



# TRAINING AND DIALOGUE PROGRAMS

## GENERAL INFORMATION ON

*MARINE INFORMATION MANAGEMENT  
FOR NAVIGATION SAFETY, DISASTER PREVENTION, AND  
ENVIRONMENT PROTECTION*

*(Internationally Accredited Category B for Hydrographic Survey)*

**課題別研修「航行安全・防災・環境保全施策立案のための  
海洋情報整備（水路測量国際認定B級）」**

**JFY 2011**

**<Type: Trainers Training / 類型: 中核人材育成型>**

**NO. J11-00674 / ID: 1180713**

**June 7, 2011 - December 1, 2011**

This information pertains to one of the Training and Dialogue Programs of the Japan International Cooperation Agency (JICA), which shall be implemented as part of the Official Development Assistance of the Government of Japan based on a bilateral agreement between both Governments.

# **I. Concept**

## **Background**

Marine survey and nautical chart preparation techniques are an essential part of human social infrastructures necessary for ensuring maritime traffic safety and realizing the sustainable growth of seaborne trade. Furthermore, the preparation of submarine topographic data and the usage of geographical space information are very important for planning disaster prevention and maritime environmental preservation measures related to large-scale disasters, such as tsunami and oil spill incidents.

In developing littoral states, the acquisition of marine survey techniques and the preparation of nautical charts that serve as the basis for the implementation of such measures for maritime use, disaster prevention, and environmental preservation remain at an insufficient level. Therefore, there is a need for assistance from Japan in this area. In addition, with equipment for an electronic navigational chart display system being made compulsory from July 2012 for many ships engaged in international navigation, there is an urgent need to improve the capacity to survey submarine topography, which is necessary in order to prepare electronic charts and update them with the latest information.

Against such a background, this training course aims to improve hydrographic survey techniques, nautical charts preparation capacity and the capacity to collect, maintain and manage marine information. The training will be provided to mid-level engineers belonging to the government and government-affiliated agencies in charge of planning maritime measures, such as hydrographic surveys, the preparation of nautical charts, disaster prevention, and environmental preservation.

This course was designated by FIG/IHO/ICA\* in 1988 to issue category B certificates for hydrographic surveying to persons who had completed the course and met the grade requirements.\*

\*NOTE: International Accredited Category B for Hydrographic Surveying

In order to bring the hydrographic surveys of various coastal countries to a certain level of quality, the necessity of standardizing competence for hydrographic surveyors on an international basis has become clearly apparent. Hence, the FIG (Federation Internationale des Geometres, or International Federation of Survey), the IHO (International Hydrographic Organization), and the ICA (International Cartographic Association) jointly established the FIG/IHO/ICA International Advisory Board on Standards of Competence for Hydrographic Surveyors in 1977. The Advisory Board sets international standards and accredits various training courses in hydrographic survey as either Category A or B courses.

## **For what purpose?**

This program aims to train the official hydrographic surveyors in the competency areas necessary for survey tasks rated as an international category B standard with the ultimate goal of making nautical charts complied in accordance with international standards,

### **How?**

The curriculum of the course consists of 60% lectures and 40% practice, including practical field training, observation, and study tours for various research institutions to fulfill the requirements of the International Standards of Competence for Hydrographic Surveyors.

## ***II. Description***

### **1. Title (J-No.)**

MARINE INFORMATION MANAGEMENT FOR NAVIGATION SAFETY,  
DISASTER PREVENTION AND ENVIRONMENT PROTECTION  
(Internationally Accredited Category B for Hydrographic Survey )  
(J11-00674)

### **2. Period of program**

June 7, 2011 to December 1, 2011 (178 days)

### **3. Target Regions and Countries**

8 countries

Cambodia, Indonesia, Iran, Kenya, Malaysia, Samoa, and Viet Nam

### **4. Eligible / Target Organizations**

This program is designed for hydrographic surveyors currently employed in national hydrographic offices or other pertinent organizations which are responsible for carrying out hydrographic surveys of marine areas.

### **5. Total Number of Participants : 12 participants**

### **6. Language to be used in this program: English**

### **7. Program Objective and Outputs**

#### **(1) Objective**

The course aims to improve the ability to collect, maintain, and manage the marine information as the basic technique of charting, and the ability to utilize geographical information in marine policy development.

#### **(2) Outputs**

- a) To acquire the hydrographic survey knowledge and techniques needed for preparing nautical charts, and to acquire International Accredited

Category B for Hydrographic Survey certification.

- b) To acquire the knowledge of GIS concepts, techniques for using various geographical information, and the ability to prepare the layered geographical information by GIS for various marine policy developments.

**8. Overall Goal**

Acquisition and enrichment of bathymetric data through the hydrographic survey in the sea around the targeted countries by their own effort, based on the international standard, will be expected. Marine policy utilizing GIS, such as the establishment of a protected marine area or the development of tsunami disaster prevention measures, will be developed by the target countries themselves.

**9. Module**

(1) Lectures and Practice

Under the International Standards of Competence of Hydrographic Surveyors, the following major subjects will be covered in the training course.

| <b>Subjects and Lectures</b>   |
|--|
| Basic Subjects<br>Mathematics and statistics<br>Information & communication technology<br>Physics<br>Nautical science  |
| Essential Subjects<br>Bathymetry<br>Water levels and flow<br>Positioning<br>Hydrographic practice<br>Hydrographic data management<br>Environmental science<br>Legal aspects<br>GIS |
| Hydrographic Field Practices in Port   |
| Onboard Training (survey vessel / boat)  |
| Maritime Disaster Prevention<br>Submarine earthquake and tsunami, tsunami simulation and tsunami information maps, etc.  |
| Study Tours<br>Tidal instruments, vessel traffic system, remote sensing, maritime disaster prevention centers, etc.  |

(2) Examination

The course will be conducted in the form of lectures, video screenings and slideshows, practice, and field training on survey vessels. An examination will be conducted on each subject.

Participants are required to pass the examination, in principle, with a score over 60 points.

(3) Training equipment

Personal computers for each participant are available during the lectures at

the Hydrographic and Oceanographic Department (HOD), Japan Coast Guard (JCG).

Following equipment will be also used during the course:

- Survey vessels belonging to the HOD, JCG
- Electronic positioning systems
- Global positioning system (GPS)
- Echo sounders (4 beam & multi-beam )
- Side scan sonar
- Seismic profiling systems
- Electro-optical range finders
- Theodolites and sextants
- Automatic hydrographic data logging and processing system
- Tide gauges
- Current Meters
- Handheld calculators
- Various drafting instruments

Note: The above contents may be subject to change.

### ***III. Conditions and Procedures for Application***

#### **1. Expectations for the Participating Organizations:**

- (1) This program is designed primarily for organizations that intend to address specific issues or problems identified in their operations. Applying organizations are expected to use the program for those specific purposes.
- (2) In this connection, applying organizations are expected to nominate the most qualified candidates to address the said issues or problems, carefully referring to the qualifications described in Section III-2 below.
- (3) Applying organizations are also expected to be prepared to make use of knowledge acquired by the nominees for the said purpose.

#### **2. Nominee Qualifications:**

Applying organizations are expected to select nominees who meet the following qualifications.

- (1) Current duties: Employed as a hydrographic surveyor in a governmental hydrographic office or other pertinent organization responsible for carrying out hydrographic surveys of marine areas,
- (2) Educational background: Have obtained credits for two years of courses in mathematics and physics on the level of at least a technical college or equivalent educational institution,
- (3) Experience in the relevant field: Be technical college graduates or the equivalent with at least two years of occupational experience in

- hydrographic survey,
- (4) Age: under 40 years of age,
  - (5) Language: have a competent command of spoken and written English.  
Please attach official certificate of English ability, such as TOEFL or TOEIC scores, etc., if possible)
  - (6) Health: must be in good health, both physically and mentally, to participate in the program in Japan. Pregnant participants are strictly requested to complete the required procedures before departure in order to minimize the risk for their health. The procedures include ① a letter of the participant's consent to bear economic and physical risks, ② a letter of permission from the participant's supervisor, ③ a letter of consent from your Embassy in Japan, ④ a medical certificate. Please ask a national staff member in the JICA office for the details.
  - (7) Must not be serving any form of military service.

### 3. Required Documents for Application

- (1) **Application Form:** The application form is available at each country's JICA office or the Embassy of Japan.
- (2) **Country Report:** Each applicant is requested to prepare a report on the subjects listed in **ANNEX 1**. Participants will be required to present his or her country report during the seminar
- (3) **Questionnaire:** Each applicant should fill in the questionnaire, which is also used for the screening (format attached - see **ANNEX 2**).
- (4) **Certificate of Credits:** Certificate of the academic credits mentioned in Section III-2.-(3) above. The certificate should be issued by the authority of the relevant college or educational institution.
- (5) **Nominee's English Score Sheet:** To be submitted with the application form. If you have any official documentation of English ability (e.g., TOEFL, TOEIC, IELTS scores), please attach it (or a copy) to the application form.

### 4. Procedure for Application and Selection :

#### (1) Submitting the Application Documents:

Closing date for application to JICA Tokyo: **April 7, 2011.**

**Note: Please confirm the preliminary closing date set by the JICA office or the Embassy of Japan in your country to meet the final date in Japan.**

#### (2) Selection:

After receiving the document(s) through due administrative procedures in the respective governments, each country's JICA office (or Japanese Embassy) shall conduct screenings, and send the documents to the JICA Tokyo office, which organizes this project. Selection shall be made by JICA Tokyo in consultation with the organizations concerned in Japan, based on submitted documents according to qualifications. *Organizations with the*

*intention of utilizing the opportunity of this program will be highly valued in the selection.*

**(3) Notice of Acceptance**

Notification of results shall be made by the respective country's JICA office of each country (or the local Embassy of Japan) to the respective governments by **no later than May 10 , 2011.**

**5. Conditions for Attendance**

Participants must:

- (1) observe the program schedule,
- (2) not change the program subjects or extend their period of stay in Japan,
- (3) not to bring any members of their family,
- (4) return to their home countries at the end of the program in Japan according to the travel schedule designated by JICA,
- (5) refrain from engaging in political activities, or any form of employment for profit or gain, and
- (6) observe the rules and regulations of their place of accommodation and not to change the accommodation designated by JICA.
- (7)to observe Japanese laws and ordinances. If there is any violation of said laws and ordinances participants may be required to return part or all of the training expenditure depending on the severity of said violation.

## **IV. Administrative Arrangements**

**1. Organizer:** JICA Tokyo

**2. Implementing Partner:**

**Japan Coast Guard**

**Hydrographic and Oceanographic Department**

URL: <http://www1.kaiho.mlit.go.jp/jhd-E.html>

**3. Travel to Japan:**

**(1) Air Ticket:** The cost of a round-trip ticket between an international airport designated by JICA and Japan will be borne by JICA.

**(2) Travel Insurance:** Term of insurance: From arrival in Japan to departure.

**(3) Accommodations in Japan:**

JICA will arrange the following accommodations for the participants in Japan:

JICA Tokyo International Center (JICA TOKYO)

Address: 2-49-5 Nishihara, Shibuya-ku, Tokyo 151-0066, Japan

TEL: 81-3-3485-7051 FAX: 81-3-3485-7904

(where “81” is the country code for Japan, and “3” is the local area code)

If there is no vacancy at JICA TOKYO, JICA will arrange alternative accommodations for the participants. Please refer to facility guide of JICA Tokyo at its URL,

<http://www.jica.go.jp/english/contact/domestic/pdf/welcome.pdf>

**4. Expenses:**

The following expenses will be provided for the participants by JICA:

(1) Allowances for accommodation, living expenses, outfit, and shipping

(2) Expenses for study tours (mainly in the form of train tickets).

(3) Free medical care for participants who become ill after arriving in Japan (costs related to pre-existing illness, pregnancy, or dental treatment are not included)

(4) Expenses for program implementation, including materials

For more details, please see p. 9-16 of the brochure for participants entitled “KENSU-IN GUIDEBOOK,” which will be given to the selected participants before (or at the time of) the pre-departure orientation.

**5. Pre-departure Orientation:**

A pre-departure orientation will be held at the respective country’s JICA office (or Japanese Embassy), to provide participants with details on travel to Japan, conditions of the workshop, and other matters.

# **ANNEX 1 Country Report**

· **Format:** visual material for presentation (ex. MS Power Point)

1. Name of applicant
2. Country
3. Name of organization and date of its establishment
4. Present post of the applicant in the above organization
5. Organizational function  
Illustrate the function of the organization to which you belong, and indicate the number of staff members of each section.  
How many staff members are there in your organization?  
What is the organization's annual budget?
6. Hydrographic services and activities  
Describe the services and activities carried out by the organization (illustrate if necessary).
7. Annual program of hydrographic surveys  
Describe the annual hydrographic implementation program of the organization (illustrate if necessary).
8. Chart, ENC, and nautical publications  
How many charts and ENC does your organization publish?  
How many copies of nautical publications does your organization publish?
9. Technical problems encountered  
Describe the technical problems that your organization is currently facing.
10. Future plans for hydrographic services and activities  
Describe future plans for hydrographic instrumentation, surveying, and activities (i.e. the acquisition of new ships, etc.).
11. Hydrographic survey ships

Give information on survey/research ships currently engaged in hydrographic survey carried out by your organization.

- (1) Name of ship
- (2) Displacement or gross tonnage
- (3) Date launched
- (4) Number of officers, researchers, and crew
- (5) Type of hydrographic survey instruments in use
- (6) Types of surveys conducted (e.g. bathymetric survey, submarine topographic/geological survey, geomagnetic/gravity survey, etc.)

12. Disaster prevention measures

Describe the maritime disaster prevention measures taken against tsunami and earthquakes in which your organization is involved.

13. Others

- (1) Give any other information which you consider useful for lecturers, instructors, and the participants in advancing discussions on the training subjects. Also list any requests you have regarding the course.
- (2) If possible, please bring two copies of the latest brochure about your organization.

## **ANNEX 2 Questionnaire**

1. Please write your background
  - (1) Personal record in the organization
  - (2) Academic background
  - (3) Work record
  
2. What are your expectations for this training course?
  
  
3. Which of the latest survey technologies or conventional survey technologies do you feel are necessary for you?  
If your answer is latest, please describe what specific technologies you need to learn about?
  
  
4. Do you have any experience aboard a survey ship as a crew member or a surveyor?
  
  
5. What kind of survey equipment is used in your organization?  
Do you have any experience in using any such equipment?
  
  
6. What kind of maritime disasters have occurred in your country (e.g. tsunami, submarine volcanic eruption, etc.)?  
What kinds of measures are important for your country?

7. Please check the boxes either "Yes" or "No."

a) Have you ever studied any aspect of the following subjects?

|                                  | Yes                      | No                       |
|----------------------------------|--------------------------|--------------------------|
| (1) Mathematics                  | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) Physics                      | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) Optics                       | <input type="checkbox"/> | <input type="checkbox"/> |
| (4) Astronomy                    | <input type="checkbox"/> | <input type="checkbox"/> |
| (5) Oceanography                 | <input type="checkbox"/> | <input type="checkbox"/> |
| (6) Map projection               | <input type="checkbox"/> | <input type="checkbox"/> |
| (7) Cartography                  | <input type="checkbox"/> | <input type="checkbox"/> |
| (8) Tides and tidal streams      | <input type="checkbox"/> | <input type="checkbox"/> |
| (9) Data processing for sounding | <input type="checkbox"/> | <input type="checkbox"/> |

b) Have you ever been engaged in the following fieldwork or operations aboard a ship? If yes, please give the term.

|  | Yes ( Term )                            | No                       |
|--|---|--------------------------|
| (1) Angle observation                          | <input type="checkbox"/> (            ) | <input type="checkbox"/> |
| (2) Traversing                                 | <input type="checkbox"/> (            ) | <input type="checkbox"/> |
| (3) GPS surveys                                | <input type="checkbox"/> (            ) | <input type="checkbox"/> |
| (4) Leveling                                   | <input type="checkbox"/> (            ) | <input type="checkbox"/> |
| (5) Coast lining                               | <input type="checkbox"/> (            ) | <input type="checkbox"/> |
| (6) Topographic survey (plane table surveying) | <input type="checkbox"/> (            ) | <input type="checkbox"/> |
| (7) Echo sounding                              | <input type="checkbox"/> (            ) | <input type="checkbox"/> |

(8) Submarine topographic survey (swath survey, side scanning, etc.)  ( )

(9) Submarine geological survey observation  ( )

(10) Tide and tidal current observation  ( )

(11) Correction of survey results  ( )

(12) Data processing by GIS software  ( )

c) Do you have any experience in using the following survey instruments? If yes, please describe the term and types / models currently used in your office.

|  | Yes (Term)               | (Type/Model) | No                       |
|--|--------------------------|--------------|--------------------------|
| (1) Theodolite                                     | <input type="checkbox"/> | ( ) ( )      | <input type="checkbox"/> |
| (2) Sextant  | <input type="checkbox"/> | ( ) ( )      | <input type="checkbox"/> |
| (3) GPS receiver                                   | <input type="checkbox"/> | ( ) ( )      | <input type="checkbox"/> |
| (4) Echo-sounder                                   | <input type="checkbox"/> | ( ) ( )      | <input type="checkbox"/> |
| (5) Tide gauge                                     | <input type="checkbox"/> | ( ) ( )      | <input type="checkbox"/> |
| (6) Automatic hydrographic data acquisition system | <input type="checkbox"/> | ( ) ( )      | <input type="checkbox"/> |
| (7) Automatic hydrographic data processing system  | <input type="checkbox"/> | ( ) ( )      | <input type="checkbox"/> |

## ***For Your Reference***

### **JICA and Capacity Development**

The key concept underpinning JICA operations since its establishment in 1974 has been the conviction that “capacity development” is central to the socioeconomic development of any country, regardless of the specific operational scheme one may be undertaking, i.e. expert assignments, development projects, development study projects, training programs, JOCV programs, etc.

Within this wide range of programs, Training Programs have long occupied an important place in JICA operations. Conducted in Japan, they provide partner countries with opportunities to acquire practical knowledge accumulated in Japanese society. Participants dispatched by partner countries might find useful knowledge and re-create their own knowledge for the enhancement of their own capacity or that of the organization and society to which they belong.

About 460 pre-organized programs cover a wide range of professional fields, ranging from education, health, infrastructure, energy, trade and finance, to agriculture, rural development, gender mainstreaming, and environmental protection. A variety of programs are being customized to address the specific needs of different target organizations, such as policy-making organizations and service provision organizations, as well as research and academic institutions. Some programs are organized to target a certain group of countries with similar developmental challenges.

### **Japanese Development Experience**

Japan was the first non-Western country to successfully modernize its society and industrialize its economy. At the core of this process, which started more than 140 years ago, was the “*adopt and adapt*” concept by which a wide range of appropriate skills and knowledge have been imported from developed countries; these skills and knowledge have been adapted or improved upon using local skills, knowledge, and initiatives. They finally became internalized in Japanese society to suit its local needs and conditions.

From engineering technology to production management methods, most of the know-how that has enabled Japan to become what it is today has emanated from this “*adoption and adaptation*” process, which, of course, has been accompanied by countless failures and errors behind the success stories. We presume that such experiences, both successful and unsuccessful, will be useful to our partners who are trying to address the challenges currently faced by developing countries.

However, it is rather challenging to share with our partners this whole body of Japan’s developmental experience. This difficulty has to do, in part, with the challenge of explaining a body of “tacit knowledge,” a type of knowledge that cannot fully be expressed in words or numbers. Adding to this difficulty are the social and cultural systems of Japan that vastly differ from those of Western industrialized countries, and hence still remain unfamiliar to many partner countries. Simply stated, coming to Japan might be one way of overcoming such a cultural gap.

JICA, therefore, would like to invite as many leaders of partner countries as possible to come and visit us, to mingle with the Japanese people, and witness the advantages as well as the disadvantages of Japanese systems, so that integration of their findings might help them reach their developmental objectives.



***CORRESPONDENCE***

For enquiries and further information, please contact the JICA office or the Embassy of Japan. Address all correspondence to:

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