



Status of China's Standards Development in the Deep-sea Field and Suggestions to the ISA on the Development of Standards and Guidelines for Activities in the Area

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- 1. Development and implementation of deep-sea standards in China**
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1 Development and implementation of deep-sea standards in China

As of 2018:

■ **23** relevant national standards applicable to the deep-sea field have been published

According to the content of the standards, they are:

■ **8 resource standards**

■ **2 environmental standards**

■ **13 technical standards**

■ **Note 6 (4 resource standards and 2 environmental standards are mainly developed by COMRA)**



1 Development and implementation of deep-sea standards in China

NO	Code	Name	Note
1	GB/T 34908-2017	Terminology for oceanic resources survey	Resource standards
2	GB/T 17766-1999	Classification for resources/reserves of solid fuels and mineral commodities	Resource standards
3	GB/T 13908-2002	General requirements for solid mineral exploration	Resource standards
4	GB/T 18341-2001	Specifications of survey for geological and mineral resources exploration	Resource standards
5	GB/T 35571-2017	Specification for oceanic polymetallic nodules exploration	Resource standards
6	GB/T 17229-1998	The expertise for oceanic polymetallic nodules survey	Resource standards
7	GB/T 35572-2017	Specification for oceanic cobalt-rich ferromanganese exploration	Resource standards
8	T/CAOE 12-208	Specification for oceanic polymetallic sulfide exploration	Resource standards
9	GB/T 20260-2006	Chemical analysis methods for marine sediment	Environmental standards
10	GB/T 20259-2006	Chemical analysis methods for marine polymetallic nodules	Environmental standards
11	GB/T 36896.1-2018	Light duty remotely operated vehicles —Part 1: General provisions	technical standards
12	GB/T 36896.2-2018	Light duty remotely operated vehicles —Part 2: Manipulators and hydraulic systems	technical standards

1 Development and implementation of deep-sea standards in China

13	GB/T 36896.3-2018	Light duty remotely operated vehicles —Part 3:Tunnel thruster	technical standards
14	GB/T 36896.4-2018	Light duty remotely operated vehicles —Part 4: Video, lighting and pan&tilt unit	technical standards
15	GB/T 13307-1992	Terminology for submersibles and underwater installations	technical standards
16	GB/T 35364-2017	TA31 titanium alloy forgings for submersible	technical standards
17	GB/T 35368-2017	Ti75 titanium alloy bars for submersible	technical standards
18	GB/T 35365-2017	Welding wires of titanium alloy for submersible application	technical standards
19	GB/T 31910-2015	Titanium alloy plates for submersible	technical standards
20	GB/T 35371-2017	Oxygen supplying and carbon dioxide absorbing for human occupied vehicles	technical standards
21	GB/T 35361-2017	Ultrasonic testing technique and quality classification for titanium butt weld joints on submersible	technical standards
22	GB/T 35367-2017	X-ray radiography technique and quality classification for titanium butt weld joints on submersible	technical standards
23	GB/T 35366-2017	Test methods of maneuverability for manned submersible	technical standards

1 Development and implementation of deep-sea standards in China

21 relevant national standards are being developed.

According to the content of the standards, they are:

- **6 environmental standards**
- **7 resource standards**
- **8 technical standards**

■ **Note 7 (1 resource standard and 6 environmental standards are mainly being developed and used by COMRA)**

2. Development and implementation of standards by COMRA

As three exploration contract contractors, COMRA has mainly developed and implemented 6 national standards including four resource standards and two environmental standards.

Resource standards(4) mainly include: *Specification for Oceanic Polymetallic Nodules Exploration, Specification for Oceanic Cobalt-rich Ferromanganese Exploration, The Expertise for Oceanic Polymetallic Nodules Survey, Expertise for Polymetallic Sulfides Survey.*



2. Development and implementation of standards by COMRA

Environmental standards(2):

Mainly there are 2 standards being used at present

- *Chemical analysis methods for marine polymetallic nodules*
- *The technology specification for the pre-treatment of deep-sea microorganism*

The above standards have played an important role in the implementation of the exploration contract and guarantee the quality of the exploration work by COMRA.

2. Development and implementation of standards by COMRA

Due to the need, COMRA is developing and using 7 standards, including 1 resource standard and 6 environmental standards. In the future, these standards will be developed into national standards.

The 6 environmental standards are as the following :

- *Preservation Practices for Marine Biological Samples;*
- *Specifications for Oceanic Environmental Survey Part 1: **General provisions;***
- *Specifications for Oceanic Environmental Survey Part 2: **Marine chemical survey;***
- *Specifications for Oceanic Environmental Survey Part 3: **Marine biological survey;***
- *Specifications for Oceanic Environmental Survey Part 4: **Marine geological survey** (Measurement for physical soil mechanics in the sediment);*
- *Technical Guidelines for Environmental Monitoring of Deep-sea Polymetallic Nodules Exploration and Development*

3. Proposed principles for the development of standards under the framework of the exploitation regulations of ISA

1) Classification of standards under the framework of exploitation regulations

From the point of view of content, it can be divided into management standards, resource standards, environmental standards, technical standards, safety and labor standards, the main body is environmental standards.

From the point of view of function, it can be divided into process standards and performance standards

3. Proposed principles for the development of standards under the framework of the exploitation regulations of ISA

2) The priority of standard-setting should be clearly defined based on scientific knowledge and the need of exploitation practice.

The standards established by ISA should be agreeable with the current technical level and practical capacity of deep-sea mining and should give the contractor a certain degree of flexibility.

According to the principles , the priority of standard-setting should be comply with the needs of exploitation practice.

3. Proposed principles for the development of standards under the framework of the exploitation regulations of ISA

(3) In view of the continuity and inheritance of resource exploration & exploitation, the development of standards should be considered as a whole.

At the same time, the standards being used in the current exploration phase should be updated and improved in time to meet the needs of the development phase.



3. Proposed principles for the development of standards under the framework of the exploitation regulations of ISA

(4) Actively promote the transition of applicable standards from ISO and other international organizations to ISA standards

ISA shall make full use of the provisions of relevant international organizations and the international mining industry concerning **safety, pollution, classification of resources, resource development feasibility study and mining environmental impact standards.**

ISA shall concentrate on the development of standards that are lacking and urgently needed for the development of resources in the area, in the light of the actual needs of the development of resources in the Area.

4 Suggestions on the development of standards

1) Suggestions on the List of Standards under the Framework of Exploitation Regulations

Integration and supplement according to the following principles

- **Reducing duplication**
- **Improving applicability of standards**
- **Enhancing operability of exploitation regulations**
- **Referring to the experience from existing practice of mineral exploitation**

4 Suggestions on the development of standards

Classification	Contents (Including is not limited to the following examples)	PR/PE	Priority
Management Standards	Adaptive Management Standards	PR	1
	Process Guidelines for Transfer of Mining Rights	PR	1
	Annual Report Standards	PR	1
	Development of Contract Approval Process Guidelines	PR	1
Resource Standards	Resource Classification Standards	PE	1
	Guidelines for the Preparation of Mining Plans	PR	2
	Feasibility Study Process Guidelines	PR	2
Environmental standards	Environmental Management Planning Standards	PR	1
	Environmental Performance Evaluation Standard	PR	1
	Environmental Impact Assessment Guidelines	PR	1
	Environmental Baseline Data Standard	PE	2
	Guidelines for the Construction of Environmental Reference Areas	PR	1
	Environmental Management Plan Construction Guidelines	PR	1
	Environmental Repair Plan Guidelines	PR	2
Safety and labour standards	Maritime Safety Standards	PR	2
	Safety Emergency Guidelines	PR	1
	Labor Employment Guidelines	PR	2

PR: process standards, PE: performance standards

4 Suggestions on the development of standards

2) On the transition of standards of international organization to the applicable standards of ISA

- ✓ Considering the international community's major concern about the environmental impact of deep-sea mining, it is suggested that ISA develop **environmental performance evaluation standards** applicable to deep-sea mining activities using existing environmental performance evaluation standards (*Environmental management-Environmental performance evaluation-guidelines ISO14031:2013*).
- ✓ With regard to standards for maritime safety and emergency preparedness plans, tools and techniques for risk identification and risk assessment can be developed with reference to **relevant process standards for risk assessment and management**, such as **ISO 31000:2018** risk management.
- ✓ Regarding the standards for reporting classification of resources, it is suggested that the **CRIRSCO standard** of the International Mining Conference should be converted into the standards for reporting reserves of ISA on the basis of the framework of the standard for reporting resources proposed in the annual report of the contractors under the guidance of ISA and in accordance with the international practice.

4 Suggestions on the development of standards

3) COMRA can actively participate in the following standards

(1) Relating to the formulation of **the *Standards for Baseline Data***, as COMRA has the experience of the usage of guidelines for environmental baseline surveys, we are willing to actively participate in the standards development for acquisition, storage, analysis and transmission of baseline data (marine geology, biology, chemistry, etc.).

(2) Relating to the formulation of the **Environmental Impact Assessment Standard**, COMRA is willing to actively participate in the formulation of the Standard on the basis of *the Technical Guidelines for Environmental Monitoring of Exploration and Development of Deep-sea Polymetallic Nodules* .

THANK YOU!

