China Emission Control Areas
Implementation

China Classification Society

European Center

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CCS
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1. Introduction

The Ministry of Transport (MOT), the People's Republic of China (hereinafter referred to as “China”) issued Marine Emission Control Areas Implementation Scheme for Pearl River Delta, Yangtze River Delta, Bohai-rim Waters (hereinafter referred to as "China ECAs Implementation Scheme") on 4 December 2015, which have entered into force from 1 January 2016.

4 core ports in Yangtze River Delta including Shanghai, Ningbo-Zhoushan, Suzhou and Nantong issued formal notices to implement the requirement of fuel sulphur content ≤0.5% m/m in advance since 1 April 2016. Subsequently Shenzhen Authority announced vessels calling Shenzhen ports (including Yantian, Shekou, Chiwan, Mawan, Dachan Bay) are required to use fuel with sulphur content ≤0.5%m/m since 1 October 2016.

Since 1 January 2017 all 11 core ports in China ECAs have implemented low sulphur content control measures. Subsequently all remaining ports in the Yangtze River Delta ECA declare the implementation in advance from 1 September 2017.

One recent case occurred on 23 February 2017 when MSA officers in Jingtang port, Hebei inspected a Malta-flagged bulk carrier and took sample of fuel oil which was sent to Hebei Entry-Exit Inspection and Quarantine Bureau for test. Test result obtained on 27 February indicated sulphur content 1.11%m/m exceeding 0.5% m/m as required. Consequently Jingtang port MSA informed MSA in Tianjin where the vessel was berthing. On 28 February Tianjin MSA officers attended onboard and took sample again indicating sulphur content 0.866%m/m. China MSA had grounds to believe the vessel using non-compliant fuel which constitutes breach of “Air Pollution Prevention and Control Law of the People’s Republic of China” and imposed penalty 60,000RMB. As per further investigation the breach resulted from loss of management onboard. The chief engineer was not familiar with fuel change-over procedure. In the case where the fuel was not identified clearly

Photo courtesy of China Shipowners Mutual Assurance Association

high and low sulphur fuels were pumped to mix up wrongly and result in excess of limitation.

According to the statistics, from April to November 2016, Shanghai MSA inspected 1858 vessels and found 55 vessels in breach of the requirements.

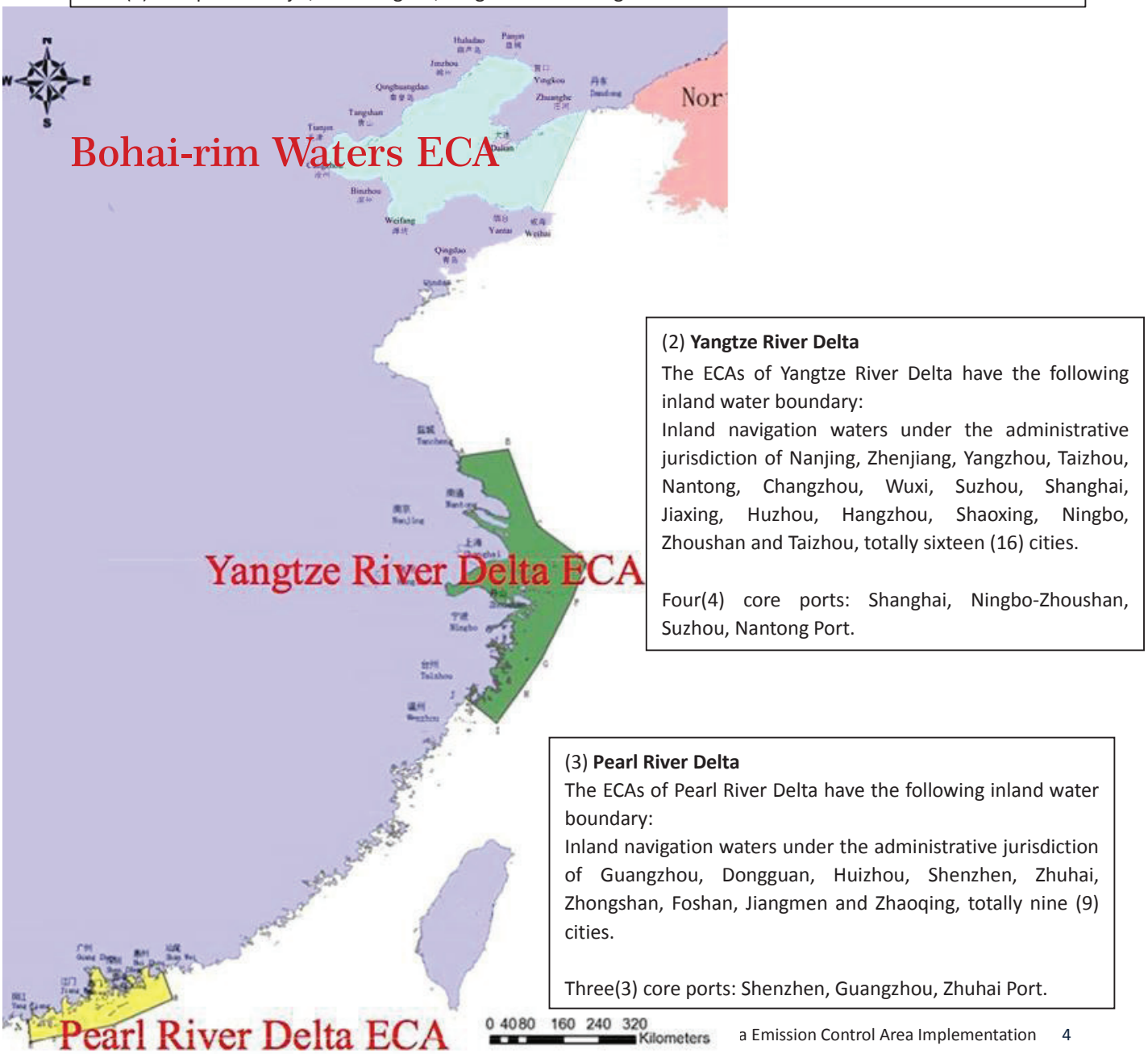
This publication collects and summarizes the updated China ECAs Implementation scheme, notices, guides issued by Competent Authority and circulars issued by China Classification Society, and focuses on the distinction in emission control requirements among ports of Europe Union, the Hong Kong Special Administrative Region of the People's Republic of China (hereinafter referred to as “Hong Kong”) and China.

2. China ECAs Specification

Currently there are three Emission Control Areas are defined, including Pearl River Delta, Yangtze River Delta, Bohai-rim Waters.

(1) **Bohai-rim Waters (Beijing, Tianjin and Hebei Province)**
The ECAs of Bohai-rim Waters have the following inland water boundary:
Inland navigation waters under the administrative jurisdiction of Dalian, Yingkou, Panjin, Jinzhou, Huludao, Qinghuangdao, Tangshan, Tianjin, Cangzhou, Binzhou, Dongying, Weifang, Yantai, totally thirteen (13) cities.

Four(4) core ports: Tianjin, Qinhuangdao, Tangshan and Huanghua Port.



(2) **Yangtze River Delta**
The ECAs of Yangtze River Delta have the following inland water boundary:
Inland navigation waters under the administrative jurisdiction of Nanjing, Zhenjiang, Yangzhou, Taizhou, Nantong, Changzhou, Wuxi, Suzhou, Shanghai, Jiaxing, Huzhou, Hangzhou, Shaoxing, Ningbo, Zhoushan and Taizhou, totally sixteen (16) cities.

Four(4) core ports: Shanghai, Ningbo-Zhoushan, Suzhou, Nantong Port.

(3) **Pearl River Delta**
The ECAs of Pearl River Delta have the following inland water boundary:
Inland navigation waters under the administrative jurisdiction of Guangzhou, Dongguan, Huizhou, Shenzhen, Zhuhai, Zhongshan, Foshan, Jiangmen and Zhaoqing, totally nine (9) cities.

Three(3) core ports: Shenzhen, Guangzhou, Zhuhai Port.

3. Implementation Roadmap

In general NOx emission control in Chinese waters shall be in line with the requirements stipulated in current MARPOL Annex VI for these international voyage ships, while SOx emission control must follow roadmap as below according to China ECAs Implementation Scheme.

Phase	Sulphur content (m/m)	Applicable Area	Time
01.01.2016 - 31.12.2016	⩽0.5%, or equivalent measures*	The ports which are in favorable conditions (voluntary)	At berth (except within 1 hour after arrival and within 1 hour before departure)
	⩽3.5%	Area within China ECAs other than these ports which are in favorable conditions (mandatory)	All time
01.01.2017 -31.12.2017	⩽0.5%, or equivalent measures*	Core ports (mandatory)	At berth (except within 1 hour after arrival and within 1 hour before departure)
	⩽0.5%, or equivalent measures*	Ports other than core ports which are in favorable conditions (voluntary)	At berth (except within 1 hour after arrival and within 1 hour before departure)
	⩽3.5%	Area within China ECAs other than core ports and other ports which are in favorable conditions (mandatory)	All time
01.01.2018 -31.12.2018	⩽0.5%, or equivalent measures*	All ports (mandatory)	At berth (except within 1 hour after arrival and within 1 hour before departure)
	⩽3.5%	Area within China ECAs other than all ports (mandatory)	All time
01.01.2019 -31.12.2019	⩽0.5%, or equivalent measures	Area within China ECAs (mandatory)	All time
From 01.01.2020	⩽0.1%, or equivalent measures*	Area within China ECAs; Expansion of China ECAs; Other possible measures	Possible implementation after completion of assessment before 2019.12.31

* Equivalent measures mean using ashore cold iron, using clean energy such as liquefied natural gas (LNG), or using an exhaust gas cleaning system (EGCS).

It is noteworthy that the Port Authorities may release the implementation notice ahead of timetable set in Scheme. So far there are several ports declaring the implementation in advance that ships calling those ports have to use fuel with sulphur content not exceeding 0.5%m/m. CCS is paying close attention to possible information released by Authorities.

4. Operational requirements

In order to implement the China ECAs Implementation Scheme, facilitate ships navigating, at berth and operating within the ship emission control areas, strengthen the supervision and management on the prevention and control of air pollution by ships and improve the quality of atmosphere environment, China MSA issued Notice on Strengthening Supervision and Management on Ship Emission Control Areas of Maritime Safety Administration of the People's Republic of China on Jan. 29 2016 to provide the parties concerned with specific operational requirements for the implementation of the Scheme.

According to the Scheme, for ships needing a changeover to low sulphur fuel within the Control Areas, information such as start and finish dates, time and marine longitude and latitude of the changeover, sulphur content in fuel, consumption of low sulphur fuel and changeover operators should be recorded in the machinery logbook. Any ship needing the changeover should provide a fuel changeover procedure in written form as part of its safety management system.

The ships should keep the note for three (3) years and the samples until the fuel is used up but at least for one year.

For ships and terminals equipped with shore-based power supply/receiving and properly arranged according to the power supply and receiving procedure, without affecting ship-shore safety, the ships can give priority to ashore cold iron. Information such as start and finish dates, time and operators of using ashore cold iron should be recorded in the machinery logbook.

Requirements for ships using dual-fuel, equipped with exhaust gas cleaning devices and ensuring marine safety or implementing the rescue at sea.

5. Port state control

Inspection requirements for ship changeover to low sulphur fuel

Documentation inspection

- Machinery Logbook: checking correct record such as start and finish dates, time and marine longitude and latitude of the changeover. checking sulphur content in fuel, consumption of low sulphur fuel. checking the record of fuel oil stored in per tank.
- Bulker delivery note
- Fuel changeover procedure and operation record.

Fuel inspection

For ships which fail the document inspection or which have violation records or which are suspected of violation after supervision, the maritime authority should carry out a fuel test.

For ships which pass the document inspection and do not have any violation records and not come under suspicion of violation, the maritime authority may carry out the fuel test randomly.

For ships subject to the fuel test, the maritime authority should make arrangements for law enforcers to take samples from the fuel on board the ship and deliver them to a testing company with the proper qualifications stipulated by the State for test. The testing company should issue a test report.

Penalties

Ships using the fuel which does not meet the standards or requirements should be, according to the circumstances of violation, subjected to one or more of the followings in accordance with the provisions of laws and regulations or international conventions:

- Warning education;
- Corrective actions;
- Detention;
- Punishment according to the Regulation106 of the Air Pollution Prevention and Control Law of the People's Republic of China. If the ship has departed from the port, the local maritime authority may ask the maritime authority responsible for the next port to offer its assistance with investigation.

Inspection requirements for equivalents

Document inspection

The maritime authority should, in conjunction with site supervision and safety inspection, check the documents of the ship. Details are as follows:

For ships using ashore cold iron, it should be checked that the start and finish time of using ashore cold iron is recorded completely and normatively in the machinery logbook; it should be ensured that the start and finish time of using ashore cold iron is in accordance with the requirements of control areas; and that the ship has been equipped for the use of ashore cold iron.

For ships using clean energy, it should be checked that the use of clean energy on board has been marked on the Air Pollutions Prevention Certificate. For dual-fuel fueled ships, it should be checked that the time of fuel

changeovers recorded completely and normatively; and that the marine longitude and latitude at the time of changeover are recorded completely and normatively; it should be ensured that positions of the ship at the time of changeover meet the requirements of the control areas; and it should be checked that the consumption of clean energy and fuel is recorded completely and normatively.

For ships using exhaust gas cleaning devices, it should be checked that the start and finish time of using the device is recorded completely and normatively in the machinery logbook; and that the marine longitude and latitude at the time when the device is started and stopped are recorded completely and normatively; it should be ensured that positions of the ship at the time when the device is started and stopped meet the requirements of the control areas; and it should be checked that a product certificate of the device is provided and the Air Pollutions Prevention Certificate has been endorsed accordingly.

Site inspection

For ships which fail the document inspection or which have violation records or which are suspected of violation after supervision, the maritime authority should patrol in the field to inspect ship's use of ashore cold iron and clean energy and installation of exhaust gas cleaning device.

Penalties

Ships adopting equivalents which fail to meet the requirements of emission equivalent to the one of low sulphur fuel oil should be, according to the circumstances of violation, subjected to one or more of the followings in accordance with the provisions of laws and regulations or international conventions:

- Warning education;
- Corrective actions;
- Detention.

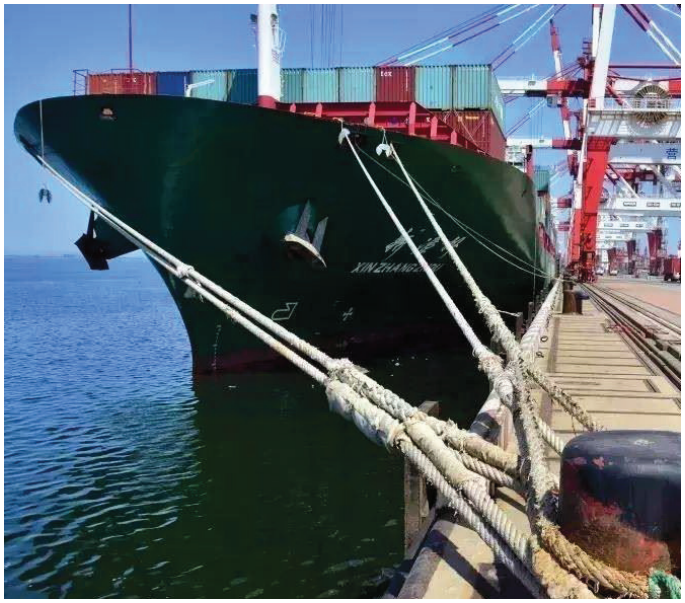
Photo courtesy of Jiangsu MSA

6. Definition and interpretation

In order to meet requirements of China ECAs Implementation Scheme, there are several important definitions of terms as follows which were issued by China MSA recently. A ship calling the port within ECA could calculate the start time of changeover operation to ensure the compliant fuel used on board within 1 hour after berthing.

At berth refers to the period between the moments when the ship being securely moored at a berth and unmoored from its berth.

Berth doesn't include anchoring and buoys mooring.



Securely moored as mentioned above means the status in which all mooring cables are secured. In extreme sea condition, provided that the main engines need standby condition to ensure the ship's safety, "securely moored" means the status in which the ship finishes with engines.

Note: there is different definition in Shenzhen, ie. **berthing time** is defined as the period of time when the first cable fastened till all the cables of the ship are untied.

Unmoored from its berth means the status in which all mooring lines are untied.

Use fuel with sulphur content ≤0.5%m/m means that all fuel used equipment on board (including the main engine, auxiliary engine, boilers, generators, etc.) should use the fuel sulphur content ⩽ 0.5% m/m.

According to implementation plan of China ECA, ships at the core ports within ECAs must use fuel oil containing 0.5% m/m or less from the moment 1 hour after being securely moored. It should be noted at the moment fuel changeover operation should have completed and compliant fuel has been burned on board. In light of above definitions, the crew could decide when changeover operation starts.

7. Regulation Comparison

Nowadays the Authorities of Europe Union (hereinafter referred to as “UN”), Hong Kong, China((hereinafter referred to as “Hong Kong”) and Mainland, China have emission control policies for ports respectively. Due to unawareness of existing distinction among different ports, ships may be in breach of such requirements and lead to penalty even detention. This section gives a summary of emission control requirements in these Authorities as reference.

Implementation date	
EU	01.01.2010
Hong Kong	01.07.2015
Mainland, China	01.01.2017 (several ports implementation in advance)
Sulphur content limitation in fuel	
EU	≤0.1%m/m
Hong Kong	≤0.5%m/m
Mainland, China	≤0.5%m/m
Applicable area	
EU	EU ports，excluding ports in the French overseas departments, the Azores, Madeira and the Canary Islands. Directive 1999/32/EC does not contain a definition of port area, which is established by the Competent Authority of Member State
Hong Kong	Any location in the waters of Hong Kong can be a berth as long as the vessel is not underway, including container terminals, cruise terminals, wharf, buoys, anchorages etc
Mainland, China	2017.1.1 -2017.12.31 Core ports in ECAs (several ports implementation in advance) 2018.1.1- 2018.12.31 All ports in ECAs 2019.1.1-2019.12.31 All areas in ECAs
Definition of berth	
EU	Including moored or anchored
Hong Kong	Including moored or anchored
China	Not including anchoring and buoys mooring
Start time of using compliant fuel	
EU	No exact requirement. Crew should start fuel-changeover operations as soon as possible after the ship is securely moored or anchored in port.
Hong Kong	1 hour after the moment the vessel is securely anchored or moored at berth
Mainland, China	1 hour after the moment the vessel is securely moored* at berth

End time of using compliant fuel	
EU	No exact moment requirement. Crew should start fuel-changeover operations as late as possible before departure, when it is allowed to start fuel changeover to be ready for departure.
Hong Kong	1 hour before the vessel is untied from its berth
Mainland, China	1 hour before the vessel is untied from its berth
Applicable machinery using compliant fuel	
EU	All engines and boilers onboard the ship which are kept running while at berth
Hong Kong	The main engine (except when it is used for the propulsion of the vessel), the auxiliary engine, the boiler and the generator
Mainland, China	All fuel used equipment on board (including the main engine, auxiliary engine, boilers, generators, etc.)
At which moment does a ship has to changeover fuel?	
EU	As soon as possible after arrival at berth.
Hong Kong	In the case where 1 hour fuel switching time is sufficient, change over operation start as soon as possible after arrival. However, in a rare case where it takes longer than 1 hour to switch fuels, the ship management or master should start fuel switching well in advance to ensure that switching to compliant fuel is completed within the first hour after arrival. (Quotation from Guide to the Air Pollution Control (Ocean Going Vessels)(Fuel at Berth) Regulation)
Mainland, China	As early as possible to ensure that changeover operation is completed within the first hour after arrival (securely moored*).

*The definition of berthing time may be different at individual pot such as Shenzhen.