

PUBLICATION 125

**SAILING DIRECTIONS
(ENROUTE)
WEST COAST
OF
SOUTH AMERICA**

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WEST COAST OF SOUTH AMERICA—OFF-LYING ISLANDS AND DANGERS

Plan.—This sector describes the off-lying islands, dangers, and banks that are widely scattered W of the coasts of Colombia, Ecuador, and Chile. The sequence of the description is from N to S.

General Remarks

1.1 The waters W of the coasts of Colombia, Ecuador, and Chile contain a number of off-lying islands, dangers, and banks, most of which are not marked by navigational aids. The islands, volcanic in origin, are in general precipitous and steep, but detached dangers lie close off many of them. Isla de Malpelo, about 200 miles off the Colombian coast, lies closest to the coast. Isla de Pascua, about 2,000 miles off the Chilean coast, is the westernmost of the off-lying islands described herein. The Archipelago de Colon and the Archipelago de Juan Fernandez are the principal island groups; the Archipelago de Colon is the largest group.

The Archipelago de Colon

1.3 The **Archipelago de Colon** (Galapagos Islands) (0°00'N., 90°00'W.) is the group of islands and islets forming the archipelago that lies on and near the Equator, between 500 and 700 miles W of the coast of Ecuador. The entire group comprises an area of about 2,966 square miles and is a military reservation.

It is reported that there are airports on Isla Baltra and at the naval base on Isla San Cristobal. All vessels, including private yachts, desiring to call at any of the islands or to enter their waters must obtain clearance from the Ministerio de Defensa Nacional, Quito, Ecuador, or from an Ecuadoran consul before sailing to the islands. Upon arrival at the archipelago, vessels must clear with the local authorities at Bahia de Naufragio, Isla San Cristobal or at Bahia de la Academia, Isla Santa Cruz, before proceeding to any of the other islands.

Area to be Avoided.—To avoid risk of damage to the environment and economy, all vessels greater than 500 grt and all fishing vessels should avoid the area bounded by:

- a. 4°04.8'N, 81°43.5'W.
- b. 4°04.8'N, 81°28.2'W.
- c. 3°52.2'N, 81°28.2'W.
- d. 3°52.2'N, 81°43.5'W.

It was reported (1992) that a vessel was detained and a severe fine imposed for approaching within 200 miles of the islands.

Winds—Weather.—Although the island group lies on and near the Equator, the climate is tempered by the cool Peru Current. The Southeast Trade Wind is the prevailing wind in the Archipelago de Colon and blows between SE and SW. From April to December, the trade wind blows with great regularity and gales are unknown. Calms are frequent from January to April, with occasional light squalls from the NW. Heavy rollers occasionally break upon the N shores during the rainy season, but no wind of any consequence accompanies them.

The greater part of the islands are, in general, embraced in a dry zone which rises to about 244m. The period of January to April is the rainy season for the low grounds, but even during this period rainfall cannot be relied on. At the higher levels light rain occurs throughout the year, and rainfall is greater from June to November when thick mists are prevalent.

Thick fog has been reported at sea near the Archipelago de Colon in April and September.

In the vicinity of the islands, bioluminescence (phosphorescence) has been observed.

Tides—Currents.—The currents in the vicinity of the Archipelago de Colon are strong, with rates of 1 to 2.5 knots. They generally set W and NW. There is a marked difference in the temperatures of the bodies of water moving within a few miles of each other. On one side of Isla Isabela the temperature of the sea 0.3m below the surface was 26°C, but on the other side it was less than 15°C. These differences are due to the cool Peru Current (Humboldt Current) coming from the S along the coasts of Chile and Peru, which, at the archipelago, joins a warmer body of water moving from the Gulf of Panama.

Near Cabo Blanco, the Peru Current leaves the coast and sets WNW and W toward the archipelago, passing this group on both the N and S sides. The breadth of the current stream on the meridian of the Archipelago de Colon is 400 to 500 miles.

Beyond the archipelago the current widens rapidly and is lost in the Equatorial Current near 108°W.

Aspect.—There are six principal islands, nine smaller islands, and a number of islets and rocks. The formation of the entire archipelago is volcanic. In general, the higher islands have one or more principal craters toward their centers with several smaller ones on their flanks. There are as many as 2,000 craters, some rising to 1,524m at their centers, among the islands. There is a marked difference between the S and N sides of the islands. The S sides are covered with luxuriant vegetation. The N sides consist in general of bare lava, from the crevices of which springs a thick undergrowth. The low lands are generally parched and rocky; however, the larger islands are fringed with dense mangroves which are backed in places by impenetrable thickets. The trees on the islands seldom grow over 9.8m high.

Water is found on many of the islands during the rainy season. An adequate supply of water can be obtained at Isla San Cristobal, but it must be boiled for drinking purposes.

Note.—Several lighted beacons and markers are situated on the islands and islets to assist small craft with local knowledge in entering the coves, craters, and narrow fairways.

Regulations.—The Government of Ecuador has established a special area to be avoided around the Archipelago de Colon, with special traffic routing measures for vessels passing within 200 miles of this island area.

The Ecuador Ship Reporting System is mandatory and applies to all vessels navigating within 200 miles of Ecuador and Archipelago de Colon. For further information, see Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

The Autonomous Temperature Line Acquisition System (ATLAS), a successive chain of mooring buoys, with quick flashing orange and white colored lights, are placed along the equatorial belt of the Pacific from the Archipelago de Colon to New Guinea. Vessels are to give them a wide berth of 6 miles.

Caution.—Mariners should exercise caution in the waters adjacent to the islands due to numerous unconfirmed reports of depths less than 200m in much deeper water.

1.4 Isla Darwin (Isolote Culpepper) (1°39'N., 92°00'W.), a small, rocky and barren islet, is the NW islet of the Archipelago de Colon. An arched rock, 31m high, lies about 0.3 mile E of the S end of the islet. A reef extends 0.2 mile SE from the rock.

The island was reported (1996) to lie 1 mile N of its charted position.

Isla Wolf (Isla Wenman) (1°22'N., 91°49'W.), rocky and barren, lies about 18.5 miles SE of Isla Darwin. It actually consists of three islets and a large above-water rock which lie close together and are separated by narrow passages; when sighted from the offing they appear as one islet.

The group of islets is formed by the crater of an old volcano, the W side of which is broken away and submerged, so that the islet is in the form of a crescent with concave sides W.

A light is shown from the NE extremity of the largest islet.

1.5 Isla Pinta (0°35'N., 90°45'W.), about 7 miles long and 4 miles wide, lies about 77 miles SE of Isla Wolf. The island has an active volcano near its center that rises to a height of about 762m.

Shoal water, on which breakers have been reported, extends 0.5 mile N from the N end of the island. Roca Nerus, belowwater rocks, extend about 0.3 mile N from a position on the N shore about 0.8 mile E of the above shoal area. A depth of 8.2m lies about 1.3 miles NNW of Cabo Chalmers, the SW extremity of Isla Pinta.

A depth of 131m was reported to lie 6 miles N of the N extremity of the island. A depth of 140m was reported to lie 7 miles NNE of the N extremity of the island. A depth of 264m was reported to lie 34 miles WNW of the island.

Anchorage can be taken, in depths of 12.8 to 27.4m, rock and sand, about 1.5 miles NNW of Cabo Chalmers (0°33'N., 90°47'W.). The anchorage lies 0.3 to 0.4 mile off high, sheer cliffs which on closing show a narrow sloping shelf of rock with patches of black sandy beach at their base.

A vessel approaching the anchorage from the S can round Cabo Chalmers (0°33'N., 90°47'W.) about 1 mile offshore and anchor 0.2 to 0.3 mile N of a conspicuous green patch near the base of the highest cliff.

Isla Marchena (0°20'N., 90°28'W.) lies 15.5 miles SE of Isla Pinta. Numerous above and below-water rocks lie up to 0.3 mile offshore and a dangerous rock lies in an approximate position about 3 miles off the NE side of the island.

Anchorage can be taken, in a depth of about 31.1m, sand, 1 mile WNW of Punta Montaluo (0°23'N., 90°28'W.). The anchorage lies off a small cove with a black beach marked by a rocky point W and high rocks E. Fishing vessels frequent the anchorage.

Isla Genovesa (0°20'N., 89°57'W.), a flat island, lies about 25 miles E of Isla Marchena. A crater lake lies near the center of the island. Bahia Darwin, marked at its head by a pair of lights, indents the S side of the island. The entrance of the bay, about 0.5 mile wide, is shallow and encumbered by reefs.

Small craft with local knowledge can enter the bay via a constricted channel and anchor on a small ledge in the NE part of the bay, where there are depths of 7.3 to 16.5m, sand.

1.6 Isla San Cristobal (0°50'S., 89°25'W.) lies at the E extremity of the Archipelago de Colon. Numerous above and below-water rocks and dangers lie close to the shores of the island which is a good radar target at 25 miles. Most of the inhabitants reside in and about Bahia de Naufragio, a town situated near the SW end of the island.

A radiobeacon is situated on the S side of the island, about 6 miles ESE of the town.

The E side of Isla San Cristobal, between Punta Pitt (0°43'S., 89°14'W.) and Punta Naufragio (0°55'S., 89°38'W.), is rockfringed and contains no harbors or anchorages. Roca Este, drying, and **Roca Ballena** (Roca Whale), awash, are off-lying dangers shown on the charts of this coast. There is an abovewater rock (Estefania) and adjacent shoal patch lying almost 3 miles NNW of Punta Pitt. The former gives a good radar return up to 15 miles.

Anchorage can be taken, in a depth of 36.6m, in Bahia de Agua Dulce (0°56'S., 89°30'W.), an open roadstead exposed to heavy rollers. The anchorage lies 0.4 mile off a waterfall, at the base

of which fresh water is available. The water should be boiled or otherwise treated before drinking.

1.7 Bahía de Naufragio (Puerto Baquerizo Moreno) (0°54'S., 89°37'W.) (World Port Index No. 15345) is the bay and town that is entered between Punta Lido, from which a light is shown, and Punta Malamocco, about 0.8 mile apart, is a port of entry for the Archipelago de Colon. A radio station is situated near the head of the bay.

Tides—Currents.—The flood and ebb tidal currents set NE and SW, respectively, with a velocity of up to 1.8 knots.

Depths—Limitations.—Shoals and reefs fringe the harbor and coast around the bay. Depths of less than 5.5m exist 0.5 mile offshore. Reefs, above and below-water, lie in the inner harbor and approaches to the harbor. Arrecife Schiavoni, with a least depth of 0.3m, lies in the entrance and helps protect the bay from NW weather. A dangerous wreck lies on shoals close E of the reef. Arrecife Schiavoni and nearby reefs are not visible on a bright day with a calm sea except for the light-colored water over them. With a swell, the sea breaks heavily on the reefs and across the S entrance of the bay. A lighted buoy marks the NE extremity of the shoal water.

1.8 Rocas Dalrymple (0°51'S., 89°38'W.), 19m high and steep-to, lies in the N approach to the bay. A light, with a racon, is shown from a concrete block on the highest rock.

Rocas Dalrymple is a good radar target; it is also a landmark on a N approach to the harbor.

Aspect.—Two piers are available here, but their alongside depths have not been reported. The piers stand 229m NE and 137m W, respectively, of Puerto Baquerizo Moreno Light (0°54'N., 89°38'W.). The pier W of the light is reserved for Naval and harbor vessels only. A prominent grey stone building, housing the Governor of the Islands and the Naval headquarters, stands 0.2 mile WNW of a conspicuous church standing at the head of the bay. The Naval base extends from the grey building WNW to another prominent building standing on Punta Malamocco. A radio mast exhibiting fixed red obstruction lights lies 91m SW of Puerto Baquerizo Moreno Light.

Anchorage.—Anchorage can be taken, in a depth of about 11m, with a lighted, metal framework tower bearing 157°, distant 0.4 mile, and Punta Lido (0°53'S., 89°37'W.), bearing 007°. Small vessels may find better holding ground nearer the head of the bay. Additional anchorage is available, in 29.3m, sand, about 0.5 mile NE of Punta Lido.

Directions.—Caution must be exercised when approaching the bay, particularly from the W. From a position about 0.5 mile S of Rocas Dalrymple, steer a course of 165° with the rock astern, bearing 345°. When about 0.3 mile W of Punta Lido, and when the light at the head of the bay bears 165°, change course to 165° and proceed to an anchorage.

1.9 The W side of Isla San Cristobal is fringed by rocks, reefs, and shoals extending as far as 1.3 miles offshore. These are numerous, small coves indenting this low, dark-colored coast. Isla Lobos (0°51'S., 89°34'W.), a good radar target, lies close offshore. A detached 3m patch lies 1.2 miles W of Isla Lobos. Punta Bassa (Manglecito) (0°49'S., 89°32'W.), a salient feature, is low, dark, and reported to be a good radar target. Breakers extend up to 0.5 mile N of the point. Anchorage can be taken about 1.5 miles SW of the point, in depths of 11 to 32.9m.

Bahía Stephens (0°48'S., 89°30'W.), an open bay on the NW side of the island, can be identified by Roca Kicker (Roca Peteadora) (0°46'S., 89°31'W.), a sheer, high rock shaped like a church with a high, square tower. The rock is a good landmark on approaching the bay, which is clear of dangers except for several shoal patches lying 1.2 miles off the NE entrance point.

Punta Finger (0°45'S., 89°28'W.) is a conspicuous dark-colored cliff topped by a pinnacle rock which is located at the NE extremity of Bahía Stephens.

Anchorage can be taken, in depths of 18.3 to 21.9m, good holding ground, about 0.5 mile offshore.

Caleta de la Tortuga (0°42'S., 89°22'W.), an open roadstead, lies 1.5 miles SW of Cabo Norte (0°41'S., 89°21'W.), the N extremity of Isla San Cristobal. Cerro Pan de Azucar (0°43'S., 89°21'W.), about 220m high, and another hill rising 0.2 mile SW, are good landmarks when approaching the roadstead.

Anchorage.—Anchorage can be taken in the roadstead, in depths of 21.9 to 27.4m, sand, about 0.5 mile offshore.

1.10 Isla Espanola (1°23'S., 89°40'W.), the S island of the Archipelago de Colon, is 195m high, rugged, and covered with brushwood. Its coasts are bold and rocky. The island gives a good radar return at 21 miles. Rocks and reefs, above and below-water, lie 0.2 mile off the island, except in the vicinity of Isla Gardner, which is encircled by foul ground. There is a 7.3m detached patch 0.6 mile N of the N extremity. Isla Gardner (1°20'S., 89°39'W.), an islet, gives a good radar return up to 16 miles.

Bahia Gardner (1°21'S., 89°38'W.), lies S and W of Isla Gardner. A reef, with an islet at its N end, extends N from Isla Espanola leaving a passage about 137m wide and with a least depth of 5.5m N of the islet. A rock, with a depth of 3.7m, lies in the bay about 0.4 mile from the SW end of Isla Gardner.

Local knowledge is required.

Anchorage can be taken in the bay, in depths of 9.1 to 18.3m,. Vessels can anchor about 0.8 mile W of the summit of Isla Gardner, in 36.6m. There is anchorage with the N extremity of Isla Gardner bearing 075°, and the S extremity 116°, in a depth of 34.7m.

Arrecife Macgowen (1°07'S., 89°54'W.) lies about 20 miles NW of Isla Espanola. It consists of rocks awash, 1.8m below the surface, which are dangerous as soundings give no warning of their proximity. A pinnacle rock, with a depth of 2.1m, was reported to lie about 0.5 mile ENE of Arrecife Macgowen.

Banco Hancock, with a depth of 19.5m, is an isolated patch lying about 19 miles WNW of Arrecife Macgowen.

1.11 Isla Santa Maria (1°17'S., 90°25'W.) has several round-topped hills that are visible from any direction. Numerous above and below-water rocks lie on fringing shoals encircling the island. Islets lie up to 1.8 miles off the NE side and up to 5 miles off the E side of the island. Isla Enderby lies 2.5 miles NNW of Punta Ayora. Isla Campeon is located 1.3 miles W of Isla Enderby and just 0.7 mile off the N coast of Isla Santa Maria. Isla Caldwell, 114m in height, lies 2 miles SSE of Punta Ayora. Isla Gardner, 227m in height, lies 2.9 miles SE of Isla Caldwell. Isla Watson lies 0.9 mile SW of Isla Gardner.

An isolated rock, awash, lies about 8 miles SE of the E extremity of the island.

Bahia Playa Prieta (Black Beach Anchorage) (1°16'S., 90°30'W.) affords good anchorage, in depths of 18.3 to 36.6m, sand, about 0.3 to 0.5 mile off the head of the bay. There is some swell, but reefs lying SW give some shelter. Vessels must not anchor in depths less than 18.3m in order to avoid a rock, with a depth of 1.8m, that lies 0.1 mile offshore. The summit of Isla Santa Maria, bearing 118°, leads S of the rock and to the anchorage.

Landmarks approaching the anchorage include a high rock lying 0.2 mile offshore and 0.5 mile S of the anchorage, and a brownish sandy beach inshore; a light is shown from the NE point of the bay.

Bahia del Correo (Post Office) (1°14'S., 90°25'W.), indenting the N coast of Isla Santa Maria, is mostly foul, but affords sheltered anchorage, good holding ground, with easy access. There are depths of 12.8 to 14.6m in the center of the bay, about 0.5 mile ENE of the W entrance point. Landing can be effected at a sandy beach in the SE part of the bay.

1.12 Isla Santa Cruz (0°38'S., 90°19'W.) is featured by a prominent mountain rising near the center of the island. It is volcanic. Rocks and foul ground fringe the island; several above-water rocks and islets lie up to 3 miles offshore.

Bahia Academy (0°45'S., 90°18'W.) indents the S coast of the island E of Punta Estrada (0°45'S., 90°18'W.). The shores of the bay are foul for 0.5 mile offshore and depths generally are less than 5.5m. Isla Coamano (0°45'S., 90°17'W.) lies on foul ground about 1.5 miles E of Punta Estrada. There are several shoal patches lying up to 1.5 miles S and SE of the Punta Estrada. A light, frequently extinguished, is shown from the Isla Coamano. Another light is shown near a stone landing jetty, about 1 mile NNW of Punta Estrada.

Landmarks include three research station buildings standing 2.2 miles N of Punta Estrada and a white sandy beach at the head of a small cove, 0.7 mile NW of the same point.

Pilotage, if required, can be provided by the Harbormaster; there is no formal pilot service.

Anchorage can be taken in Bahia Academy, in depths of 11 to 14.6m, about 0.6 mile from the landing jetty with Punta Estrada bearing 180°, distant about 0.7 mile. Vessels approaching the bay from the E or W should keep about 3 miles offshore.

Puerto Nunez (0°43'S., 90°13'W.), a foul cove, affords anchorage, in 6.4m, clear of the foul ground which extends up to 0.8 mile offshore.

Rocas Gordon (0°34'S., 90°09'W.), a group of three rocks, of which the largest is 61m high, lies 1 mile NE of Islas Plaza (0°35'S., 90°10'W.). A light is shown from the S side of the S island of Islas Plaza.

Isla Baltra (0°27'S., 90°16'W.), low and covered with brush, is separated from the N coast of Isla Santa Cruz, and from the E end by Canal de Itabaca (0°29'S., 90°16'W.), a shallow passage about 0.3 mile wide. Buoys mark the fairway, which is used by fishing vessels in transit. It is reported that most of the buoys have been removed and a pole beacon marks a rock near the W outlet of the fairway.

Isla Baltra accommodates a naval and air force base; because of this, the use of Isla Baltra is restricted.

The quay is controlled by the naval authority.

Local knowledge is required.

Anchorage.—Anchorage can be taken, in depths of 7.3 to 14.6m, sand and rock, at the E end of Canal de Itabaca. The steep-to S shore of the canal should be favored on entering to anchor.

1.13 Caleta del Norte (0°25'S., 90°17'W.) is the N of two small bays on the W side of Isla Baltra. Punta del Norte, the NW end of the island and bay, is reported to be a good radar target. Isla Seymour (0°24'S., 90°17'W.) is separated from the N end of Isla Baltra by a passage blocked by foul ground at its E end. Anchorage can be taken, in 16.5m, at least 0.2 mile off the head of Caleta del Norte.

Caleta Aeolian (0°27'S., 90°18'W.), the S of two bays, is entered S of Punta Naboia (0°26'S., 90°17'W.). A light is shown from a tower on the point and prominent lighted radio masts stand within the point. Seaplane ramps are situated at the sandy head of the bay. A wharf, 61m in length, with alongside depths of 6m, is situated nearby as is a radio station and airfield.

Anchorage can be taken, in 16.5m, in the outer bay.

Islas Guy Fawkes (0°31'S., 90°32'W.) are a straggling group of islets lying off the NW side of Isla Santa Cruz. Isla Eden (0°33'S., 90°32'W.) lies at the S end of the group. Anchorage can be taken, in about 14.6m, 0.8 mile NNE of Isla Eden.

Islas Daphne (0°25'S., 90°22'W.) consists of three islets. The NE islet, 107m high with sheer sides, lies about 3.5 miles W of Isla Seymour. The cone-shaped SW islet lies 5 miles W of Caleta del Norte. The third islet is an above-water rock lying on a shoal, 0.7 mile E of the SW islet. When approaching from the NE, Isla Baltra and Isla Seymour appear to merge with the higher background of Isla Santa Cruz, and Islas Daphne is the first to be identified.

Isla Santa Fe (0°50'S., 90°04'W.) lying about 12 miles off the SE side of Isla Santa Cruz, is steep-to except on its N side where above and below-water rocks lie up to 200m offshore. A 12.8m patch lies 1.7 miles ENE of the NW extremity of the island.

1.14 Isla San Salvador (0°15'S., 90°45'W.), high and wooded, consists mainly of lava and has a conspicuous volcanic hill (Cerro Pan de Azucar) at the W side of the island.

Isla Rabida (0°25'S., 90°42'W.), a small, barren island, lies 2.5 miles off the S side of the island. A group of small islets lies 4 miles E of Isla Rabida, and a chain of islets including a 4m patch lie off the SE end of Isla San Salvador.

Bahia de Sullivan (0°17'S., 90°34'W.), formed E and S by Isla Bartholome (0°17'S., 90°33'W.), is open to the NE and has a 7.4m rocky patch lying in its center. Small vessels can anchor in at least 20.1m, 0.3 mile off the head of the bay.

Bahia de James (0°14'S., 90°52'W.), an open bay, has sheltered coves within the NE and SE entrance points. Isla Albany, lying 0.5 mile off the NE entrance point, merges with Isla San Salvador from offshore. Cerro Pan de Azucar (a prominent volcanic cone), 395m high, is the best landmark on approaching the bay. Anchorage can be taken, in 13m, off a sandy beach with the center of Isla Albany bearing 346°, distant 1.7 miles. Large vessels should anchor about 0.4 mile farther out, in 27.4m, sand over rock. Depths of 9.1m or less exist up to 0.5 mile from the head of the bay.

1.15 Isla Isabela (0°30'S., 91°10'W.) is composed of six huge craters, all active, joined at their bases by lava, the most remarkable isthmus being Istmo Perry. The S end of the island is moist from the trade wind and has dense vegetation. The N part is dry and barren. There are few navigational aids or landmarks.

Punta Albemarle (0°10'N., 91°20'W.), the N end of Isla Isabela, is a good radar target. Foul ground extends 0.5 mile N of the point. Roca Redonda (0°14'N., 91°37'W.), a barren islet, lies 18.5 miles WNW of the point. Between Punta Albemarle and Punta Alfaro, the island is steep-to, but the latter point is fringed for about 1 mile offshore by shoals of less than 9.1m.

An islet lies 2.2 miles NNW of Punta Alfaro (0°25'S., 90°57'W.).

Bahia de Perry (Cartago Bay) (0°35'S., 90°55'W.) indents the coast between Punta Alfaro and Cabo Barrington (0°36'S., 90°54'W.). The bay is fringed by mangroves, but anchorage can be taken, in depths of 12.8 to 23.8m, sand and rock. Roca Blanca (0°33'S., 90°52'W.), above-water, lies 4 miles NNE of Cabo Barrington.

1.16 Cabo Woodford (0°45'S., 90°47'W.) is the E extremity of Isla Isabela. Between this cape and Cabo Barrington, the coast is foul for at least 1.3 miles offshore. A rock about 6m wide, with a depth of 1.8m, was reported to lie about 6.5 miles ESE of Cabo Woodford.

The coast between Cabo Woodford and Cabo Rosa, the S extremity of Isla Isabela, is considered hazardous to approach as there are several islets and rocks scattered offshore. Landings are

difficult due to breakers. The dangers include Islas Crossman (0°51'S., 90°48'W.), Isla Tortuga (1°01'S., 90°52'W.), Roca Burra (0°58'S., 90°52'W.), and Roca Union (1°02'S., 91°06'W.).

Villamil (0°57'S., 90°58'W.) is a village situated at the head of a bay, about 8 miles SW of Punta Veintimilla (0°55'S., 90°51'W.). Cerro Villamil is a conspicuous hill rising about 0.8 mile within the W shore of the bay and 1 mile SW of the village.

A 46m long pier and a flagstaff are situated adjacent to the village. The E side of the bay is encumbered with shoals, rocks, and islets for 1.8 miles offshore. A light is shown from a tower on the W islet.

Pilotage.—Pilotage is not compulsory, but is recommended for the first visit; although there is no formal pilotage service, a member of the Harbormaster's staff can advise.

Anchorage.—Anchorage can be taken, in a depth of 12m, about 1 mile W of Villamil Light, but it is not recommended due to the heavy swell and breakers. Landing is possible in a cove about 4 miles SW of the village.

1.17 Cabo Rosa (1°03'S., 91°10'W.) is the S extremity of Isla Isabela. From the cape, the coast trends WNW for 17 miles then NW to Punta Cristobal (0°54'S., 91°31'W.), which can be identified by a mass of small craters behind it. Other than Caleta Iquana (0°57'S., 91°27'W.), the coast is quite regular in outline.

Bahia Isabel (0°37'S., 91°06'W.) indents the W side of Isla Isabela. Four islets are clustered about 0.5 mile offshore. Anchorage can be taken, in depths of 18.3 to 25.6m, sand, about 0.3 mile S of the southernmost islet. The area E of the islands is shoal with a foul bottom. Only small vessels should anchor in this area, and even then a tripping line is necessary.

Anchorage can be taken in a cove about 5 miles NE of Caleta Webb (0°48'S., 91°27'W.). Two small hills, covered with green brush with a sandy beach on each side, identify the anchorage.

The cove has depths of 54.9m about 0.8 mile offshore, decreasing to 5.5m close inshore. Good anchorage can be taken about 0.5 mile offshore, in 32.9m.

Caleta Tagus (0°16'S., 91°22'W.), formed by an old crater, affords good anchorage, in depths of 11 to 29.3m, sand and gravel. The shores of the cove are steep-to and the entrance is clear of dangers. Anchorage is reported as being good in a cove near Punta Vincente Roca, about 17 miles NW of Caleta Tagus.

There are depths of 11 to 36.6m, good holding ground of rock and sand in the cove, which is reported to have a large cave at the water's edge.

1.18 Isla Pinzon (0°36'S., 90°40'W.) is a small, high island lying in the passage between Isla Isabela and Isla Santa Cruz, about 11 miles NE of Cabo Woodford. A small, high islet stands about 5 miles SE of Isla Pinzon.

Isla Fernandina (0°25'S., 91°29'W.) lies close to the W side of Isla Isabela on the NW side of Bahia Isabel. The island is a high, large volcano that is barren, steep-to, and has a crater lake near its center. An extensive field of lava encircles the base of the volcano. Foul ground extends at least 0.5 mile off the SE side of the island.

A vessel anchored off the island's NE coast in Espinosa Bay, with Punta Espinosa (0°16'S., 91°27'W.) bearing 295° and the S point of the bay bearing 177°, in 34.7m.