

## 1. Purpose

The purposes of this VTS manual are to enhance vessel traffic service of waterways, to ensure safety of navigation of vessels, to protect the marine environment of surrounding waters and to provide VTS user timely information and necessary assistance, within the limits of the VTS coverage.

## 2. Authority

This manual is on the authority of The commercial Port Law and The Regulation on port service at commercial ports.

## 3. Geographic Position and Port Area (See Figure 1)

### (a) Geographic Position

Keelung Harbor, a port born in nature surrounded by mountains with one side open to sea, is located at Lat 25°09'42.5"N 121°44'57.5"E at the northeast of Formosa. Chi-lung Tao at the northeast and 2.5 nautical miles off the port entrance, is one of the best landmarks of the port. Ho-Ping Island is the largest island at the eastside of the port; Tung-Pon Yu, a plain low elevation island, and said VTS Control Center that directs the port traffic service is established thereupon. Total length of the berths in Keelung port is more than 9000 meters with 8000 meters in operation. The depth of the water is from 9 to 14.5 meters normally. Port area is about 572 hectares in total, 196 hectares for land area and 376 hectares for waters. Prevailing wind comes from NE and NNE most of time from September to May and coming from SW and S during June to August; NE monsoon in the winter and SW monsoon in the summer; every year from July to October as typhoon season; the precipitation is more in winter; fog occurs mostly in spring or summer (March to July); average range of the tide is about 0.92 meter.

### (b) Demarcation of Port Area

(i) Port limit: the waters and ratified land area bounded by a line connecting west breakwater, east breakwater, planned north breakwater and planned south breakwater of Ba-Tz-Men are defined as port area.

(ii) Inner harbor: The waters bounded by south of line connecting berth No.19W temporary light post (25°08'50.3N 121°44'43"E) and An-Lan light post (25°08'52.5N 121°44'56.5"E) are defined as inner harbor.

(iii) Outer harbor: The waters bounded by inner side of a line connecting east breakwater and west breakwater are defined outer harbor excluding those waters designated as inner harbor, Cheng-bin area and Ba-Tz-Men area.

(iv) Cheng-Bin area: The waters bounded by west of Ho-Pin bridge (not included) and east of Ba-Tz-Men light post that turns 180° from true north are defined.

(v) Ba-Tz-Men area: The waters bounded by a line connecting planned north breakwater, planned south breakwater of Ba-Tz-Men and east of Ho-ping bridge (including) are defined.

### (c) Inbound/Outbound Main Channels

The waters of inbound/outbound main channels bounded between two lines, one line connecting east breakwater light post (25°09'40"N, 121°44'49.3"E) and An-Lan light post (25°08'52.5N 121°44'56.5"E) and the other line connecting west breakwater light post (25°09'37.2"N, 121°44'39.1"E) and berth No.19W temporary light post (25°08'50.3N 121°44'43"E). The depth at the centerline of the main channel is 15.5 meters below zero tide level.(Keelung port tidal datum). The width of main channel at port entrance is 275.61 meters and the width of inner harbor between berth No.19W temporary light post and An-Lan light post is 355 meters.

### (d) Anchorage and Quarantine Anchorage

(i) Eastern waters bounded by a line connecting east breakwater light post (25°09'30.6"N, 121°44'55"E) and An-Lan light post

(25°08'52.5N 121°44'56.5"E) as quarantine anchorage

(ii) Anchorage at outside of the port

(1) West anchorage: the waters bounded by west of inbound channel and east of Yeh-liu Pan-tao.

(2) East anchorage: the waters bounded by east of outbound channel and Chi-lung Tao to Shen-ao port

The waters bounded by a line connecting referential points G, B, C and F in West anchorage at outside of the port are temporary reserved as "inbound waiting anchorage" for merchant vessels (see Figure 2) so that they can enter and berth as soon as the berth is available.

(e) Prohibited-anchorage area

(i) No vessels shall drop anchor or make a temporary stay at the inbound/outbound main channels, traffic separation waterways and separation zone.

(ii) The waters bounded by a line connecting west breakwater lighthouse (25°09'26.3"N, 121°44'40.1"E) (Guan-Hwa Tower), temporary light post (25°08'50.3N 121°44'43"E) in berth No.19W and those of coastlines are designated as "Keelung port prohibited-anchorage area" and no vessels shall drop anchor in this area.

(iii) No vessels shall drop anchor or dredge the anchor within the sectoral waters 1350 meters radius from the center of the port (25°09'39"N, 121°44'45"E) where submarine cables is laid.

#### 4. Port Control and Entering/Departing Permit

(a) Merchant Ships

The shipping company or ship's agent of vessels must comply with the provisions of articles 24, 25 of Merchant Port Law and articles 4, 5 and 7 of Regulation for International Commercial Port Administration and submit entering/departing application form together with all necessary papers to Shipping and Navigation Department of the Harbor Bureau. After approval, vessels must acquire berth assignment according to relevant rules prior to entering. Upon the completion of these formalities and entering/departing application, the vessels must submit the further application to VTS control center via VHF channel 14 prior to entering/departing the port. The vessels then can enter/depart port according to predetermined sequence as soon as the VTS control operator verifies the submitted data and issues the permission.

(b) Naval Ships:

(i) Same application procedures as merchant ships, that is, Enter/depart port must be permitted and sequenced by VTS control center. VTS control center shall grant high priority of entering/ departing whenever encountering search and rescue, combat, and patient carrying missions

(ii) Any vessel navigate within 20 nautical miles control area of Keelung port must maintain continuous watch on VHF channel 14 so as to meet the communication needs in case of emergency.

(c) Official Ships (Coast Guard cruise, Customs cruise, police boats, port service boats, and fishery official boats)

(i) Verify the data whether it correct or not; Does the vessels comply with the rules and apply for the permit or exempt from the every application?

(ii) permit and sequence of entering/departing port.

(d) Operation Ships

(i) Verify the data whether it correct or not; Does the vessels comply with the rules and apply for the permit or exempt from the every application?

(ii) Dredger and Tug with towing length 50 meters or more must maintain continuous watch on VHF channel 14 and communicate with VTS control center at all times.

All entering/departing vessels shall record the time when passing through the center of outer breakwater as official time of

entering/departing.

## 5. Communications

(a) A VHF voice radio station "KEELUNG PORT RADIO" (KPR) has been set up under the VTS center (VTC) and maintains a continuous radiotelephone watch on VHF channels 12, 14, 16. Designated frequencies and functions are stated as follows:

- (i) VHF Channel 16 (156.8MHz) functions as international distress, emergency, reporting channel.
- (ii) VHF Channel 14 (156.7MHz) functions as port traffic service channel for vessel reporting and Vessels/Shore communications.
- (iii) VHF Channel 12 (156.6MHz) functions as backup channel and piloting communications
- (iv) Shore Station/Call Sign: "KEELUNG PORT RADIO".

(b) Radiotelephone of port service network

Two "Vessel-Port" service frequencies: 141.010-104.040MHz and 141.070-141.100MHz, according to "Designated Radiotelephone Regulation", are frequencies for communications among VTC, pilot, tugboat, ferry and work boat.

(c) All Vessels/VTC communications must use VHF frequencies and must be in English mainly and in Mandarin secondly.

## 6. General Guidelines and Pilotage Duty Regulations

(a) Traffic Separation Scheme (See Figure 2)

(i) the waters bounded by a line connecting the following points (refer to Chart 0353 issued by Chinese Naval Hydrographic Agency)

A-25°09'36"N 121°44'39"E B-25°11'09"N 121°41'50"E  
C-25°12'57"N 121°42'23"E D-25°12'12"N 121°45'34"E  
E-25°09'48"N 121°45'00"E F-25°12'38"N 121°43'46"E  
G-25°10'13"N 121°44'12"E H-25°10'19"N 121°45'06"E  
J-25°13'07"N 121°43'53"E K-25°11'00"N 121°43'59"E  
W-25°12'31"N 121°44'12"E X-25°12'18"N 121°45'10"E  
Y-25°10'24"N 121°44'42"E Z-25°10'23"N 121°44'35"E

(ii) All vessels approaching or departing port are required to follow the inbound/outbound directions of traffic channels.

(iii) Inbound/outbound waterways are both one-way traffic lane. All vessels operating in these channels should maintain a safety distance with vessel ahead according to maneuverability of own vessel.

(iv) Any anchoring or temporary stay is prohibited at inbound/outbound waterways.

(v) Only one vessel at a time is allowed to operate and pass at port entrance.

(vi) Vessels allowed to enter the port should follow the rules of International Regulations for Preventing Collisions at Sea, 1972 (amended 1989). Rule 10 (b)(iii), Traffic Separation Schemes, of chapter 2 states: normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from the side shall do so at as small an angle to the general direction of traffic flow as practicable. Rule 10 (c) states: a vessel shall so far as practicable avoid crossing traffic lanes, but if obliged to do so shall cross as nearly as practicable as right angles to the general direction of traffic flow and with particular caution to giving the way to the vessel at waterway.

(b) Types of vessel required reporting

Following vessels navigating, anchoring, operating within 20 nautical-mile radius of VTS area of Keelung Port must report to VTC concerning movement of vessel.

(i) For power-driven vessels 500 tons or more in gross.

(ii) For power-driven vessels 50 meters or more in length.

(iii) For towing or pushing ahead vessels 500 tons or more in total in gross or 50 meters or more in total in length.

(iv) For passenger vessels regardless tons in gross or meters in length.

(c) Contents of Reporting

- (i) Upon Arrival: Passing at 20 nautical mile range of center of outer breakwater of port entrance.
- (ii) Confirmation: Passing at 5 nautical mile range of center of outer breakwater of port entrance.
- (iii) Applying entering or departing port.
- (iv) Anchoring or weighting-up
- (v) Embarking/disembarking pilot the vessel (can be reported by pilot)
- (vi) Shifting to new mooring or berthing position
- (vii) In case of incidence or emergency.

(d) Regulations of pilotage operation.

- (i) Keelung Port is approved as a compulsory pilotage area.
- (ii) When approaching outer harbor anchorage inside the breakwater from open sea, the vessels shall navigate and anchor by herself without pilot after securing a permit from the KPR. However, if a master desires to have the pilotage service for bring his ship in, the owner or agent of vessels shall request pilotage from the Keelung pilot station directly and arrange for embarking of pilot upon vessel arrival. Prior to the arrival, the vessels shall report to VTS control center via VHF channel 14 and then switching to VHF channel 12 contacting with pilot station for embarking time of pilot. In circumstances due to darkness in the night or severe weather condition, when pilot cannot safely embark the vessel outside the breakwater, she may also arrange to get permission to enter from the KPR with VHF on channel 14, and then proceed with safe speed to enter the harbor where the pilot will be waiting to board inside the breakwater.
- (iii) When embarking/disembarking pilot, Vessels shall comply with the International Convention on Safety of Life at Sea (SOLAS) Chapter V, Rule 17 and rig the pilot ladder on lee side.
- (iv) For vessels carrying dangerous goods specified as 9 categories by SOLAS requesting for pilotage, for safety reason, the pilot shall embark at 2 nautical miles from the outer side of breakwater. The agent of the vessel shall inform the pilot station about the said situation in advance
- (v) The owner or agent of vessels shall request pilotage from the Keelung pilot station according to rules. They shall notify the vessel with time and position the pilot will embark as well as the information of pilotage. The pilot shall contact with the captain directly.
- (vi) Following vessels are exempted from pilotage compulsory:
  - (1) For vessels with R.O.C. nationality Naval ships, official boats, pilot boat, vessels of 1000 tons or less, ferry boats, yachts and other vessels approved by the authority.
  - (2) Foreign vessels of 500 ton or less in gross.
- (vii) Requesting of pilotage shall be filed 10 nautical miles from pilot boarding ground for entering vessels and 2 hours before for departing vessels.
- (viii) Use telephone or VHF channel 12 to request pilotage.

7. Vessel to VTS Control Center

(a) Information of Initial Report (on arrival at 20 nautical mile range of center of outer breakwater of port entrance)

- (i) Vessel's name, call sign and time passing through 20 nautical mile range.
- (ii) Position of reporting point.
- (iii) Course and speed.
- (iv) General description of dangerous cargo on board if any.
- (v) ETA of pilot boarding ground.

(b) Information of Second Report (passing through 5 nautical mile range from the center of outer breakwater of port entrance)

- (i) Vessel's name, call sign and time passing through 5 nautical mile range.
- (ii) Position of reporting point.

(iii) Ready to enter the port or anchoring.

#### 8. Service Provided by VTS Control Center

- (a) VTS providing the mariner with information related to the safe navigation within 20 nautical miles VTS control area.
- (b) Traffic conditions on the waterways such as weather, special circumstances, dredging, navigational warnings etc.
- (c) Assistance to the occasional incidence of navigating vessels
- (d) The request of pilotage, firefighting boats (engines), and ambulance.
- (e) Incidence prevention, traffic condition of fairways, and notice to navigational warnings.

#### 9. Traffic Monitoring

- (a) VTS control center shall take serious cautions, such as vessels routing intentions of nearby waters and clearing the waterways, in monitoring vessels carrying dangerous goods, large passenger cruiser, special vessels and vessels with limited maneuverability.
- (b) VTS control center shall take necessary measures in order to decrease the loss of lives and property for the vessels not under command or restricted in their ability to maneuver that will cause damages to the vessel traffic and environment of nearby waters.
- (c) All vessels navigating within 20 nautical miles of VTS area of Keelung Port shall maintain a continuous watch on VHF channel 14 and receive the instructions and safety information issued by VTS control center.
- (d) Vessels for dock/undock shall make report to VTS control center one hour prior to the operation by shipyard.

#### 10. Traffic Regulations That Vessels Comply with

- (a) Waiting or approved entering/departing vessels
  - (i) Vessels anchoring at outer anchorage must get the permission from the VTS control center beforehand.
  - (ii) Vessels permitted for entering will take pilot 1.5 nautical miles from the port entrance.
  - (iii) Departing vessels must wait at her berth or outer anchorage inside the breakwater. Navigating or proceeding to the port entrance area without permission is prohibited.
  - (iv) Vessels must apply for entering/departing port in advance, and when more than one ship is requesting entry or departure simultaneously, the priority will be determined by the KPR according to the situation.
  - (v) With the exception of emergency, no vessels shall cast anchor in fairways, turning circle or other non-anchoring area. Report to VTS control center immediately in case of emergency.
  - (vi) Entering/ Departing vessels must navigate on the designated direction and designated waterway of traffic separation scheme.
- (b) Navigating for berthing after entering port.
  - (i) Vessels must not only comply with the rules of Convention of the International Regulations for Preventing Collisions at Sea 1972 but the provisions to navigation and collision avoidance provided in Merchant Port Law as well as in Regulations for International Commercial Port Administration.
  - (ii) Vessels must navigate with safe speed after entering port area.
  - (iii) Vessels must navigate as slow as practicable in the port. Side-by-Side, overtaking, or obstructing other vessel's movement are prohibited. While other vessels conducting diving, hydrographic, dredging, buoy fixing, and other surface and underwater operations, the vessels shall pass through it slowly at safety range specified.
  - (iv) Small Vessels must not hamper the safety navigation of large vessels

#### (c) Berthing

- (i) Vessels shall exhibit designated signs while engaging underwater operations.
- (ii) Vessels shall maintain continuous watch on VHF channel 14 when disaster happened in the port area or during typhoon period. If incidence or emergency happened to the vessels, the vessels must not only take emergent measures but also report to VTS control center.
- (iii) In order to keep maneuverability of vessel in case of emergency, the vessels must hold sufficient crew members on duty all the time. At least one third of crew members and one officer each responsible for deck and engine department respectively should be kept on board. More crew members should be on alert when typhoon warning issued.

#### (d) Anchoring

- (i) Vessels shall anchor at the designated anchorage area. Anchoring at fairways and prohibited-anchorage area are prohibited.
- (ii) Vessels must report to and be permitted by VTS control center via VHF channel 14 one hour prior to entering anchorage for anchoring.
- (iii) Vessels shall report to VTS control center 10 minutes after drop anchor and 10 minutes before heaving up the anchor.
- (iv) Anchor watch should be kept during the anchoring period, and maintain continuous watch on VHF channel 14.

### 11. Special Purpose Vessels

- (a) For vessel engaged in towing where the length of tow exceeds 300 meters or the width of tow exceeds 45 meters shall report to the VTS center one hour in advance.
  - (b) For vessel engaged in speed measurement or compass adjustment within 20 nautical miles of VTS area of Keelung Port shall fly the International Code Flag "SM" or "QQ" and shall report to VTS center in advance.
  - (c) For vessel engaged in trial navigation within 20 nautical miles of VTS area of Keelung Port shall fly the International Signal Code Flag "RUI" in the daytime and shall exhibit three all-round white-green-red lights in a vertical line at night.
  - (d) For vessel carrying dangerous cargo engaged in navigating, berthing, anchoring, or operating should exhibit red flag or red light to warn other vessels to keep well clear.
- Above categories of vessels shall maintain a listening watch on the designated VTS frequency, notify other vessels of own ship's route intension, take necessary action to prevent collision, and maintain navigational watch to ensure the safety of navigation.

### 12. Environmental Protection of Surrounding Waters

- (a) According to the provisions of Marine Pollution Prevention Act, for vessels operating within Taiwan waters, excluding for those permitted to discharge to the ocean, all used engine oils, sewage, garbage, and other pollutants shall be kept on board or be discharged to disposal facility ashore.
- (b) Report of incidents
  - (i) Vessel's name, call sign and name, position of person making report.
  - (ii) Nature and cause of pollution.
  - (iii) Time and position of incident
  - (iv) Types and characteristics of pollution
  - (v) Dimension and quantity of pollution
  - (vi) Emergency communication measures such as telephone, fax etc....

### 13. Regulation and Management of Foreign Fishing Boats Entering Port Area

Since the anchorage of Keelung Port is limited, the waterways will be obstructed if many fishing boats anchored at the anchorage. In order to manage the temporary anchoring of foreign fishing boat, the maximum number of fishing vessels entering the port for replenishing/supply shall not exceed 10 and the operation time shall not exceed 24hours. During anchoring, they must not obstruct the waterways of the CSBC drydock and Cheng-Bin fishing port. The maximum number of entering port will be 40 for those fishing boats with

engine failure, injury to crew, and in severe weather conditions.

#### 14. Foreign Yachts Entering/Leaving Port

24 hours prior to the arrival of port, foreign yachts should authorize her agent to apply for port entry permit under the provisions of International Commercial Prot Administrative Rules. The VTS control center, associated with the port police station and Keelung security inspection station of Coast Guard, will direct the berthing and conduct security inspection to the yacht

#### 15. Temporary Close of Port in Dense Fog

Dense fog always takes place from March to July. In the daytime, if one can not see the light post of eastern breakwater in bare eyes from VTS tower, the port shall close temporarily and resume entering/departing after the fog is dispersed. At night, if one can not see the light of light post of eastern breakwater in bare eyes from VTS tower, the port shall close temporarily. If dense fog occurred instantly, the captain of the vessel will make a decision on whether entering/departing the port based upon safety principle.

#### 16. During Air Raid

##### (a) Arriving vessels

(i) For vessels anchored at the anchorage or entering port should weigh up the anchor or stop entering the port immediately and keeping the vessels off the waterways and proceed to open sea.

(ii) For vessels entered and unmoored should anchor at nearby designated anchorage and keep off the waterways if the situation is too emergent to leaving the port.

##### (b) Departing vessels

(i) Vessels at berth, anchorage, dock or mooring at a buoy shall stay in her position if the anchor and lines still secured.

(ii) Vessels should anchor at nearby designated anchorage and keep off the waterways if the situation is too emergent to leaving the port and the anchor and lines not secured.

##### (c) Shifting berth vessels

(i) Vessels should stay in her position if the anchor and lines still secured.

(ii) Vessels approaching or leaving the berth should re-berthing to her original berth if applicable or anchor at nearby designated anchorage if not applicable.

(iii) For vessels in shifting berth should anchor at nearby designated anchorage and keep off the waterways if the situation is too emergent to shifting to designated position

#### 17. Foreign Vessels Transit Passage through Taiwan Territorial Sea

According to the laws and regulations of "Foreign Vessels Exercising the Right of Innocent Passage through Taiwan Territorial Sea", foreign vessels exercising innocent passage through Taiwan territorial sea shall comply with generally accepted international laws and regulations, procedures. In addition, follow the general procedures to report to VTS control center.

Figure 1. Keelung Port

Figure 2. Keelung Port Waterways and Anchorage