

**Dossier du BHI No. TA-6**

**LETTRE CIRCULAIRE 40/2000  
15 septembre 2000**

**SECOND COURS DE CARTOGRAPHIE MARINE A  
L'ACADEMIE MARITIME INTERNATIONALE (AMI) DE TRIESTE, ITALIE**

Monsieur,

L'Académie maritime internationale (AMI) de Trieste a informé le BHI, pour le compte des Autorités italiennes, qu'un second cours de cartographie marine était prévu pour 2001.

Le cours débutera le lundi 26 février 2001 pour se terminer le 24 novembre 2001.

Ce second cours est destiné à douze étudiants provenant de tous pays. Il est demandé aux autorités gouvernementales, responsables de l'hydrographie dans les pays, d'adresser les dossiers de candidature à l'Académie maritime internationale (AMI), via Eduardo Weiss 15, 34127 Trieste, Italie (Téléphone : +39 040 350829, Télécopie : +39 040 350322 et courrier électronique : imoima@imoima.org) **par le biais de l'AMBASSADE ITALIENNE** dans leur pays, avec copie au Bureau hydrographique international. **Les candidatures non adressées aux Ambassades italiennes ne seront pas acceptées**, et ne seront donc pas prises en considération dans la sélection. **Les candidatures doivent parvenir à l'AMI au plus tard, le 18 décembre 2000.**

L'AMI prendra en charge les frais de déplacement, les frais de transports locaux à Trieste, ainsi que ceux afférents à l'hébergement et aux repas. **Les autres dépenses personnelles (argent de poche) seront supportées par L'AUTORITE NATIONALE de CHAQUE ETUDIANT. (Voir Annexe 2, page 3).**

De par ses objectifs, sa durée et son contenu technique, ce cours revêt une grande importance. L'on espère que la Communauté hydrographique et les Instituts hydrographiques européens en particulier seront prêts à apporter leur soutien à l'AMI en détachant des conférenciers, en fonction des demandes que l'AMI adressera directement à chaque pays.

Les informations sur le programme du cours et la logistique sont fournies dans l'Annexe 2. Un exemplaire du formulaire de candidature est également joint en tant qu'Annexe 3.

Veuillez agréer, Monsieur, l'assurance de ma haute considération,

Pour le Comité de direction,

Contre-amiral Giuseppe ANGRISANO  
Président

Annexe 1 - Liste de distribution  
Annexe 2 - Détails et logistique (en anglais uniquement)



**LISTE DE DISTRIBUTION**

- Tous les Etats membres de l'OHI et les pays suivants :  
*Bangladesh, Bulgarie, Lettonie, Israël, Madagascar, Malte, Maurice, Mexique, Myanmar, Panama, Roumanie, Arabie Saoudite, Seychelles, Slovénie.*
- DGVII de la CE, Transport maritime – Chef de la Division M. W. De Ruyter. Rue de la Loi 200, Bruxelles, Belgique.
- Académie maritime internationale, Trieste, Italie. Via E. Weiss 15, 34127 Trieste, Italie.
- Ministère des Affaires Etrangères italien, Direction générale pour la coopération en matière de développement, Rome, Italie. Piazzale della Farnesina n°1, 00194 Rome, Italie.
- Ministère des Affaires Etrangères italien, DGCS Ufficio XIII, viale Tiziano 80 – Rome, Italie.
- Région Frioul-Vénétie julienne, Assessore Regionale ai Trasporti – Avv. W. Santarossa, via Giulia 75/1, 34125 Trieste, Italie.
- Président de la Province de Trieste, Piazza Vittorio Veneto 4, 34132 Trieste, Italie.
- Président des Autorités portuaires de Trieste, Punto Franco Vecchio, 34135 Trieste, Italie.
- Université de Trieste – Magnifico Rettore, Piazzale Europa 1 (Rettorato), 34100 Trieste, Italie.
- Président de la Chambre de Commerce italienne, Piazza della Borsa 14, 34100 Trieste, Italie.

## **DETAILS OF THE COURSE**

### **Background**

#### ▪ **Requirements for the Course**

At present nautical cartographers are trained at Hydrographic institutes through in-house training. This usually only applies, however, to Services with sufficient resources to make qualified nautical cartographers available for dedicated training requirements.

Generally speaking, HOs – having to deal with both traditional and innovative responsibilities - are usually affected by a lack of personnel, thus resulting in difficulties in providing didactic as well as production. Newly – established HOs obviously may not be in a position to engage in any in-housing training. It was therefore felt that there exists a need for an appropriate institution, capable of organizing and presenting courses for nautical cartographers, to proceed with the development of such a course (as was recently recommended by the IHB).

At present there is no nautical cartographic school in the Mediterranean area. It was recognized that in view of the ever developing automated cartographic technologies and the consequent pressures on the HO's to produce electronic nautical charts (ENC), a formal course in nautical cartography should be presented. The course should be offered by a recognized training institution and should offer subjects, of great interest to HO's, both for developed and for developing countries, in order to improve staff knowledge and introduce new technology.

#### ▪ **Aim of the course and prospective users**

The aim of the course is to train nautical cartographers, to be employed at Hydrographic Services and at other cartographic bodies, able to perform the following:

- Elaborate a cartographic scheme in accordance with local coastal morphology, maritime traffic and port features;
- Plan a new chart, selecting proper projection size and scale, in accordance with pertinent cartographic scheme;
- Evaluate extant hydrographic and topographic data, in order to produce charts with both traditional and electronic systems;
- Compile a new chart, using traditional means as well as computer aided cartographic systems, in compliance with INT specifications;
- Acquire working knowledge of photomechanical and printing techniques, in order to be able to understand and evaluate issues connected with the production of traditional charts;
- Convert a traditional chart into an electronic chart, by digitizing existing traditional charts in the standard format or alternatively, verifying – when necessary – a third party's digitization;
- Acquire basic knowledge of the structure of geographically defined relational databases
- Update charts in both traditional and digital formats;
- Acquire awareness of legal aspects connected with nautical cartography

- **Attendees (entry requirements)**

Course applicants should belong to a Hydrographic Service or to other bodies responsible for nautical cartography and should at least hold a Higher School Completion Certificate.

- **Total duration**

9 months (1 academic year)

- **Number of participants**

In order to ensure maximum didactic efficacy, classes should not exceed 12 students.

- **Languages**

The course will be held in English

- **Course certificate, diploma**

The model course is produced by an international Working Group, with the co-ordination of the IMA and the supervision of the IHB.

The course will be submitted to the FIG – IHO Advisory Board to obtain recognition.

Upon successful completion of the course, a document will be issued by the IMA certifying that the holder has successfully completed a course in Nautical Cartography.

## COURSE OUTLINE

The duration of the course will be 9 months (40 weeks). Lessons will be, generally, 7 hours per day, from Monday to Friday, for a total number of 1400 hours.

The course has been subdivided into the following 15 modules.

Every module contains specific segments which are developed taking into consideration the requirement of the course and the time allocated.

The programme includes complementary activities such as visits to cartographic institutes and printing organizations.

Most modules end with a practical project. All aspects will be evaluated and will be used for determining the final course work.

Tests will be given on completion of the following modules: basics, geodesy, chart projections, databases, GIS applications, legal administrative aspects.

<i>Modules</i>	<i>Hours</i>
<b>GENERAL INTRODUCTION .....</b>	<b>5</b>
<b>1. Basics .....</b>	<b>120</b>
1.1 Mathematics and Statistics .....	70
1.2 Computers.....	50
<b>2. General .....</b>	<b>20</b>
2.1 Introduction .....	4
2.2 International Organizations .....	8
2.3 National Organizations .....	8
<b>3. Geodesy .....</b>	<b>70</b>
3.1 General Fihure of the Earth.....	7
3.2 Geometrical Foundations relate to Geodetic Reference Ellipsoid.....	14
3.3 Reference Systems- Geodetic Datums.....	14
3.4 Fundamentals of Three-Dimensional Geodesy .....	14
3.5 The Geodesic (Orthodromic) and Loxodromic Curve on the Ellipsoid .....	14
3.6 Project Work: 1.....	7
<b>4. Chart Projections.....</b>	<b>70</b>
4.1 General Theory.....	14
4.2 Mercator Projection.....	3
4.3 Gaussian Projections.....	14
4.4 Lambert Projection.....	7
4.5 Polar Stereographic .....	7
4.6 Cartographic Projections.....	14
4.7 Summary of Geodesy and Projections.....	4
4.8 Project 2.....	7
<b>5. Navigation .....</b>	<b>70</b>
5.1 General Principles .....	7
5.2 Types of Navigation .....	6
5.3 Systems and Methods.....	15
5.4 Port and Coastal traffic .....	3
5.5 Hydrographic notes .....	4
5.6 Project 3.....	35
<b>6. Nautical Charts .....</b>	<b>70</b>
6.1 Introduction .....	4
6.2 Definitions.....	6
6.3 Specifications .....	14
6.4 Chart Schemes .....	9
6.5 Production systems-methods .....	2
6.6 Project 4.....	35

<b>7. Cartographic data .....</b>	<b>105</b>
7.1 General.....	2
7.2 Topography .....	4
7.3 Hydrography.....	4
7.4 Navigational Aids and Navigational Systems .....	3
7.5 Sailing Directions and other textual information .....	3
7.6 Tides-vertical datums.....	4
7.7 Photogrammetry and aerial photography .....	4
7.8 Satellite imagery .....	4
7.9 Data evaluation .....	6
7.10 Data preparation .....	6
7.11 Data assimilation .....	6
7.12 Quality control.....	3
7.13 Project 5 .....	56
<b>8. Field data .....</b>	<b>105</b>
8.1 Topography .....	8
8.2 Hydrography.....	8
8.3 Reconnaissance.....	7
8.4 Oceanography.....	8
8.5 Marine geology.....	4
8.6 Project 6 .....	70
9. Traditional cartography .....	140
9.1 Compilation.....	20
9.2 Drafting.....	3
9.3 Printing.....	3
9.4 Quality control.....	9
9.5 Project 7 .....	105
<b>10. Computer assisted cartography</b>	<b>140</b>
10.1 Types of digital data: raster, vector..	4
10.2 Digital cartographic systems .....	4

10.3 Data capture methods .....	10
4	
10.4 Migration procedures.....	5
10.5 Products.....	3
10.6 Quality control .....	9
10.7 Project 8.....	105
<b>11. Databases.....</b>	<b>56</b>
11.1 Relational databases.....	24
11.2 Object oriented databases .....	32
<b>12. ENC Production .....</b>	<b>266</b>
12.1 Theoretical overview.....	49
12.2 Procedures, methods and tools.....	133
12.3 Project 9.....	84
<b>13. Cartographic maintenance .....</b>	<b>49</b>
13.1 Traditional .....	7
13.2 Digital.....	7
13.3 ENC .....	7
13.4 Project 10.....	28
<b>14. GIS applications.....</b>	<b>70</b>
14.1 Principles and criteria .....	6
14.2 Theoretical approach .....	39
14.3 Special issues .....	25
<b>15. Legal Administrative aspects ..</b>	<b>35</b>
15.1 Product liability .....	7
15.2 Copyright.....	2
15.3 Recommendations.....	2
15.4 Resolutions.....	2
15.5 Law of the sea .....	6
15.6 Delimitation zones .....	7
15.7 Distribution of cartographic products	2
15.8 Project 11.....	7

## Complementary Activities

**Visits:** Technical visits will be held during the weeks dedicated to the ENC Production module

**Final Tests** 14 hours at the end of the course

## LOGISTICS

**Accommodation:** Twin-bedded rooms (two students per room) for the entire period of the course.

**Food arrangements:** breakfast, lunch and dinner will be provided by IMA.

Health and accident insurance will be provided.

**Pocket money and other personal expenses will be at the charge of the organization to which the student belongs.**

Assistance in obtaining a visa may be provided by IMA, but should be the responsibility of the national organization.

Prepaid air tickets will be made available at a selected air company (will be communicated by IMA) in the country.

**Note: The air ticket will have to be refunded in case of non-completion of the course**



**COURSE ON NAUTICAL CARTOGRAPHY**  
From 26 February to 24 November 2001

**NOMINATION FORM FOR PARTICIPATION**

A completed nomination form should be submitted to the Director of the International Maritime Academy,\* Trieste, Italy **THROUGH THE ITALIAN EMBASSY** \*\*, with a copy to the IHB Monaco\*\*\*. Nominations should be made as early as possible, using a separate form for each nomination, indicating clearly the Government's priority if more than one participant is nominated:

- 1. FAMILY NAME.....  
FIRST NAME .....  
OTHER NAME .....
- 2. Mailing address .....  
.....  
.....  
Telephone.....  
Fax.....  
E-Mail.....
- 3. Nearest airport where air travel will commence and terminate:  
Name of airport .....  
Location.....
- 4. Date of birth.....
- 5. Sex:    Male                  Female
- 6. Place of birth.....
- 7. Nationality.....
- 8. Passport No.....
- 9. Date and Place of Issue .....

\*International Maritime Academy, via Eduardo Weiss 15, 34127 Trieste, Italy. (Fax: +39 040 350322.

e-mail: <imoima@imoima.org>)

**\*\*The nominations not transmitted to the Italian Embassy will not be accepted and taken into consideration**

\*\*\*International Hydrographic Bureau, BP445, MC 98011 MONACO CEDEX, Principality of

10. Person to notify in case of emergency:

Name .....

Address.....

.....

Telephone.....

Fax.....

E-Mail.....

11. Present position and description of duties .....

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12. Educational background .....

.....

.....

13. Previous experience.....

.....

.....

Nominee's signature.....

**The above-mentioned person is nominated as our first/second possible participant in the course**

Name and signature of Government official authenticating this nomination.....

Title .....

**ACCEPTANCE FORM**

I hereby accept the invitation of the International Maritime Academy (IMA) to participate in the Course on Nautical Cartography (from 26.02.2001 – 25.11.2001).

I confirm that:

- 1. I will refrain from engaging in political, commercial and any activities other than those governed by the course programme;
- 2. I will advise the Academy immediately if I am unable to attend the course; and
- 3. I will travel to Trieste, Italy and return to my home country at the end of the course, as appropriate, by the route designated by the Academy.

Signature of Participant .....

Name of Participant .....  
(Printed)

Address .....

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.....

Date.....