War, the Soviet Union was secretly engaged in the most comprehensive cartographic endeavour of the twentieth century. Thousands of cartographers working deep within the USSR produced detailed maps of areas within and beyond the Soviet Union at a range of scales, from 1:1,000,000 to 1:5,000. Soviet topographic map sheets covered most of the world's continents at 1:1,000,000, 1:500,000 and 1:200,000, with Western Europe and Central Asia covered at 1:100,000 and 1:50,000, and complete coverage of all Soviet republics at 1:25,000. In addition, thousands of towns and cities outside the USSR (including London, Paris, New York and Sydney) were mapped in street-level detail at the scales of 1:25,000 or 1:10,000.¹

Building on the cartographic achievements of Imperial Russia, such as the 'ten verst' 1:420,000 mapping of 1868–89, the origins of the USSR's secret global military mapping project lie in the International Map of the World (IMW). First proposed by German geomorphologist Albrecht Penck in 1891, this was a collaborative project amongst industrialised nations to map the world at the scale of 1:1,000,000. The scheme divided the world into an alphanumeric grid covering four degrees latitude (in bands A to V stretching north and south from the Equator)

and six degrees longitude (zones 1 to 60 starting from 180 degrees west).

Russia had initially signed up to the IMW project and was involved in formalising the cartographic specifications, but when the USSR later withdrew and all surveying activity was brought under state control in 1921, its focus was directed towards mapping the interior. After priorities were diverted during the Second World War, Stalin decreed that military and civil mapping authorities would produce a new topographic map of the whole Soviet Union at 1:100,000. By its completion in 1954, the focus of the Military Topographic Directorate of the General Staff had shifted to mapping foreign territories. Eventually, the project advanced to cover the globe, facilitated by the acquisition of satellite imagery since the early 1960s.

Before 1993, when Soviet mapping first became commercially available to the West, little was known about the accuracy and scope of the global project. Today, Soviet maps provide a substantial historical and geospatial resource for a range of applications, including archaeology, environmental management and urban studies. They were also used in the US-led invasion of Afghanistan in 2001, thanks to their superior depiction of terrain. Along with many areas of the globe, the Soviet military

¹ For a more detailed examination of Soviet military maps, see Davies, J. and Kent, A.J. (2017) *The Red Atlas: How the Soviet Union Secretly Mapped the World* Chicago: University of Chicago Press. A wide range of associated resources, including maps, is available online at www.redatlasbook.com.

mapping of Malta is comprehensively detailed. Although a city plan of Valletta has yet to emerge, topographic mapping of the archipelago exists at the scales of 1:1,000,000, 1:500,000, 1:200,000, 1:100,000 and 1:50,000. The Maltese landscape

THE SOVIET TOPOGRAPHIC MAPPING OF MALTA

All Soviet topographic map sheets use the alphanumeric grid and nomenclature adopted by the International Map of the World. Latitude 36°N defines the boundary between bands I and J; consequently, Malta appears on 1:1,000,000 sheet I-33 'ТРИПОЛИ' (Tripoli) (Figure 1) and Gozo falls on the adjacent sheet J-33 'ПАЛЕРМО' (Palermo). According to their marginalia, both sheets were compiled in 1983 and printed in 1986. Maps at this small scale cover a large area and were intended for strategic planning, hence they contain few specific details. However, it is possible to determine some characteristics of the island of Malta and its functions; major towns are labelled, the airfields at Luqa and Hal Far are each indicated by an aircraft symbol, and Valletta is shown as both the capital (square) and as a major port (boat symbol) with ferry connections across the Mediterranean. The latter are represented by dashed lines; the longer dashes with point

was therefore mapped at the same level of detail as much of Western Europe, including the United Kingdom, and reflects the geostrategic value of the Mediterranean archipelago.

symbols denote undersea cables. Major roads are shown in orange and a spot height of 240 metres is indicated to the northwest of Rabat.

Soviet map nomenclature is designed to allow sheets at every scale to be easily identified. Each 1:1,000,000 sheet is subdivided into four 1:500,000 sheets (lettered A, Б, В, Г). The 1:500,000 sheets I-33-A 'О. МАЛТА'



(Fig. 1) Extract from Soviet 1:1,000,000 sheet I-33, printed in 1986 at Khabarovsk (private collection)



(Fig. 2) Extract from Soviet 1:500,000 sheet I-33-A, printed in 1968 at Tbilisi (private collection)

(Island of Malta) (Figure 2) and J-33-B 'КАЛЬТАНИССЕТТА' (Caltanissetta, Sicily) for Gozo include more detail, particularly the individual shapes of urban areas and towns such as Hamrun and Tarxien. The number of airfields has grown, and a wider range of features, such as churches, anchorage points, watch towers and lighthouses are shown through the introduction of more symbols. The level of hydrographic detail has also increased with more isobaths and spot depths; the integration of hydrography on topographic maps is a hallmark of Soviet military mapping.

At 1:200,000, much more detail is shown on the maps, particularly regarding topography. At this scale, the contours are close enough

to indicate more detailed landforms and escarpments. On sheets J-33-XXXIII 'О. ГОЦО' (Island of Gozo, printed 1988) and I-33-III 'ВАЛЛЕТТА' (Valletta, printed 1979) (Figure 3), roads are classified as major (orange) or minor (yellow), and distances between places (in kilometres) are indicated in pink. Wrecks are also shown, as are cliffs and ravines. More villages are included, and attention is paid to the transliteration of place names, which attempts – where possible – to follow local pronunciation, e.g. 'ТАРШИН' for Tarxien and 'МАРСАШЛОК' for Marsaxlokk. The inclusion of aircraft symbols in Marsaxlokk Bay is likely to denote the flying boats that were taking off here in the 1930s. In addition to the topographic and hydrographic information shown on



(Fig 3) Extract from Soviet 1:200,000 sheet I-33-III, printed in 1979 at Sverdlovsk (Ekaterinburg) (private collection)

the sheet, the reverse includes a written description of the area covered, accompanied by a schematic diagram of its surface geology. This information is characteristic of Soviet 1:200,000 maps. For Malta, the island's soil is simply described as 'crushed-stone loamy'.

(Fig 4) Extract from Soviet 1:100,000 sheet I-33-5, printed in 1987 at Moscow (private collection)

(Fig 5) Composite of extracts from Soviet
1:50,000 sheets I-33-005-B and I-33-006-A, both
printed in 1977 at Saratov (private collection)

At the scale of 1:50,000, the Maltese Islands are covered by six sheets: J-33-137-B 'ВИКТОРИЯ' (Victoria), J-33-137-Г 'О. ГОЦО' (Island of Gozo), I-33-005-B 'РАБАТ' (Rabat), I-33-006-A 'ВАЛЛИЕТТА' (Valletta) (Figure 5), I-33-005-Г 'ЗУРИК' (Zurrieq) and I-33-006-B 'БИРЗЕБУДА' ('Birzebuda' – a mis-transliteration of Birżebbuġa). All six sheets were printed in 1977 at Saratov. With a contour interval of 10 metres, the depiction of terrain is more detailed and depicts footbridges over rivers, while major fortifications (including those surrounding Valletta and beyond, e.g. the

and provides a clear hierarchy of settlements. Valletta's function is described as a 'military naval base' (in brackets under its label), while alternative place names are occasionally given (e.g. San Pawl il-Baħar is also labelled

A CITY PLAN OF VALLETTA?

For the purposes of illustration, the city plan of London (1:25,000) provides a typical example of a Soviet city plan. It was printed in 1985 and comprises four non-overlapping sheets, each about one metre square in size. These were designed to be trimmed and assembled to

An extract showing Central London (Figure 6), indicates the comprehensive level of detail. Important objects are classified and colour coded according to their function: black for industry; purple for administration/government; and green for military/communications (all other buildings are coloured brown). These objects are identified in a numbered list, which usually appears in the margin of a city plan, but, in the case of London, forms a separate booklet that describes several hundred objects. The booklet also includes a geographically accurate map of the London Underground network. The extract in Figure 6 indicates the

(Fig 6) Extract from Soviet 1:25,000 city plan of London, printed in 1985 at Sverdlovsk (Ekaterinburg) (private collection)

locations of Underground stations (not shown on contemporaneous Ordnance Survey maps at 1:25,000), a monument (Nelson’s Column) in Trafalgar Square, and a metal railway bridge (Hungerford Bridge). Arrows in the River Thames record the directions of tide and flow,

SOURCE MATERIAL

Systematic topographic mapping requires accurate base material, whether this is derived from original surveys or existing maps. In completing the comprehensive mapping of its own vast territories at the scales of 1:100,000 by 1954 and of 1:25,000 by 1988,² the Soviet Union overcame many difficulties inherent to portraying landscapes of considerable cultural and environmental diversity. Mapping foreign territories, however, especially those belonging to potentially hostile nations, is further hindered by limited accessibility to those territories and often to their maps.

In the early years of the Cold War, the Soviet Union relied heavily on indigenous mapping as source material, where this was readily available. The scale and date of the mapping used is often stated in the lower right-hand corner of each Soviet sheet beneath a print code that indicates the type of map, job number, month, year and factory of production.³ Following the launch of satellites (e.g. the Zenit programme from the early 1960s) that were specially designed to capture imagery for cartographic purposes, reliance on indigenous mapping decreased. Nevertheless, while imagery can provide land cover information (e.g. whether the surface comprises buildings, vegetation or hydrology), indigenous maps provide interpretations that aid the cartographer in their identification of land use (e.g. hospitals and factories) through labels and symbols, and of the proper form of place names (toponyms). A combination of imagery and indigenous mapping, therefore, allowed Soviet cartographers to create up-to-

while symbols along the Thames Embankment indicate its suitability for mooring ships. It is tempting to speculate how this information was gathered, especially whether by eyewitnesses on foot.

date maps that were both geometrically and geographically accurate.

The Soviet topographic sheets of Malta reflect this combination of sources. Table 1 indicates the source material mentioned on sheets at scales 1:200,000 and larger. The exact scales of source mapping are given, along with other ‘materials’ (dating from 1972, 1973 and 1981), which are likely to refer to satellite imagery. Standard cartographic practice dictates that maps at smaller scales are derived from those at larger scales, since detail can be generalised. Hence, the 1:200,000 maps were derived from maps at the larger scale of 1:100,000; the 1:100,000 maps were derived from those at 1:50,000; and the 1:50,000 mapping was derived from maps at 1:25,000. The omission of dates for some of the source mapping suggests the use of existing Soviet maps rather than indigenous mapping, while other, non-Soviet, sources appear to have been used in the creation of the larger-scale 1:50,000 sheets.

Table 1 Sources mentioned on Soviet topographic maps of Malta

Scale	Sheet	Print Date	Sources Mentioned on Sheet
1:200,000	J-33-XXXIII	September 1988	Compiled from a map of 1:100,000, created using materials dated 1981
1:200,000	I-33-III	October 1979	Compiled from a map of 1:100,000 dated 1978; established from material of 1972, 1973
1:100,000	J-33-137	October 1987	Compiled from a map of 1:50,000, created using materials dated 1981
1:100,000	I-33-5	November 1987	Compiled from a map of 1:50,000, created using materials dated 1981
1:100,000	I-33-6	November 1987	Compiled from a map of 1:50,000, created using materials dated 1981
1:50,000	J-33-137-B	June 1977	Compiled from a map of 1:25,000 dated 1962; updated from material of 1973
1:50,000	J-22-137-Γ	June 1977	Compiled from a map of 1:25,000 dated 1962; updated from material of 1973
1:50,000	I-33-005-Б	September 1977	Compiled from a map of 1:50,000 dated 1942; updated from material of 1972, 1973
1:50,000	I-33-006-A	September 1977	Compiled from a map of 1:50,000 dated 1942; updated from material of 1972, 1973
1:50,000	I-33-005-Γ	September 1977	Compiled from a map of 1:50,000 dated 1942; updated from material of 1972, 1973
1:50,000	I-33-006-B	September 1977	Compiled from a map of 1:50,000 dated 1942; updated from material of 1972, 1973

The cartographic sources of the six 1:50,000 sheets refer to maps at scales of 1:25,000 (1962) and 1:50,000 (1942). The two sheets covering Gozo, which mention the 1:25,000 source mapping, were probably derived from the series first produced by the Directorate of Overseas Surveys (DOS) that year.⁴ These new maps were based on a post-war survey of the islands at 1:2,500 that used aerial photography.⁵

The four 1:50,000 sheets covering Malta mention source mapping of the same scale dating from 1942. This is unlikely to be British, since GSGS (Geographical Section General Staff) and other wartime mapping tended to use imperial scales.⁶ In its advance through Europe, the Red Army captured German mapping of foreign territories and this was often used later by Soviet cartographers, particularly for their creation of city plans.⁷ However, German mapping, derived from

2 Vereshchaka, T.V. (2002). *Topographic Maps: The Scientific Principles of their Content* Moscow: MAIK Nauka/ Interperiodika.

3 For more information on Soviet print codes and metadata, see Davies and Kent (2017) and Davis, M. and Kent, A.J. (2018). “Identifying metadata on Soviet military maps: an illustrated guide” In: Altić, M., Demhardt, I. and Vervust, S. (Eds) *Dissemination of Cartographic Knowledge* New York Springer, pp.301–313.

4 The Maltese Islands were covered in three sheets at 1:25,000 (DOS 352), Series M898, first issued in 1962.

5 Böhme, R. (Ed.) (1989). *Inventory of World Topographic Mapping: Western Europe, North America, and Australasia* Barking: Elsevier.

6 For example, GSGS 3859 includes several editions at 1:31,680 (two inches to one mile) produced from 1934 to 1955, while a series of two maps at 1:31,680 (Series MDR 582) were produced by the Royal Engineers (512th Field Survey Company) in 1943. Both examples are available in the British Library (Maps MOD GSGS 3859 and Maps MOD MDR 582).

7 For example, the Soviet plan of Belfast (printed in 1964) mentions source mapping of 1:10,000 from 1940; a German photo-enlargement of the Ordnance Survey map of 1:10,560 (Davies and Kent, 2017).

photo-reconnaissance and produced in 1941, covered Malta at 1:10,000⁸ and 1:25,000,⁹ while a year later, Italian military cartographers were also using photo-reconnaissance to create detailed plans of Malta at 1:5,000, 1:10,000 and 1:25,000.¹⁰ The cartographic source specified on the four Soviet sheets, i.e. 1:50,000-scale mapping of 1942, therefore remains elusive.

Since most national mapping agencies are not concerned with hydrographic surveys, bathymetric information on Soviet topographic maps tends to be derived from other cartographic sources. Occasionally,

these include charts produced by the UK Hydrographic Office and similar organisations, but the bathymetric information presented on Soviet topographic maps does not often match these sources. There are accounts of Soviet fishing trawlers and survey vessels mooring in ports around the UK¹¹ and it is not unlikely that some of the hydrographic information on the Soviet mapping of Malta was derived in this way. Certainly, for many coastlines around the world, the Soviet method of gathering this important information remains to be established.

CONCLUSION

Malta did not escape the attention of the secret Soviet global military mapping programme. Detailed topographic maps of the archipelago exist at a wide range of scales, from 1:1,000,000 to 1:50,000. Some of these maps were derived from indigenous mapping, including that produced by the Directorate of Overseas Surveys (DOS), probably in combination with satellite imagery. Nevertheless, several questions surrounding the Soviet mapping of Malta remain unanswered, such as the identity of the wartime cartographic

source that was used for the 1:50,000 mapping of the island, how the hydrographic information was gathered, and whether a Soviet city plan of Valletta – a strategic naval base – exists. Perhaps the greatest mystery is how cartographers working deep inside the USSR were able to create these fascinating and highly detailed maps of the Maltese Islands.

8 Generalstab des Heeres (1941). British Library Maps Y.471.

9 Generalstab des Heeres (1941). *Militärgeographische Angaben über Malta* Berlin: Generalstab des Heeres, Abteilung für Kriegskarten und Vermessungswesen (IV. Mil.-Geo). British Library Maps 47.f.17.

10 Istituto Geografico Militare (1942). Cartographic Archive, San Marco, Cabinet 88.

11 Thompson, E. (2018). *On Her Majesty's Nuclear Service* Oxford: Casemate Publishers.