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Malta

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NATIONAL INTELLIGENCE SURVEY

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Transportation and
Telecommunications

Military Geography

Armed Forces

NATIONAL INTELLIGENCE SURVEY PUBLICATIONS

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These chapters were prepared for the NIS by the Defense Intelligence Agency. The Transportation and Telecommunications chapter includes a contribution on airfields from the Defense Mapping Agency, Aerospace Center, and a contribution on merchant marine from the Department of the Navy. Research was substantially completed by April 1973.

Malta

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Transportation and Telecommunications

A. Appraisal (C)

The transportation and telecommunications (telecom) systems adequately serve the economic needs of the nation. Highways afford the only means of land transportation and provide access to virtually every town and village on the islands of Malta and Gozo. Ferry services between these islands accommodate both passengers and vehicles. Valletta, the only major port, and the small port of Marsaxlokk handle all maritime cargo.

The main highways are surfaced and are in good condition. On the island of Malta, the network is densest in the east and sparsest in the hilly western region (Figure 14). The network on Gozo, although limited, is well distributed. There is no road system on Kemma. With few exceptions, highways were developed from cart tracks and gradually widened as traffic increased. Some roads, although wide enough to accommodate two lanes of traffic for small European vehicles, would be inadequate for military vehicle use.

Civil aviation consists of the international transport of passengers and cargo on commercial air carriers; there is no domestic service. All routes of Malta Airlines, the nation's only carrier, are operated by the British European Airways Corporation (BEA). Luqa, the international airfield, and Hal Far, a military field, are the only active airfields and both are on the island of Malta.

Telecommunication facilities are of good quality and satisfy all normal requirements. Most domestic communications are handled by a wire telephone system centered in Valletta on Malta and in Rabat on Gozo. The islands are linked by submarine cables and by radio relay, and radiocommunication stations and submarine cables provide international telecommunication service.

Responsibility for transportation is vested in various government ministries. The Ministry of Public Works controls highway matters, the Ministry of Development administers maritime affairs, and the Ministry of Commonwealth and Foreign Affairs supervises civil aviation. Telecommunications are controlled partly by

the Government of Malta and partly by private and government interests of the United Kingdom. A highway development and improvement program underway since 1969 will upgrade the entire network. Long range plans to improve telecommunications have been formulated.

B. Strategic mobility (C)

The highway system could not meet heavy military demands. Large-scale movement and supply of military forces would be restricted by narrow and winding roads, narrow bridges, a few sharp curves, and narrow streets and some narrow low archways in cities and towns. Four airfields with paved runways would provide considerable support for military operations. Luqa can handle sustained use by C-135 aircraft, and Hal Far, a military field operated by the British Royal Air Force, can support C-130's. Telecommunications are capable of supporting major military operations; however, in the more remote areas, wire telephone facilities are vulnerable to sabotage.

C. Highways (C)

The basic highway network of the islands totals 760 miles, of which 650 miles are bituminous (mostly bituminous treatment), 80 miles are crushed stone and gravel, and 30 miles are improved and unimproved earth. Because of the rocky composition of the islands, many roads have a natural stone subbase. Roadway widths are not uniform and range in extremes from 10 to 50 feet. Main routes, however, have widths in excess of 20 feet and are bituminous surfaced. There are no fixed design specifications for Maltese roads.

There are nine bridges, ranging from 20 to 80 feet in length, on the islands; all are of stonemasonry or reinforced concrete construction. Five of the bridges are located on Malta and four are on Gozo. All can accommodate two lanes of traffic, and all have unlimited vertical clearances. In addition, there are about 20 short culverts on the network. The island of Malta has two tunnels, both located at the southwest

edge of Valletta; each is about 10 feet wide with a 12-foot vertical clearance.

The Ministry of Public Works is responsible for highway construction and maintenance. Although past policy was directed largely to improving existing roads, some new roads are under construction or planned. The road projects are being paid for by appropriations made from development plan funds.

Except for difficulties encountered in excavation because of the rocky nature of the islands, there are no unique construction problems. Supplies of stone, gravel, and sand for construction purposes are adequate, but some cement and all other materials must be imported.

The current highway development program is being carried out as part of the Third Development Plan (1969-74). Major objectives of the highway program are to provide better road access to areas on Malta and Gozo having potential importance for economic development, including tourism, and to relieve traffic congestion in the urban areas ringing Valletta. Cost of the program over the 5-year period is estimated at about US\$10 million.

Specific projects include a new road, already partly constructed, from Msida to Saint Georges Bay via Gzira; it is expected to facilitate traffic movement to the northwest of Valletta. Another route will be constructed from Msida to the south, but will bypass Hamrun, a major traffic bottleneck. Part of this project involves the construction of a large bridge in the Msida area. A new road is planned from Dingli to Zurriq along the southwestern coast. A new route from the Hamrun area will be constructed to Siggiewi; a large bridge is required as part of this project. In the northwest a bypass route is planned around Melliha to facilitate access to the ferry link with Gozo. Some new construction, widening, and realignment is also planned for the Gozo road system. Other roads, especially those in the vicinity of Valletta, are in the process of or will be widened, realigned, and resurfaced. About 50 miles of existing roads that carry heavy traffic volumes are being resurfaced with a heavy duty bituminous surface. Although not part of the current development program, the construction of a bridge or tunnel between Malta and Gozo via the island of Kemmuna is under consideration and some preliminary surveys have been performed. However, the high cost of this project, estimated at about US\$20 million, will probably defer construction for some time.

¹For diacritics on place names see the list of names on the apron of the Terrain and Transportation map, the map itself, and other maps.

Highway traffic is restricted primarily by the narrow stretches of roadway in the network, sharp curves, some steep grades, and narrow village streets. Transport operations are performed mainly by private individuals; there are no large trucking firms or government-owned transport carriers. Approximately 600 buses are in use, and scheduled bus services are provided to most towns and villages. Animal-drawn carts are widely used for transporting agricultural products from farming areas to markets.

In early 1971 there were 53,100 motor vehicles registered, including 41,765 passenger cars and 11,335 trucks and buses. No motor vehicles are manufactured, but in 1969 about 650 passenger cars, trucks, and buses were assembled; most were British made. There were also about 2,200 assembled vehicles imported; most were from the United Kingdom, and the remainder from West Germany, Italy, and Japan.

D. Ports (C)

Malta has one major and two minor ports. Valletta (Figure 1), the major port, and Marsaxlokk, a minor port, are located on the largest island, Malta. The minor port of Mgarr is on the island of Gozo. Maritime facilities at Valletta and Marsaxlokk handle all of the import-export trade. Since the islands acquired independence, the ports have changed from being mainly bases for naval vessels to commercial complexes. Except for Mgarr on Gozo, the ports are considered adequate for normal requirements. Port administration is the responsibility of the Ministry of Development.

Valletta is the commercial center of the islands. It has a safe and commodious harbor with sufficient depths for the largest vessels afloat. Valletta has excellent ship-repair facilities and is the NATO Headquarters of COMEDSOUEAST. There is a total development plan for Valletta, but until this plan can be implemented, only minimal modifications or additions to existing facilities will be undertaken.

The minor port of Marsaxlokk is primarily a POL facility. Eventually, the area is to be established as a major free port and a Mediterranean distribution center. Mgarr is a base for small trading vessels and fishing boats. Facilities are insufficient to cope with present traffic, and improvement of its harbor is among the objectives in plans for major development of Gozo.

Significant details of the principal port are given in Figure 2.



FIGURE 1 Port of Valletta (C)

FIGURE 2. Characteristics of major port of Valletta (35°54'N, 14°31'E.) (C)

ACTIVITIES	HARBOR	BERTHS
Capital, most important commercial center, and an important ship-repair center located on the NE. coast of the island of Malta. Limited facilities exist for use of the Royal British Navy. Principal receipts are textiles, metals, wheat, and feed for livestock. Principal shipments are gloves, potatoes, onions, scrap metals, and hides and skins. Port has 5 graving docks, the largest with a length of 962 feet, and 7 marine railways, each having a hauling capacity of 500 tons. Estimated military port capacity: * 15,685 long tons.	Large, improved natural harbor, divided into two sections by the Valletta promontory. The NW. section, Marsamxett, a yacht basin, has a water area of about 350 acres and general depths of 19 to 102 feet. The breakwater-protected SE. section, Grand Harbour, and main commercial section, has a water area of about 700 acres and general depths of 19 to 72 feet. Approach deep and clear; depths leading to berths exceed depths in berths.	Alongside—3 large, 1 standard, and 4 small ocean-type cargo vessels; 5 standard and 11 small coaster-type cargo vessels; 40 lighters; 2 standard ocean-type tankers (alternative berths); 1 standard coaster-type tanker and 1 alternative berth; 1 representative sound-and-river-type tank barge; 1 frigate (Mitscher class); 1 destroyer (Gearing class); 1 escort vessel (Buckley class); 1 minesweeper, ocean (nonmagnetic); 3 gasoline (alternative berths), (Patapseo class). Mooring—4 standard and 14 small ocean-type cargo vessels; 3 standard and 8 small coaster-type cargo vessels. Anchorage—Extensive, unprotected anchorage S. of harbor entrance for all classes in depths of 20 to 100 feet over good holding ground of mud and sand.

*Maximum amount of general cargo that can be unloaded onto wharves and cleared from wharf aprons during period of one 24-hour day (20 effective cargo-working hours). Estimate based on static cargo transfer facilities of the port existing at time of estimate and designed for comparison rather than operational purposes; it cannot be projected beyond a single day by straight multiplication.

E. Merchant marine (C)

The merchant fleet (ships of 1,000 g.r.t. and over) consists of two dry cargo ships totaling 3,590 g.r.t. or 4,234 d.w.t. These 2,117-d.w.t., oil-fired sister units are about 25-years old and have an operating speed of .3 knots. Both ships, *Avolos* and *Oleos*, are owned and operated by Maltese National Lines, Ltd., and serve ports in Malta, Belgium, England, France, Italy, Portugal, Spain, Libya, and Tunisia.

F. Civil air (C)

Malta Airlines is the only civil air operator. Formed in 1948 as Malta Airways, Ltd., the present title was adopted in 1951. Maltese private interests own 66% of the company's stock, while the remainder is held by the British European Airways Corporation (BEA). Since 1948 BEA has operated all Malta Airlines' routes under a contract whereby BEA provides all aircraft, operational personnel, and maintenance. Aircraft operated by Malta Airlines have included Vickers Viscounts and Vikings and Hawker Siddeley Tridents. Malta Airlines provides scheduled services which link Malta to Rome, London, Tripoli, and Catania. In addition, scheduled international service is provided by Alitalia, Libyan Arab Airlines, *Union de Transports Aeriens*, and BEA.

Malta has no domestic civil air service and no registered civil aircraft. Aircraft provided by BEA to Malta Airlines carry British registry.

An estimated 335 persons are engaged in civil aviation activities. They are employed by Malta Airlines, Malta International Aviation Company (MIACO), and the Department of Civil Aviation. Except for a 4-month training course conducted by BEA for its own pilots at Luqa airfield, there is no civil aviation training on the island. Some training for Maltese aircrews is provided in England.

Civil aviation is regulated by the Department of Civil Aviation under the control and supervision of the Ministry of Commonwealth and Foreign Affairs. Malta is a member of the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) and has air agreements or arrangements with at least 14 other countries.

G. Airfields² (C)

The air facilities system consists of four airfields and one seaplane station. All airfields have permanent-surfaced runways and are located on the island of Malta. One of the airfields is joint civil/military, one is military, and the other two are abandoned. Takali, an abandoned field, has a runway that can support aircraft up to the C-47 class for emergency landings. Luqa, the jointly operated airfield, is used by

²For detailed information on individual air facilities, see Volume 13, *Airfields and Seaplane Stations of the World*, published by the Defense Mapping Agency, Aerospace Center, for the Defense Intelligence Agency.

FIGURE 3. Selected airfields (C)

NAME AND LOCATION	LONGEST RUNWAY; SURFACE; DIMENSIONS; ELEVATION ABOVE	ESWL*	LARGEST AIRCRAFT NORMALLY SUPPORTED	REMARKS
	SEA LEVEL			
<i>Feet</i>				
Hal Far..... 35°49'N., 14°31'E. S. of Valletta.	Asphalt macadam..... 6,000 x 150 230	36,000	C-130.....	Military. British Royal Air Force Base. On a care and maintenance basis only. Can be operational in 20 minutes.
Luqa..... 35°51'N., 14°28'E. SW. of Valletta.	Asphalt macadam..... 7,800 x 150 300	46,000	C-135.....	Joint. International aerodrome. Total fuel storage is 1,050,000 U.S. gallons of jet fuel and avgas.

*Equivalent Single-Wheel Loading: Capacity of an airfield runway to sustain the weight of any multiple-wheel landing-gear aircraft in terms of the single-wheel equivalent.

international commercial airlines and the British Royal Air Force. It has two runways, one of which has a weight-bearing capacity sufficient to support sustained operations by C-135 aircraft. Facilities include depot maintenance, POL, and navigation and landing aids. Hal Far, the military airfield, is operated by the British Royal Air Force. It has two runways, each of which has a weight-bearing capacity sufficient to support sustained operations of C-130 aircraft. Hal Far, currently on a care and maintenance basis, can become operational in 20 minutes. The support facilities at Luqa airfield are maintained in good condition. There are no known plans for construction or major improvements at any of the airfields.

Characteristics of the Luqa and Hal Far airfields are given in Figure 3.

H. Telecommunications (C)

The telecommunications (telecom) system is capable of satisfying all normal requirements of the government and the public. Well-designed, long-range plans have been formulated to meet a telecom growth rate estimated at 14% per annum. Most domestic telecommunications are handled by wire telephone systems, which are centered in Valletta on Malta and in Rabat on the nearby island of Gozo. Excellent local and long-distance telephone service is provided by an automatic system on Malta that enables most subscribers to call each other by direct-distance dialing. The islands of Malta and Gozo are linked by a submarine cable and by a radio-relay link. A good international service is provided by radiocommunication stations and submarine cables. A few radiobroadcast stations, augmented by a wired network, provide coverage for all population centers. Malta's telecom system, though small, compares well with the systems operated by Luxembourg, Iceland, or

Portugal. The major elements of the telecom network are shown in Figure 4.

The Ministry of Development regulates public service telecom facilities; it owns the domestic telephone facilities and delegates their operation to the Posts and Telephones Department. All public international communication installations are owned and operated by a British commercial company, Cable and Wireless, Ltd. The Maltese Broadcasting Authority is an independent government agency which regulates and supervises radiobroadcast and TV operations.

The domestic telephone system serves most localities on Malta and Gozo. Long-distance circuits are mainly underground cables, and local distribution networks are overhead open-wire lines. No line repeater stations are used, and the condition of the outside plant equipment is generally good. A submarine multiconductor cable with 14 to 24 pairs connects Malta with Gozo via Kemmuna, extensions of this submarine cable continue into the central telephone exchanges in Valletta and Rabat (Gozo). Most telephone traffic between the two islands is now carried by a 62-channel, 7 gigahertz radio-relay link connecting Naxxar with Rabat (Gozo). Telephone facilities are concentrated in and near Valletta, which has about 30% of the country's estimated 45,000 telephones. Valletta has a 10,000-line automatic exchange, and nearby Sliema has a 7,000-line automatic exchange. Integrated into the system are fully automatic satellite exchanges at Birkirkara, Birzebbuga, Rabat (Gozo), Rabat (Malta), and San Pawl il-Bahar, and a manual exchange at Marsa. There is no domestic telegraph system; all telegrams are transmitted via telephone circuits.

Very good international service is furnished by radiocommunication stations, a coaxial submarine telephone cable, and by seven single-channel

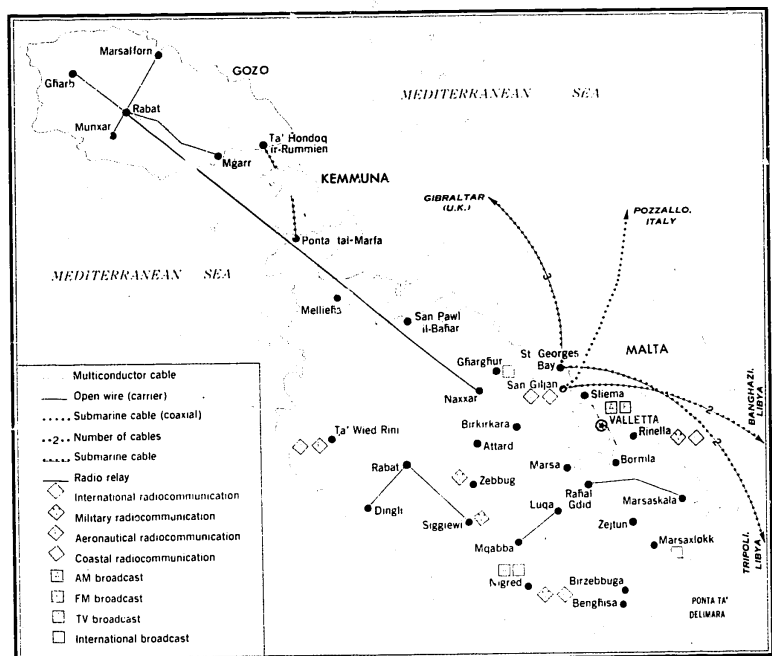


FIGURE 4. General telecommunications pattern (C)

submarine telegraph cables. The international facilities of Cable and Wireless, Ltd., are located in Valletta (control station), San Giljan (transmitter station), and Ta Wied Rini (receiver station). Direct telephone, telegraph, telex, and facsimile circuits are operated to the United Kingdom, and thence to many world points. The coaxial cable carries 36 telephone channels between San Giljan and Pozzallo, Sicily. The telegraph cables connecting Malta with Gibraltar and Libya terminate at Saint Georges Bay and San Giljan. Malta is connected to the international telex network and has about 85 local subscribers on the two main islands. Semiautomatic dial telephone service is available into Malta from eight European countries, the United States, Australia, and New Zealand.

Special-purpose facilities include coastal, aeronautical, police, and military radiocommunication stations. Coastal stations are operated at San Giljan by Cable and Wireless, Ltd., and at Rinella by the British Admiralty. Aeronautical stations, which provide both domestic and international service, are operated by

International Aeradio, Ltd. (United Kingdom), at Ta Wied Rini and Benghisa. The Malta police have a fixed and mobile very-high-frequency (VHF) network with the control station in Il-Furjana, a western suburb of Valletta. The United Kingdom Defence Forces operate NATO-affiliated radiocommunication facilities at Benghisa, Rinella, Siggiewi, and Zebbug.

Excellent radiobroadcast and limited TV coverage is provided by three AM, two FM and one TV station. *Radio Malta*, a subsidiary of the Malta Television Service, Ltd., operates a new AM transmitter (20 kw., mediumwave) at Nigred; an FM transmitter collocated with the main studios at Gwardamanga near Valletta; and the only TV transmitter, located at Charghur. The latter operates on Channel 10, using European standards. An extensive wire broadcast service is operated by Rediffusion (Malta), Ltd., from studios in Valletta; this service reaches nearly 60,000 wired sets on Malta and Gozo. International broadcasts in several languages are provided by a new 20-kw. transmitter operated by *Deutsche Welle* at

Nigred. A low-powered FM station is operated by the British Forces Broadcasting Service. In mid-1972, an estimated 80,000 radiobroadcast receivers and 65,000 TV receivers were in use.

No climatic or geographic factors significantly affect the development of telecommunications, and most of the intercity telephone network is in the form of buried cables, which reduces vulnerability to sabotage. Also, the increasing complexity of the Maltese telecom network provides a growing number of alternate routes for both domestic and international services.

Malta has no capability to manufacture or assemble telecom equipment. The United Kingdom has supplied virtually all of the equipment in use, including all military telecom gear. In recent years,

some VHF police equipment was purchased from Philips (Netherlands), and AEG-Telefunken (West Germany) supplied the broadcast equipment for the Nigred station.

Malta appears to have an adequate supply of trained technicians and operators to maintain its growing telecom network. Selected personnel have attended the Cable and Wireless, Ltd. telecom college in the United Kingdom, and the Malta College of Arts, Sciences, and Technology offers certificate and degree courses in electrical engineering.

The Third Development Plan (1969-74) calls for 53,300 telephone lines in installed capacity by the end of 1974. Plans have been finalized for a radio-relay link to Sicily with an initial capacity of 180 telephone channels.

Military Geography

A. Location (U/OU)

The Maltese Islands are strategically located near the narrows of the central Mediterranean Sea, between Sicily and North Africa. Malta, the largest island, is only 50 nautical miles south of Sicily and about 165 nautical miles east of Tunisia and lies at the eastern entrance of the 78-nautical-mile "waist" of the Mediterranean Sea (Figure 5).

The total area of the Maltese Islands is 121 square miles, about one-tenth the size of Rhode Island. Malta has an area of 95 square miles, Gozo has an area of 25 square miles, and Kemma and a few very small uninhabited islands have a total area of 1 square mile. The three main islands are roughly oval-shaped, have a northwest-southeast orientation, and extend over a distance of 27.5 miles.³ The maximum dimensions of

³Distances are in statute miles unless nautical miles are specifically stated.

the island of Malta are about 17.5 miles in length and slightly over 8 miles in width; Gozo is about 9 miles long and 4.5 miles wide. The total population of the Maltese Islands, about 322,000, is a little more than one-third that of Rhode Island.

B. Topography (U/OU)

The Maltese Islands are mostly low, rocky, flat to dissected plains (Figure 13). The central and southeastern parts of Malta consist of a low, nearly level, eastward-sloping plain interrupted in places by generally narrow, steep-sided valleys. A higher, mostly dissected plain, bordered by a line of steep slopes, dominates the western part. The northwestern part of the island, composed of dissected plains characterized by parallel ridges and valleys, is separated from the rest of the island by a north-facing escarpment, most of it sheer precipice, which extends generally east-west

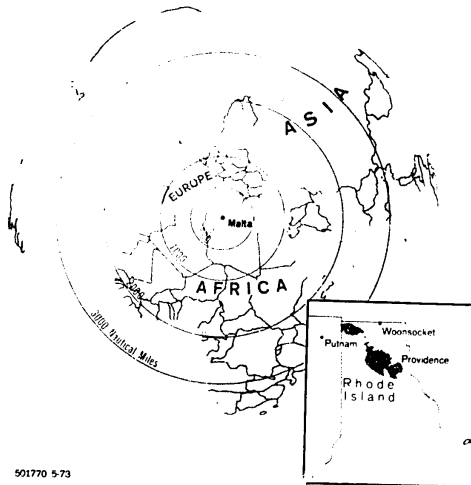


FIGURE 5. Location and comparative area (U/OU)

across the entire island. The plains of Gozo and Kemmauna are mostly rolling to dissected, and those of Gozo are broken in places by deep, narrow valleys and low, steep-sided, flat-topped hills.

Most elevations on Malta are between 100 and 400 feet; however, the area of high ground in the west is mostly between 600 and 800 feet, and near the southwest coast the island rises to 829 feet, the highest elevation in the islands. On Gozo, elevations are between 200 and 400 feet, but several hills in the western part of the island are over 500 feet and the highest is 638 feet. The highest elevation on Kemmauna is 245 feet. Slopes are commonly less than 5% on the flat to rolling plains of southeastern Malta and southern Gozo and more than 30% in the dissected areas of both islands and on Kemmauna. There are many cliffs, mainly on the coasts. Local relief (differences in elevation between tops and bottoms of adjacent topographic features) is generally less than 100 feet in the flat to rolling plains, mostly 200 to 450 feet in the dissected plains, and slightly over 500 feet in the hills of Gozo.

There is very little natural vegetation on the Maltese Islands. Both Malta and Gozo are intensively cultivated. Field crops consist mainly of small grains, predominantly wheat, and less extensively of sulla, a forage crop. Vegetables are grown in gardens around villages, and irrigated crops are grown locally in some valleys. Fruit trees and grape vines are planted in sheltered places, mainly in valleys or near stone walls. Throughout the islands, vegetation is most luxuriant during March and April.

Kemmauna has no streams, and there are no perennial streams on any of the other islands. All stream courses are dry except for short periods following heavy winter rains, but even following these rains flooding is not extensive. On Malta, most of the major stream courses originate near the southwest coast and trend generally northeastward. On Gozo, stream courses generally form a radial pattern. The stream courses are generally in deep, narrow, steep-sided valleys; however, the lower parts of many valleys on Malta are wider and have low, gently sloping sides. Streambanks are commonly steep and rocky, and bottoms are mostly rocky. There are several springs on Malta and a few on Gozo.

Culture features form a dense pattern on Malta and Gozo, especially on the flat to rolling plains in southeastern Malta. The significant features are villages, stone walls, terraces, and quarries. Nearly all buildings are constructed of brick or limestone and have flat roofs. Town streets are narrow, and Valletta and some of the smaller towns are enclosed by walls of

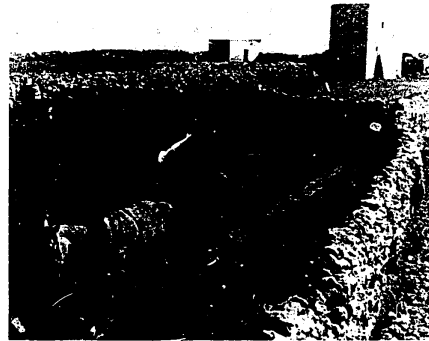


FIGURE 6. Prevalent throughout the Maltese Islands are stone walls surrounding small fields, forming boundaries, and paralleling most roads. They vary in size but generally are several feet wide and mostly 5 or 6 feet high; some may be as much as 10 feet high. (U/OU)

stone or brick. Fields are small and generally are separated by walls of loosely piled stones (Figure 6); in most places these are 5 or 6 feet high, but some are several feet thick and as much as 10 feet high. On ridges and valley sides, crops are grown on terraces that have stone retaining walls. Malta and Gozo are linked by a sea ferry and have extensive networks of mostly bituminous-treated roads. The main roads generally are two lanes wide. There are no railroads.

C. Climate (U/OU)

The climate, typically Mediterranean, is characterized by mild, rainy winters (December through March) and hot, dry summers (June through September). The remaining months are transitional. These climatic regimes result from the many lows migrating through or stagnating near the islands in winter and from the controlling influence of the Azores high in summer.

Average annual rainfall ranges from about 19 to 26 inches (Figure 7). Annual amounts may vary considerably from year to year, and, on occasion, drought years are recorded. Mean monthly amounts are greatest, 3 to 4 1/2 inches, during the period October through January, and minimum rainfall is observed in May through August, when mean amounts are 1/2 inch or less. Mean monthly cloudiness varies from less than 20% cloud cover in July and August to about 55% in December through February. Skies are frequently cloudless in summer, and overcast conditions are not widespread in winter except during periods of

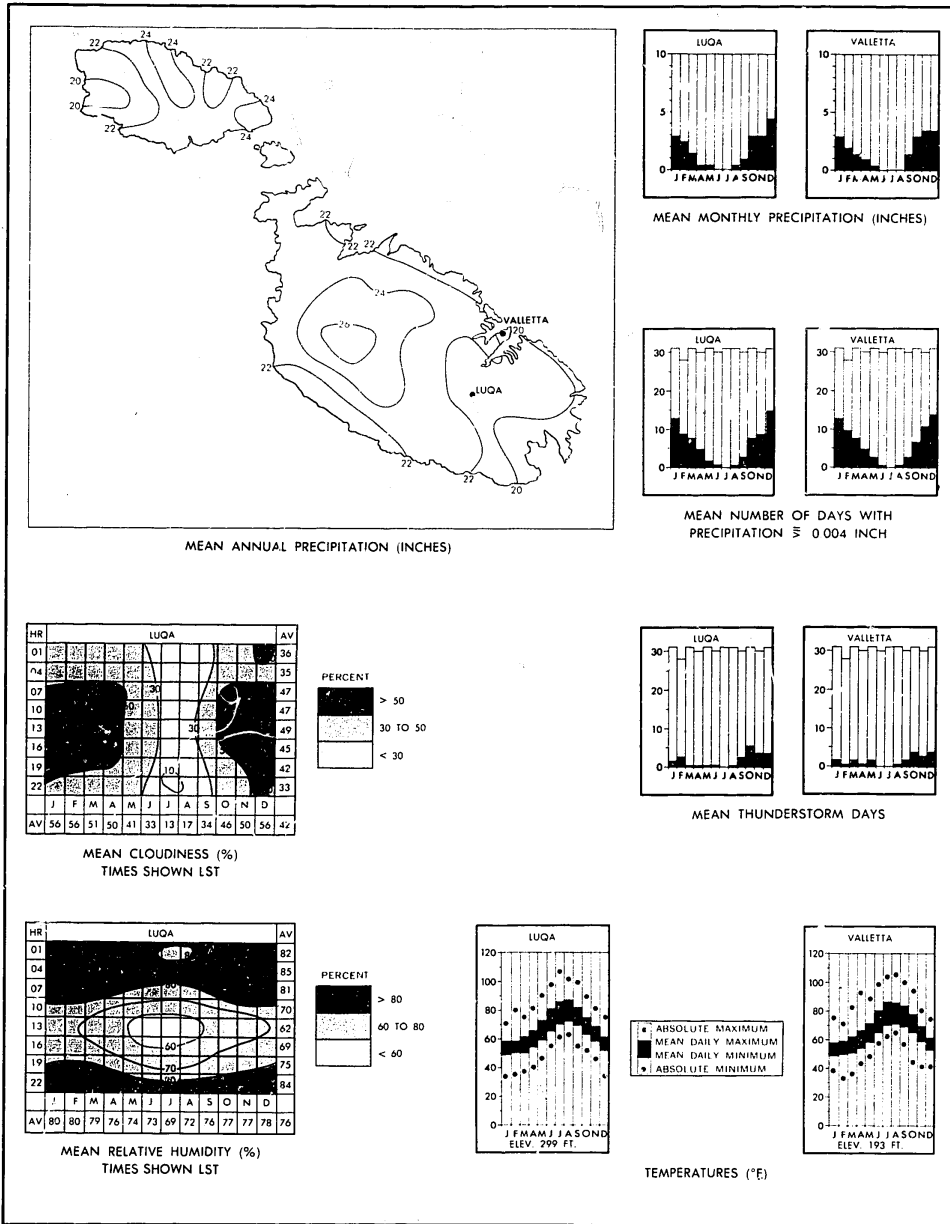


FIGURE 7. Precipitation, cloudiness, thunderstorm days, relative humidity, and temperatures (U/OU)

stagnated lows and frontal systems. Thunderstorms and accompanying turbulence, icing conditions, and heavy rain or hail are associated most often with frontal passages during the autumn transition and winter seasons. About three-fourths of the annual 20 to 30 thunderstorms occur during this period. The generally excellent visibility is interrupted for brief periods by rain showers or early morning fog. Even so, visibility seldom is restricted to less than 2 miles.

The moderating influence of the Mediterranean Sea is reflected in the comparatively small (for this latitude) diurnal and annual range of temperature. Mean daily maximum temperatures are mostly in the low to middle 80's (°F.) in summer and near 60°F. in winter. Mean daily minimums are in the middle 60's to low 70's in summer and near 50°F. in winter. Extremes of 106°F and 34°F. have been recorded. Relative humidity varies slightly throughout the year, with mean morning values ranging from 75% to near 90% and afternoon values mostly from 55% to 75%.

Surface winds prevail from the west or northwest throughout the year and are generally light; mean monthly speeds are less than 15 knots. On occasion, moist southeasterly sirocco winds bring widespread low stratus clouds, heavy dew, and sometimes heavy rains. Less frequently, southerly or southwesterly winds may come as a hot, dust-laden, dry sirocco which, when strong, shrivels vegetation and creates an almost unbearable climatic condition. The islands also are subject in winter to the gregale, a strong wind from the northeast often lasting for 2 or 3 days. Land and sea breezes are most prominent in summer. At times, afternoon sea breezes from the north coast and south coast meet in the center of the main island and form a line of convergence that may produce stationary clouds, with tops to 10,000 feet, and rain showers.

D. Military geographic region (C)

The Maltese Islands comprise one military geographic region. The combination of environmental conditions within the country would have a relatively uniform effect on military operations.

In all of the islands, conditions are generally unfavorable for ground operations. Cross-country movement of vehicles would be hindered even in the areas of flat plains by the dense network of stone walls which enclose the small fields and parallel the roads. These walls, many of which would be difficult to breach, would compartmentalize movement. Steep, terraced or rockstrewn slopes are a hindrance in the dissected areas of western and northern Malta and in the hilly and dissected areas of Gozo. Cliffs on Gozo

and in northern and western Malta are obstacles. Although swollen streams would hinder movement for only short periods immediately after heavy rains, the generally steep, rocky streambanks are year-round hindrances. Soft, wet soils would be a problem for short periods during winter. Obstacles to cross-country movement are insignificant in central Gozo and in the valleys of northern Malta, although exit from these small areas would commonly be very difficult. The dense networks of mostly bituminous-treated roads on Malta and Gozo would not support heavy traffic; many are narrow and winding. Off-road vehicular dispersal would be impossible in many places because of the stone walls. The flat to rolling plains on Malta and Gozo are generally well suited for road construction, although clearing of numerous stone walls would be necessary. Alignments generally would be unrestricted, and little grading or bridging would be necessary. Natural foundations and drainage are mostly good, and rock suitable for crushing is available in most places. Limited supplies of water for construction are available from ground sources. Most of the dissected plains are moderately well suited for road construction. Slopes generally range from 7% to 10% but may exceed 30% in places and would restrict alignments. Small amounts of grading would be necessary and, although grading is moderately easy, drilling and blasting of rock may be required in places. A moderate number of bridges or culverts would be necessary to cross narrow, steep-walled valleys. Natural foundations are fair to good, and sand and gravel and rock for crushing are generally available. The steep coastal slopes along the western and southern coasts of Malta and the steep hills in western Gozo are poorly suited for road construction. New roads would require many steep grades and sharp curves, extensive cut and fill, and much drilling and blasting. Concealment from air observation is lacking, but concealment from ground observation and excellent cover from flat-trajectory fire would be afforded by surface irregularities and by limestone quarries, which are scattered throughout the islands; the numerous stone walls that surround most fields also provide some cover. The Maltese Islands are generally unsuited for the construction of bunker-type installations because of shallow soils; however, tunnel-type installations could be constructed in many places, mostly in the dissected and hilly areas. Although excavation would be moderately difficult, the best sites are on the coastal slopes and cliffs of southwestern Malta, where the rock stands well without support and entries would be short and rock cover adequate. Elsewhere, excavation would generally be easy, but

construction of tunnel-type installations would commonly require long entries to obtain adequate cover. Limestone caves are numerous on Malta and Gozo, especially in western Malta and in the east-west escarpment that crosses the central part of the island. Many of those on Malta have been improved and used for military installations.

Although there are numerous sites for helicopter landings in the flat to rolling areas, most parts of the islands are poorly suited for airborne and airmobile operations. Few sites are suitable for parachute landings; slopes more than 30% are common in the dissected and hilly areas, and the flat to rolling areas generally have numerous villages and closely spaced stone walls. The best sites for parachute landings and the only sites suitable for landing assault-type aircraft are the existing airfields in southeastern Malta. The flat to gently rolling plains in central and southeastern Malta are moderately suited for airfield construction. Slopes are generally less than 5%, relief is slight, and only moderate amounts of grading would be necessary; however, numerous stone walls would have to be removed, and runway alignments and lengths would be restricted in places by steep-sided valleys and by villages. Air approaches would be slightly restricted by ridges to the north and west. The soil has generally good bearing strength and fair wearing properties. Coarse fill and stone for crushing are available in most places, but sand and gravel would have to be transported from surrounding areas, and only a limited amount of water is available from wells and springs. Small airfields could easily be constructed in several small, nearly level areas in northern Malta and central Gozo, but runway lengths, alignments, and air approaches would be restricted by nearby hills and ridges. Elsewhere, airfield construction would generally be infeasible because of steep slopes.

The islands are poorly suited for irregular force operations. Concealment from air observation would be extremely limited, and supplies of water, shelter materials, and firewood are scarce. Trees are almost entirely lacking except for scattered clumps of evergreen scrub along some valleys and small scattered citrus groves. Concealment from air observation would be limited to buildings, which are most numerous in the southeastern part of Malta, and to the caves on Malta and Gozo. In contrast, concealment from ground observation would be good throughout the islands because of the surface irregularities, limestone quarries, and stone walls. The lack of perennial supplies of surface water would make irregular forces dependent on underground sources for fresh water. Malta and Gozo are densely populated, and the

numerous towns and villages are interconnected by a close network of roads on Malta and an open but well distributed road network on Gozo. On Kemma, the population is sparse and there is no road network. Grains, vegetables, and fruits are readily available on the intensively cultivated islands of Malta and Gozo. Conditions are favorable for supplying irregular forces by air and sea.

The coasts of the islands are unsuited for large-scale amphibious operations. Beaches are few, and the coastal terrain consists mostly of steep, rocky headlands and ridges which have sloping rocky shelves and precipitous cliffs (Figure 8). Although the offshore approaches are generally clear, the nearshore approaches are partly obstructed by a few small islands, rocks, shoals, and shifting sandbars. Exits from the beaches would be difficult in most places.

E. Strategic area (C)

The island of Malta—the only strategic area in the Maltese Islands—contains Valletta (population 15,465) (Figure 9), the capital and largest town; the only harbor; all of the airfields; and over 90% of the population. Ships of any size can be accommodated in the large natural harbor at Valletta, and the port contains one of the major ship-repair facilities in the Mediterranean. A minor port at Marsaxlokk (population 1,525) handles imports and transshipments of POL (petroleum fuels, oil, and lubricants) products. POL storage facilities on the island have a capacity of about 2,589,000 barrels of refined products. Air facilities consist of two active and two inactive airfields. The largest active airfield is a joint civil/military and international aerodrome located near Luqa about 3 miles southwest of Valletta. The other active airfield, Hal Far, is about 6 miles south of Valletta and is a military facility on a care and maintenance basis only but can be operational in 20 minutes. Malta has telecommunication facilities that can provide an alternate communications link between Europe and North Africa. The principal industries are small and primarily concerned with food processing and the production of beverages, cigars and cigarettes, textiles, footwear, and furniture.

F. Approaches

The Maltese Islands have a total of 87 miles of coastline and claim jurisdiction over territorial waters for 6 nautical miles and exclusive fishing rights for 12 nautical miles. Indented by numerous bays and coves,



FIGURE 8. From irregular, rocky shores, which are typical of the islands, the terrain rises steeply to flat to rolling uplands. The uplands are primarily cultivated, terraced, and in places deeply cut by waadies. There are few coastal roads. (C)



FIGURE 9. Valletta is the principal maritime center in the Maltese Islands. Its improved natural harbor can accommodate commercial and naval vessels of any size. (U O U)

the coasts are characterized by steep, rugged cliffs and sloping rock shelves. (U O U)

1. Sea (C)

Seaward of the 5-fathoms curve the offshore approaches are mostly deep and clear; however, shoreward the nearshore approaches are partly

obstructed by a few small islands, rocks, shoals, and shifting sandbars. Nearshore bottom material is mainly a mixture of sand and gravel, with mud and rocks in places. Tides are semidiurnal, and the spring range is less than 4 feet. Surf 4 feet or higher may occur at any time along unprotected stretches of coast but is most frequent in February, when it occurs about

23% of the time. The best of the few beaches on the islands are along the northern and northwestern coasts of Malta and the northern coast of Gozo. Exits from most beaches would be by cross-country movement, tracks, or trails.

The amphibious landing area on the north coast of Malta in Mellicha Bay (Figure 13) provides the best access to the Malta Strategic Area. It has a length of 530 yards, all usable, and mostly clear offshore approaches. In the nearshore, approaches are partly obstructed by rocks and shoals and the bottom consists of sand, gravel, and some scattered boulders; bottom slopes would generally permit dry-ramp LST landings. Tides are semidiurnal, but the spring range is only 0.6 foot. Surf 4 feet or higher occurs infrequently. Except for mixtures of sand and gravel in places, the beach consists of sand that is firm in the wetted area and soft where dry. Beach widths range from 40 to 45 yards at low water to approximately 30 yards at high water, and gradients are steep to moderate between the low water and high water lines and are mostly steep in the high water zone. The beach is backed in most places by a low road embankment, which in turn is backed by an intensively cultivated, flat valley floor containing many stone fences and a few craterlike depressions. Exit from the beach is immediately onto a surfaced road that leads to Mellicha, 1,500 yards to the south; from Mellicha, surfaced roads lead to the principal towns on the island.

2. Air (U/OU)

Air approaches⁴ from the south are over central and southeastern Tunisia, northwestern Libya, and the Mediterranean Sea, and from the north are over the southern Italian mainland, Sicily, northern Tunisia, and the Mediterranean Sea. There are fewer topographic hazards in the southern approaches, and, although weather conditions are favorable for flying throughout most of the year in all approaches, they are

⁴The discussion zone for air approaches extends approximately 300 nautical miles beyond the shores of Malta.

more favorable during May through September and are best in the south.

In the southern approaches in summer, clear skies or scattered clouds prevail, and turbulence is light except in occasional thunderstorms over the African coast. The weather is less favorable in winter, when cyclonic storms and associated frontal systems cause extensive cloudiness, rain showers, thunderstorms with associated turbulence, moderate to severe icing, and occasional duststorms and sandstorms. The annual number of thunderstorm days decreases southward from near 20 to less than five. Maximum thunderstorm activity over water is largely confined to the autumn transition and winter seasons, while over the African coast it is largely confined to late summer and autumn. The average height of the freezing level ranges from about 7,500 feet in winter to near 16,000 feet in summer. Upper winds are generally westerly all year at levels to 55,000 feet. Mean speeds increase with height to maximums at 40,000 to 45,000 feet; highest mean speeds of 60 to 80 knots occur in winter at these levels.

In the northern approaches, weather conditions are best in late spring and summer, when scattered cumulus clouds and little or no turbulence prevail and only a few scattered showers and isolated thunderstorms occur. The most hazardous weather for flying occurs in autumn and winter; cyclonic activity increases, bringing widespread cloudiness and lower ceilings, numerous showers, and moderate to severe turbulence and icing conditions. Thunderstorms, occurring on 10 to 35 days annually, are more numerous and most severe during these seasons. The large variation in the number of annual thunderstorms is due to the diverse topography of Sicily and southern Italy. The mean height of the freezing level ranges from near 6,000 feet in winter to near 16,000 feet in summer. Upper-level winds to 55,000 feet are predominantly westerly in all seasons. Mean speeds increase with height to maximums at 40,000 to 45,000 feet; strongest winds occur in February, when mean speeds of 50 to 65 knots occur at these levels.

Armed Forces

A. Introduction

The Malta Armed Forces Act of 28 August 1970 provides for the Governor General of Malta raising an armed force for the purpose of national defense, fishery protection and smuggling prevention in the Maltese territorial waters, assisting the Malta police in providing internal security, and providing a search and rescue service. The force, known as the Malta Land Force (MLF), consists of approximately 680 volunteer, full-time, uniformed personnel. The MLF alone has no capability to resist an invasion by the armed forces of any of Malta's neighbors. (C)

On 26 March 1972 Malta signed the current agreement with the United Kingdom for the use of military facilities in Malta "for the defence purpose of the United Kingdom and the North Atlantic Treaty Organisation. . . ." In return the United Kingdom agreed to pay an annual rental. Although the agreement was signed only by the United Kingdom and Malta, several NATO members, chiefly the United States, Italy, and West Germany, contribute to the annual rental, making payment directly to the United Kingdom. The agreement includes provision for the use of the U.K. installations by certain NATO allies, while denying the use of the facilities to the Warsaw Pact countries. (S)

British forces were almost completely withdrawn from Malta during the period of negotiation of the new agreement. Their return was completed on 12 October 1972. Currently the British forces consist of a Royal Navy shore contingent of 400 British and 200 locally enlisted personnel located at Fort St. Angelo, Il-Birgu; a Royal Marine Commando (battalion) of 900 at St. Andrews Barracks, northwest of Sliema; a Royal Signals company of 110 (a British Army element) at Mtarfa; and a Royal Air Force contingent of 1,100 British and 500 locally enlisted personnel comprising a photographic reconnaissance squadron and a long-range maritime reconnaissance squadron

at Luqa airfield.⁵ Flag Officer Malta, Royal Navy, is also NATO COMEDSOUEAST and has a small headquarters at Valletta. (S)

A 10-year Mutual Defense and Assistance Agreement between the United Kingdom and Malta became effective upon Maltese independence on 21 September 1964. It permitted the United Kingdom to maintain forces in Malta and committed the British to the defense of the country. On 1 April 1965 the United Kingdom turned over to Malta three part-time, volunteer territorial battalions. These were later reduced to two. On 1 October 1970 the regular force of the Malta Land Force was organized (Figure 10) from the former British Colonial Royal Malta Artillery, which the United Kingdom had disestablished. When the Malta Labor Party led by Dom Mintoff came to power on 17 June 1971, Mintoff as Prime Minister let his dissatisfaction with the Mutual Defense and Assistance Agreement be known. After expelling the NATO Commander (an Italian), Naval Forces Southern Europe, and threatening to expel the British, the current agreement for British use of facilities in Malta (Figure 11) was negotiated and signed on 26 March 1972. The agreement is scheduled to be in force until March 1979. For what appeared to be reasons of economy, Malta disestablished the two part-time reserve battalions on 1 April 1972, leaving only the active Malta Land Force. (U/OU)

B. Malta Land Force⁶

While Malta's armed forces are raised by the Governor General in the name of the Queen, supreme authority over them resides with the Prime Minister.

⁵For information on airfields see the Transportation and Telecommunications chapter of this General Survey, as well as Volume 13, *Airfields and Seaplane Stations of the World*, published by the Defense Mapping Agency, Aerospace Center, for the Defense Intelligence Agency.

⁶For current detailed information see *Military Intelligence Summary*, published by the Defense Intelligence Agency.



FIGURE 10. Queen Elizabeth II presents colors to Malta Land Force unit (U/OU)

who retains the defense portfolio in his own office. Day to day supervision of the force is carried out by the Assistant Secretary for Defense and Internal Security. The Commander, M.L.F. is a brigadier who has a small staff of about 30 officers and enlisted men. (U/OU)

Under the command of the M.L.F. there is one tactical battalion-sized unit (600 personnel) consisting of a headquarters battery, an air defense artillery battery, an infantry company, a maritime troop, and an air troop. In addition, there is a service support unit which contains engineers in addition to logistical personnel. The air defense battery is armed with 40-mm air defense guns, and the maritime troop operates five fast patrol craft. The air troop in cooperation with the Malta Police Department operates four Bell 47G helicopters obtained from West Germany. As in the case of the patrol craft, the helicopters are under the control of the M.L.F. (S)

I. Military manpower (U/OU)

Service in the M.L.F. is voluntary. A recruit is assigned to the corps of his choice if there is a vacancy, otherwise at the convenience of the service. Subsequent to the initial induction of personnel who had served with the British Army, one class of 23 recruits has been inducted and completed a 12-week basic training course in 1971.

There are provisions in the Malta Armed Forces Act of 1970 for the induction of women and boys between



FIGURE 11. British aircraft carrier in Grand Harbour, Malta (U/OU)

the ages of 14 and 16½ years for training as future noncommissioned officers. None have been inducted so far.

Recruits are enlisted at age 17½ and serve to age 48. The terms for enlistment are 3 years for the initial period, 9 years for the second period, and 10 years for the third period for a total of 22 years. Thereafter they may be continued on a yearly basis until age 48.

The projected military manpower potential of males between the ages of 15 and 49 as of 1 July 1973 is estimated to total about 86,000, slightly more than 75% being physically fit for military service. Distribution by 5-year age groups are as follows:

AGE	TOTAL NUMBER OF MALES	MAXIMUM NUMBER FIT FOR MILITARY SERVICE
15-19	17,000	14,000
20-24	17,000	14,000
25-29	14,000	11,000
30-34	11,000	8,000
35-39	10,000	7,000
40-44	10,000	7,000
45-49	7,000	4,000
Total, 15-49	86,000	65,000

2. Strength trends (C)

Strength of the Malta Land Force will probably continue at its present level of approximately 680. Sufficient volunteers are available to maintain this level. As an example, there were 200 applicants for the 23 recruit openings in the class inducted in June 1971.

3. Training (C)

Training methods are the same as those initiated by the British in Malta's colonial force. Personnel operating the two fast patrol craft (PBF) on loan from the U.S. were initially trained by U.S. Navy personnel in Malta. Those operating the three ex-German patrol boats and four ex-German helicopters received their training in West Germany. Malta has no schools for

advanced training and will have to rely on friendly countries to supply such training.

4. Military budget (U/OU)

The annual military budget is prepared by the Assistant Secretary for Defense and Internal Security based on estimates submitted by the Commander Malta Land Force. The military budget, as a part of the budget of the Office of the Prime Minister, is incorporated in the central government budget and submitted to the House of Representatives, where it is usually approved without major changes. Annual military budgets for recent years are shown in Figure 12.

5. Economic support (C)

Malta lacks the industrial base to supply its small military force with weapons, ammunition, and military equipment. The leading industries are shipbuilding and repair, beverages, food processing, and textiles. Malta's shipyards, though capable of naval construction, are occupied primarily with the repair and overhaul of oceangoing merchant ships. Domestic production in direct support of the military is limited to food, clothing, and footwear; all other military materiel must be imported and the United Kingdom is the prime supplier. At independence in 1964, the United Kingdom turned over to the Malta Land Force the equivalent of US\$60.9 million in fixed assets. An additional US\$42,000 in grant aid assistance was provided for military equipment and training in 1965 and 1966.

6. Emergency Labor Corps (C)

A significant amount of the MLF effort goes into administering and training the 1,500-man Emergency Labor Corps (ELC), which was established on 13 May 1972 to absorb some of the unemployed and to serve as an engineer and pioneer unit. Males between the ages of 18 and 50 inclusive are eligible, and the length of

FIGURE 12. Annual military budgets (U/OU)

	FY1970-71	FY1971-72	FY1972-73
Malta Land Force budget (U.S. dollars*)	739,200	1,640,890	1,742,315
Malta Land Force budget as a percent of the central government budget	1.6	1.4	1.6
Malta Land Force budget as a percent of GNP	0.3	0.7	0.6

NOTE—Fiscal year begins 1 April and ends 31 March for years indicated.

*Converted at exchange rates as follows: 1 April 1970 through 31 December 1971 at 1 Maltese pound equals US\$2.40, 1 January 1972 through 31 March 1973 at 1 Maltese pound equals US\$2.67.

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service is 1 year maximum. Members wear military uniforms, receive some vocational and basic military training, and engage in various public works projects. They are subject to military discipline under the command of an MLF major as Commanding Officer, ELC. The commander's permanent staff consists of seven officers and 43 senior noncommissioned officers of the MLF. Headquarters of the ELC is located at Saint Patrick's Barracks, which it shares with the Royal Malta Artillery and the Headquarters of the MLF. The ELC is scheduled to be replaced by the newly formed Pioneer Corps by June 1973.

7. Pioneer Corps (C)

Recruitment for the Pioneer Corps commenced on 25 April 1973. It is planned to be a unit of three battalions, one of which will be the present ELC. Each battalion is to have 1,230-men—1,100 workers

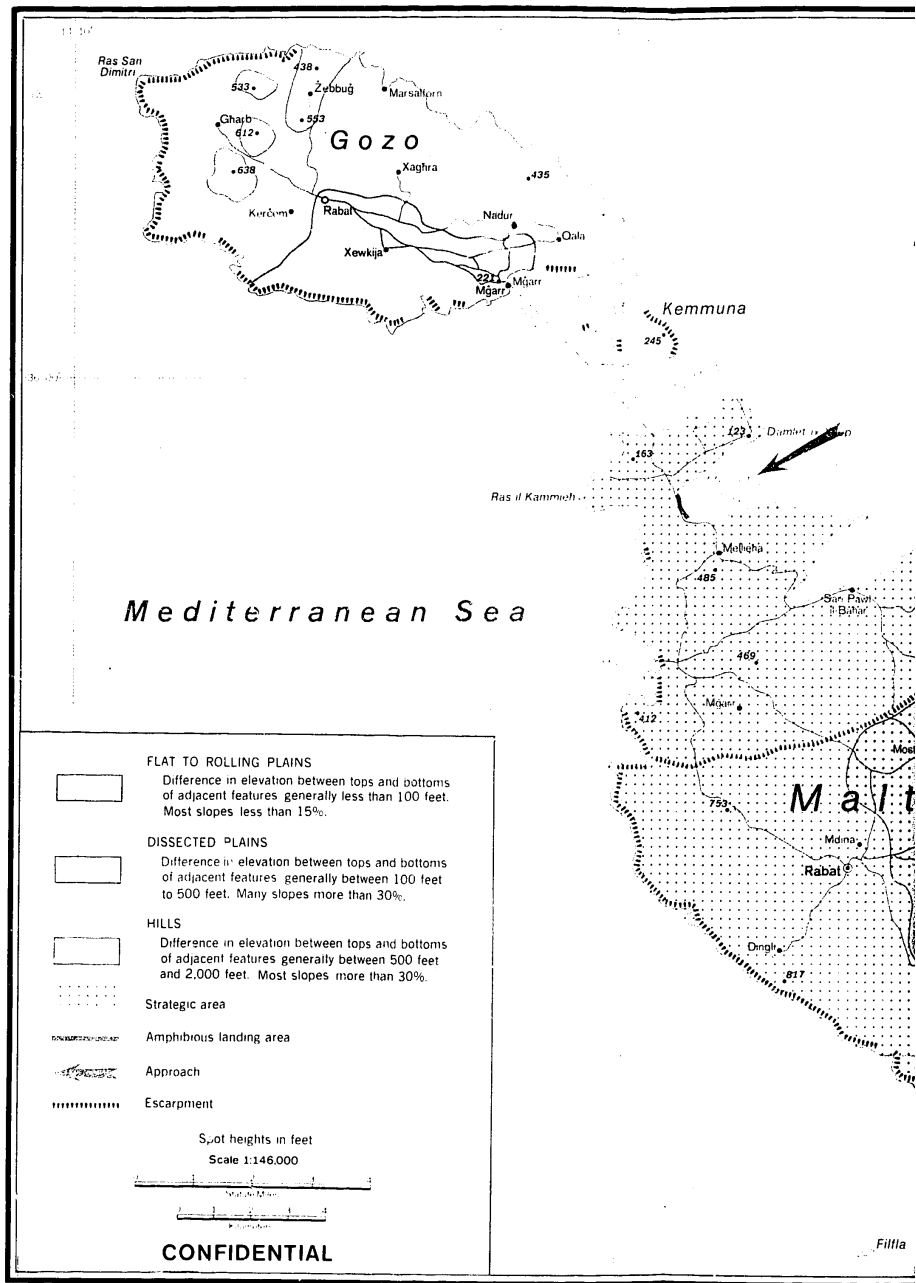
and 130 supervisory personnel—organized into four companies of five platoons each. Eligible personnel are those unemployed between the ages of 18 and 45 inclusive who have been registered for employment for at least 6 months. Enlistment is for 5 years, or to age 60, but may be terminated at anytime on receiving employment.

The organization is to be uniformed. Initially members of the Pioneer Corps will participate in 3 months military training. Thereafter, they will receive training in various trades and work on such projects as construction of a new 300,000-ton drydock, extension of the Luqa Airport runway, construction of an airport terminal building, extension of electricity and telephone facilities, and construction of harbor facilities.

The source of supervisory personnel will be primarily the MLF. How this demand will affect the MLF is not clear at this time.



(1)



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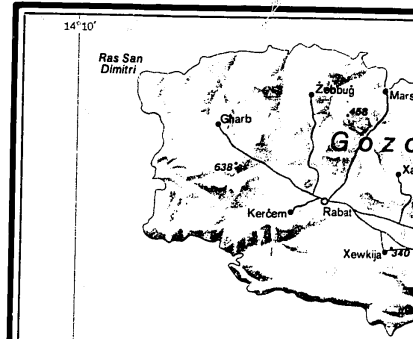
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Places and features referred to in this
General Survey (u/ou)

	COORDINATES	
	'N.	'E.
Benghisa (locality).....	35 49	14 32
Birkirkara.....	35 54	14 28
Birzebbuga.....	35 50	14 32
Buskett (park).....	35 52	14 24
Dingli.....	35 51	14 22
Gharb.....	36 04	14 13
Gharghur.....	35 55	14 27
Gozo (isl).....	36 03	14 15
Grand Harbour (harbor).....	35 54	14 31
Gwardamanga.....	35 53	14 30
Gzira.....	35 54	14 30
Hamrun.....	35 53	14 29
Il-Birgu.....	35 53	14 31
Il-Furjana.....	35 54	14 30
Kemmuna (isl).....	36 01	14 20
Luqa.....	35 52	14 29
Malta (isl).....	35 55	14 25
Marsa.....	35 53	14 30
Marsamxett Harbour (harbor).....	35 54	14 30
Marsaxlokk.....	35 50	14 33
Mdina.....	35 53	14 24
Mellieha.....	35 58	14 22
Mellieha Bay (bay).....	35 59	14 22
Mgarr.....	36 02	14 18
Msida.....	35 54	14 29
Mtarfa.....	35 53	14 24
Naxxar.....	35 55	14 27
Nigred.....	35 49	14 28
Ponta ta' Delimara (point).....	35 49	14 34
Pozzallo, Sicily.....	36 43	14 51
Rabat, Gozo.....	36 03	14 14
Rabat, Malta.....	35 53	14 24
Rumla tal-Mixquqa (cove).....	35 56	14 21
Rinella (locality).....	35 54	14 32
Saint Georges Bay (inlet).....	35 56	14 30
San Giljan.....	35 55	14 29
San Pawl il-Bahar.....	35 57	14 24
Siggiewi.....	35 51	14 26
Sliema.....	35 55	14 30
Ta' Wied Rini (locality).....	35 53	14 21
Tripoli, Libya.....	32 54	13 11
Valletta.....	35 54	14 31
Zebbug.....	35 52	14 26
Zurrieq.....	35 50	14 28

Selected airfields

Hal Far.....	35 49	14 31
Luqa.....	35 51	14 29



Mediterranean

Malta

- Surfacted road
- ✈ Airfield
- ⚓ Major port

Populated places

- Valletta 15,547
- ⊞ 15,000 to 22,000
- ⊙ 10,000 to 15,000
- 5,000 to 10,000
- Under 5,000

Spot elevations in feet

Scale 1:146,000

0 1 2 3 4

Statute Miles

0 1 2 3 4

Kilometers

501165 5-73



Central Intelligence Agency For

