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## **Working Party on Inland Water Transport**

### **Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation**

#### **Thirty-ninth session**

Geneva, 15–17 June 2011

Item 3 of the provisional agenda

#### **Mutual recognition of boatmasters' certificates**

### **Development of the Standards of Training and Certification in Inland Navigation (STCIN)**

#### **Submitted by Inland Waterway Transport Educational Network (EDINNA)\***

##### *Note by the secretariat*

1. At its thirty-fifth session, the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) took note of the Inland Waterway Transport Educational Network (EDINNA) project – a cooperation initiative between 20 inland navigation schools on the training and educational issues in the European Union, such as harmonization of inland navigation education and training, development of the standards of training and certification inland navigation, communication and language in navigation on inland waterways and development of educational exchange programmes. The Working Party requested the secretariat to monitor and report on progress in EDINNA activities and to invite EDINNA to take part in the relevant meetings of SC.3/WP.3, related to the issues of crewmen training and education (ECE/TRANS/SC.3/WP.3/70, para. 30).
2. In the context of the Working Party's discussion on the mutual recognition of boatmasters' certificates, the secretariat presents a draft working document from EDINNA on core competencies in inland navigation on operational (OL) and management level (ML). This work is undertaken in the framework of elaborating Standards of Training and Certification in Inland Navigation (STCIN).
3. The Working Party may wish to take note of this information and, if appropriate, comment on the proposal by EDINNA.

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\* Except for a small adjustment in the overall structure, the secretariat reproduces the document as received.

## **I. Development of the Standards of Training and Certification in Inland Navigation (STCIN)**

1. EDINNA is working together on a current base with several parties in a Joint Working Group on the development of the STCIN. The Joint Working Group consists of the following members: EBU (European Barge Union), ESO (European Skippers Organisation), ETF (European Transport Workers Federation), Platina, Danube Commission, Commission Centrale pour la Navigation du Rhin, and EDINNA.
2. EDINNA came up with a first draft of a working document on core competencies both on operational (OL) and management level (ML). This classification was chosen to further develop harmonized Standards of Training and Certification in Inland Navigation (STCIN). The competencies on OL and ML have been agreed upon in the meantime. The competencies can and will however be adapted when necessary, e.g. due to changes in the market.
3. This structure would allow for an easier integration of career changers coming from other related transport sectors such as maritime industry or other branches.
4. The STCIN could cover the following issues in various chapters:
  - (a) General Provisions
  - (b) Qualifications of instructors and supervisors
  - (c) Standards governing the use of training equipment such as simulators, training ships, laboratories
  - (d) Mandatory requirements for functions on board-operational level
  - (e) Mandatory requirements for functions on board-management level
  - (f) Supplements: i.e. mandatory requirements for ML on ships transporting dangerous goods or passenger vessels
  - (g) Certificates
  - (h) Training and assessment criteria
  - (i) Quality system
  - (j) Criteria for recognition of IWT institutes
5. For the beginning, it was decided to concentrate on the two core functions on board an IWT vessel: boatman as part of the OL and boatmaster on ML. All participants of the JWG agreed that the concept of STCIN is a possible way forward which is supported by the members of the JWG.
6. Since Inland Waterways is a fast changing sector, new technological demands on board must be met via a regular actualisation of the competencies for operational and management level after discussion and by mutual agreement of the joint working group.
7. EDINNA has been integrated into the PLATINA consortium in order to actively contribute to the further advancement of the STCIN concept by developing the new Deliverable 3.13: consolidated tables of knowledge, skills and proficiency for operational and management level. The consolidated tables will have the following structure:

**Table 1**  
STCIN

<i>Competence</i>	<i>Knowledge, understanding and proficiency</i>	<i>Methods for demonstrating competence</i>	<i>Criteria for evaluating competence</i>
Assist the ship management in situation of maneuvering and handling a ship on inland waterways using all types of waterways and ports	<p>Types of bollards and winches on push/tow vessels and barges, self-propelled vessels and ashore.</p> <p>Demonstrates handling of wires and ropes during mooring and unmooring operations, such as:</p> <p>Demonstrates the use of head ropes, stern ropes and springs;</p> <p>Demonstrates the safety measures to be taken when handling mooring ropes and wires;</p> <p>Demonstrates how to attach mooring ropes or wires to various types of bollards and other facilities;</p> <p>Demonstrates the use of various winches</p>	<p>Knowledge:</p> <p>Theoretical exam</p> <p>Understanding and proficiency:</p> <p>Practical training and exam on (school) training vessel</p> <p>Training record book during work placement practice</p>	<p>Candidate is able to:</p> <p>Prepare the ship for mooring operation;</p> <p>Take care of the fenders and to place them in position;</p> <p>Select the wire or rope usable in case of a mooring operation;</p> <p>Understand the communication (orders) between the wheelhouse and wanted deck activities;</p> <p>Handle the wires and ropes in the wanted sequence taking in account the safe working rules.</p>

8. A start has been made concerning Navigation at the beginning of 2011. The consolidated tables for OL as well as ML on the 7 core competencies aforementioned will be delivered to the European Commission in December 2011.

9. In parallel to the development of the STCIN, EDINNA will deliver the first basic set of Standard Inland Communication Phrases (Riverspeak) this year and has applied for a Transfer of Innovation Fund at the Directorate General Education and Culture to further elaborate the concept of Riverspeak.

10. In the meantime, EDINNA takes part in the discussion on the use of simulators, which is been organized by the CCNR and applied for a Partnership Fund at DG Education and Culture to be able to make a profound investigation on the simulators currently in use at the member institutes.

## **II. Professional Competencies Operational and Management Level**

11. The results of these discussions dating from November 2009 can be found below.

## **A. Professional Competence – Operational Level version 1.0**

### **1.0. Navigation**

*1.1. Assists the ships management in situations of manoeuvring and handling a ship on inland waterways, using all types of waterways and ports and is able to;*

- 1.1.1 assist with mooring, unmooring and hauling (towage) operation
- 1.1.2 assist with couple operations of push barge combinations
- 1.1.3 assist with anchoring operations
- 1.1.4 steer the ship complying to helm orders using steering gear properly
- 1.1.5 apply knowledge of influence of wind and current
- 1.1.6 apply knowledge of navigational aids, tools and materials such as fenders, etc.
- 1.1.7 undertake actions to be taken in terms of safety in navigation
- 1.1.8 describe the main European inland waterways
- 1.1.9 describe the characteristics of various types of inland waterways
- 1.1.10 apply the knowledge of day and night signs, sound signals and general rules of the inland waterway police regulations
- 1.1.11 describe the various types of locks in relation to lock operations
- 1.1.12 use systems of traffic control

### **2.0. Cargo handling, stowage and passenger transport**

*2.1 Assists the ships management in preparation, stowage and monitoring of cargo during loading and unloading operations and is able to:*

- 2.1.1 read stowage plans
- 2.1.2 monitor the stowage and securing of cargo
- 2.1.3 apply knowledge of various types of cargo and their qualities
- 2.1.4 apply knowledge of the use of ballast
- 2.1.5 measure gauge marks and to check the amount of cargo
- 2.1.6 work according to regulations and safe working rules
- 2.2. *Assists the ships management in services to passengers and is able to:*
- 2.2.1 apply knowledge of regulations and conventions regarding passenger transport
- 2.2.2 assist in safe movement of passengers when embarking and disembarking
- 2.2.3 assist in controlling passengers during emergency situations
- 2.2.4 communicate effectively with passengers

### **3.0. Controlling the operation of the ship**

*3.1. Assists the ships management in controlling the operation of the ship and care for persons on board and is able to:*

- 3.1.1 distinguish various types of ships
- 3.1.2 apply knowledge of the of inland waterway ships construction and their behaviour in water, especially in terms of stability and strength

3.1.3 apply knowledge of the ships structural parts and identifies the parts by name and function

3.1.4 apply knowledge of the ships watertight integrity

3.1.5 apply knowledge of the ships certificate of approval

3.2. *Uses the ships equipment and is able to:*

3.2.1 apply knowledge of various types of anchors and handling anchor winches

3.2.2 apply knowledge of deck equipment and lifting devices. (Coupling winches, hatches lifting devices, car crane, etc.)

3.2.3 apply knowledge of equipment especially on passenger ships

#### **4.0 Marine engineering and electrical, electronic and control engineering**

4.1 *Assists the ships management in marine-, electrical-, electronic-, control engineering to ensure general technical safety and is able to:*

4.1.1 apply knowledge of construction and functioning , of monitoring operations and daily maintenance work

4.1.1. to prepare main engines and auxiliary equipment for operation

4.1.2. apply knowledge of machinery malfunctions and correction of faults to prevent any damage

4.1.3. operate machinery including pumps, piping systems, bilge- and ballast systems

4.1.4. apply basic knowledge of electronic devices

4.1.5. prepare, starting, connecting and changing generators and control their systems

4.1.6. apply knowledge of malfunctions, common faults and actions to prevent damage

4.1.7. use suitable tools

4.2 *Performs maintenance work on marine-, electrical-, electronic-, control engineering equipment to ensure general technical safety and is able to:*

4.2.1 perform the daily maintenance work at the main engines, auxiliary machinery, and control systems

4.2.2 perform the daily maintenance work at machinery including pumps, piping systems, bilge- and ballast systems

4.2.3 apply knowledge of qualities and limits of different materials used on board to maintain and repair equipment and technical devices

4.2.4 follow procedures of maintenance and repair

4.2.5 understand technical information material and documenting technical procedures

#### **5.0 Maintenance and repair**

5.1. *Performs maintenance of the ship and the ship's devices and is able to:*

5.1.1 work with different materials and tools used for maintenance and repair operations

5.1.2 apply knowledge of the use of cleansing and preserving agents regarding the protection of health and environment

5.1.3 maintenance technical devices according to technical instructions

- 5.1.4 apply knowledge of production and qualities of different wires and ropes
- 5.1.5 make knots and splices according to their use and maintain them
- 5.1.6 prepare and carry out working plans by teamwork and control the results

**6 Communication**

*6.1. Performs general and professional communication. Is able to:*

- 6.1.1 use information- and communication systems
- 6.1.2 solve different tasks with the help of information- and communication systems
- 6.1.3 collect and store data including backup and data update
- 6.1.4 follow instructions for data protection
- 6.1.5 present facts using technical terms in the home country language and in at least one foreign language, preferable English
- 6.1.6 use river speak in case of difficulties in communication
- 6.1.7 obtain information according to nautical, technical and safety subjects

*6.2. Performs social behaviour and is able to:*

- 6.2.1 understand and follow instructions and to communicate with others in terms of shipboard duties
- 6.2.2 contribute to good social relation and cooperation with others on board
- 6.2.3 accept social responsibility, conditions of employment, individual rights and duties, dangers of alcohol and drug abuse
- 6.2.4 plan, purchase and prepare simple meals

**7 Safety, health and environmental protection**

*7.1. works according to safe working rules and understand the importance of the care for safety, health and environment. Is able to:*

- 7.1.1 understand the importance of following instructions regarding the safety at work and prevention of accidents
- 7.1.2 apply knowledge of safety equipment to prevent accidents
- 7.1.3 take precautions to be taken before entering enclosed spaces
- 7.1.4 apply knowledge of national - and international regulations to prevent accidents and to protect health, safety and environment

*7.2. acknowledges the importance of training and acts immediately in case of emergencies and is able to:*

- 7.2.1 apply knowledge of different types of emergency
- 7.2.2 follow procedures in case of an alarm
- 7.2.3 perform medical first aid
- 7.2.4 use and maintenance personal safety equipment and shipboard live saving equipment
- 7.2.5 swim and assist in case of rescue operations
- 7.2.6 to use emergency escape routes

- 7.2.7 use internal emergency communication and alarm systems
- 7.3. *Fire fighting. Takes precautions to prevent fire. Uses in case of fire the fire fighting equipment and is able to:*
  - 7.3.1 distinguish the elements of a fire and their classification
  - 7.3.2 distinguish types and sources of ignition
  - 7.3.3 distinguish and use different types of fire extinguishers
  - 7.3.4 act according to shipboard fire fighting procedures and organisation
  - 7.3.5 follows instructions concerning: outfit of a fire fighters, personal equipment, methods, extinguishing materials, procedure, breathing apparatus and its use during fire fighting and rescue operations
- 7.4. *Perform duties taken into account the protection of the environment and is able to:*
  - 7.4.1 apply knowledge of regulations to protect the environment
  - 7.4.2 take precautions to prevent pollution of the environment
  - 7.4.3 use materials in a economical and energy saving way
  - 7.4.4 Dispose waste goods environmentally friendly

## **B. Professional Competence – Management Level version 1.0**

12. The Captain/Master of the Ship has the ultimate responsibility for the ship, crew, cargo, goods and passengers on board as well as the whole transport procedure. This implies that all crew members must obey the Captains instructions. He alone has the sole authority on board concerning vessel operation, cargo handling as well as safety aspects.

### **1.0. Navigation**

- 1.1. *Plans a journey on inland and maritime waterways and conducts navigation on European inland waterways. Is able to:*
  - 1.1.1 navigate on European inland waterways including locks and lifts according to navigation agreements with agent;
  - 1.1.2 respect all traffic regulations on navigable waterways;
  - 1.1.3 consider economical and ecological aspects of ship operation in order to use vessel efficiently;
  - 1.1.4 observe technical structures and profiles of the waterways and use precautions;
  - 1.1.5 work with up-to-date charts/maps, Notices to Skippers/Mariners and other publications in order to determine vessel position exactly;
  - 1.1.6 use tidal datum's, tidal currents, periods and cycles, time of tidal current and time of tide, variations across an estuary;
  - 1.1.7 use SIGNI (Signalisation de voies de Navigation Interieur) and IALA (International Association of Lighthouse Authorities) on maritime waterways for safe navigation;
  - 1.1.8 use of traffic supervision tools and ability to apply them

- 1.2. *Sails and manoeuvres ensuring safe operation of the vessel in all conditions on inland and maritime waterways. Is able to:*
  - 1.2.1 navigate and manoeuvre taking into account geographical, hydrological, meteorological and morphological characteristics of the main inland waterways;
  - 1.2.2 give order to moor and unmoor vessels and to haul towage operations;
  - 1.2.3 apply local knowledge when conducting navigation;
  - 1.2.4 provides ship's access to competent authorities;
  - 1.2.5 use modern electronic navigational aids, with specific knowledge of their operating principles, limitations, sources of error, detection of misrepresentation of information and methods of correction;
  - 1.2.6 apply knowledge and abilities to use radar navigation as well as modern navigation equipment to ensure safe vessel operation;
  - 1.2.7 consider effects of current, wind and water-levels in connection with interactions of crossing, meeting and overtaking vessels as well as ship-shore (canal effect) in order to determine draught;
  - 1.2.8 use of propulsion and manoeuvring systems as well as appropriate communication and alarm systems.
- 1.2. *Responds to navigational emergencies on inland and maritime waterways. Is able to:*
  - 1.2.1 apply knowledge of precautions in an emergency when intentionally beaching a ship in order to prevent greater damage;
  - 1.2.2 apply knowledge of refloating a grounded ship with and without assistance;
  - 1.2.3 apply knowledge of actions to be taken if collision is imminent;
  - 1.2.4 apply knowledge of actions to be taken after a collision and assessment of damage control.
- 1.3. *Uses VHF equipment during navigation on inland and maritime waterways. Is able to:*
  - 1.3.1 apply knowledge of VHF communication and procedures contained in the (Basel) regional arrangement concerning the radiotelephone service on inland waterways;
  - 1.3.2 apply knowledge of equivalent regulations on radiotelephone services such as UBI
- 2.0. Cargo handling and stowage.**
  - 2.1 *Plans and ensures safe loading, stowage, securing, unloading and care of cargoes during the voyage. Is able to:*
    - 2.1.1 apply knowledge of relevant national, European and international regulations, codes and standards concerning the operation of transporting cargoes;
    - 2.1.2 apply knowledge of the effect on trim and stability of cargoes and cargo operations;
    - 2.1.3 use calibration tables in order to assess effective tonnage, use stability and trim diagrams and stress calculating equipment, including ADB (Automatic Data-Based) to develop a stowage plan;

- 2.1.4 compose stowage plans including knowledge of loading cargoes and ballast systems in order to keep hull stress within acceptable limits;
- 2.1.5 control loading and unloading procedures with regard to a safe transport including procedures for sea transport;
- 2.1.6 Differentiate various goods and their characteristics in order to monitor and ensure safe and secure loading of goods as laid down in the stowage plan.
- 2.2. *Plans and ensures a safe transport of passengers and care during the voyage. Is able to:*
  - 2.2.1 to apply knowledge of relevant national, European and international regulations, codes and standards concerning the transportation of passengers;
  - 2.2.2 Arrange and monitor regular exercises on safety as laid down in the (safety) muster list in order to guarantee safe behaviour in potential situations of danger;
  - 2.2.3 Apply knowledge of impacts on stability of the ship in relation to weight distribution of passengers, behaviour and communication with passengers;
  - 2.2.4 Define and monitor on-board risk analysis of limited access for passengers as well as compilation of an effective on-board protection system in order to prevent unauthorised access;
  - 2.2.5 analyse reports given by passengers (i.e. unforeseen occurrences, defamation, vandalism) in order to support strategic decisions;
- 3.0. Controls the operation of the ship and care for persons on board.**
  - 3.1 *Building, construction and operation of various types of ships. Is able to:*
    - 3.1.1. Apply knowledge of inland waterway ship building and construction;
    - 3.1.2 distinguish construction methods of ships and their behaviour in the water,
    - 3.1.3 especially in terms of stability and strength;
    - 3.1.4 apply knowledge of structural parts of ship and identification thereof, i.e. for
    - 3.1.5 damage control and analysis;
    - 3.1.6 apply knowledge of the ship's watertight integrity.
  - 3.2. *Controls and monitors the mandatory equipment as mentioned in the ship's certificate of investigation. Is able to:*
    - 3.2.1 apply knowledge of functionalities of deck equipment and lifting facilities (cranes);
    - 3.2.2 apply knowledge of specific requirements for transport of goods with tankers, passenger ships, tug boats and push barge combinations.
- 4.0. Marine engineering and electrical; electronic and control engineering.**
  - 4.1. *Plans the workflow and is able to:*
    - 4.1.1. apply technical knowledge of the functionality of the main engines and auxiliary equipment and their control systems;
    - 4.1.2. Monitor and control crew members when operating and maintaining the main engines and auxiliary equipment including pumps, piping systems, steering mechanisms.
  - 4.2. *Monitors main engines and auxiliary equipment and is able to:*

- 4.2.1. Give instructions to prepare main engines and auxiliary equipment;
- 4.2.2. detect malfunctions, common faults and take actions to prevent damage;
- 4.2.3. apply knowledge of material sciences as well as physical and chemical conditions of oil and other lubricants;
- 4.2.4. apply technical knowledge on the evaluation of engines performance.
- 4.3. *Plans and gives instructions for ballast procedures in relation to the ship's pumping and pumping control system. Is able to:*
  - 4.3.1. Monitor routine pump works, ballast and loading pump systems.
- 4.4. *Organises safe use and application, maintenance and repair of the ship's electro-technical devices. Is able to:*
  - 4.4.1. prevent potential damages on electric and electronic devices on board due to knowledge of malfunctions and common faults in ship electro-technology;
  - 4.4.2. test control systems and instruments to recognize faults and at the same time take actions to repair and maintain electric or electronic control equipment like automation;
  - 4.4.3. give instructions to crew members in the pre- and after activities to connect or disconnect technical shore based facilities.
- 4.5. *Controls the safe maintenance and repair of technical devices and is able to:*
  - 4.5.1. ensure appropriate use of tools to maintain and repair technical devices;
  - 4.5.2. assess characteristics and limits of materials as well as necessary procedures which are used to maintain and repair technical devices;
  - 4.5.3. evaluate technical and internal documentation.
- 5.0. Maintenance and repair**
- 5.1. *Organizes safe maintenance and repair procedures of the ship and its equipment. Is able to:*
  - 5.1.1. control safe behaviour of crew members with regard to properties and use of materials and additives;
  - 5.1.2. define, monitor and control work orders so that crew members are able to perform maintenance and repair works independently;
  - 5.1.3. order, buy and control material and tools considering health and environmental protection, i.e. conservation or cleaning materials;
  - 5.1.4. control if wires and ropes are being used according to the their manufacturing properties and intended purpose. And repair or replace them if required.;
  - 5.1.5. motivate crew members to work independently in a team by formulating clear aims and objectives and control results of the work executed by the crew members by giving feed-back (needs to be replaced to chapter on social competencies)
- 6.0. Communication**
- 6.1. *Performs human resource management and social responsibility for staff; takes care of organisation and training on board, assures at all time good communication. Is able to;*

- 6.1.1 organise and stimulate teambuilding and coach the crewmembers and instruct crew in order to be understood in relation to shipboard duties and if necessary take disciplinary measures;
- 6.1.2 guide crew on information- and communication systems on board including internet for the operation of the ship;
- 6.1.3 collect, safe and manage data with regard to data protection laws;
- 6.1.4 describe circumstances by using relevant technical terminology in first language or if necessary in English (River-Speak)
- 6.1. *Use "Riverspeak" in situations with communication problems and is able to:*
- 6.2.1. Retrieve, evaluate and use information with relevance to safety on board as well as nautical-technical issues.
- 6.3. *Cares for a well balanced and social working atmosphere on board and is able to:*
- 6.3.1 take social responsibility for crew members and realize added value of a well balanced working atmosphere on board; be considerate of individual rights and duties of crew members, mediate and solve interrelational issues and disputes;
- 6.3.2 adhere to national, European and international social legislation
- 6.3.3 follow strict alcohol and drug prohibition and react appropriately in cases of infringements, take responsibility and demonstrate consequences of misbehaviour;
- 6.3.4 organise preparation of meals on board after *consultation* of crew members, plan shopping possibilities according to suitable berths.
- 7.0. Safety; health and environmental protection**
- 7.1 *Monitors and controls the applicable legislative requirements and measures to ensure safety of live. Is able to:*
- 7.1.1 adhere to national, European and international legislation and takes appropriate measurements for the care of health protection and the prevention of accidents;
- 7.1.2 control and monitor validity of the ship's certificate and other documents to be carried on board;
- 7.1.3 comply with safety regulations during all working procedures by using relevant safety measures in order to avoid accidents;
- 7.1.4 control and monitor all safety measures necessary for cleaning closed spaces before persons open, enter and clean those facilities
- 7.1. *Maintain safety and security for people on board and is able to:*
- 7.1.1 to apply the rules of life saving appliances for victims and own personal safety;
- 7.1.2 organise training exercises for behaviour in fire, emergencies, damages, leakage warning, explosion, collision, "Man over Board" and evacuation of the ship in order to limit damage;
- 7.1.3 give instructions related to fire prevention, personal protection equipment, methods, fighting material, respirators and possible application of these devices in emergencies;
- 7.1.4 perform first aid;

- 7.1.5 establish an effective on-board system to control life saving appliances and correct application of personal protection clothing;
- 7.1.6 Recognise dysfunctions on board, evaluate them and take appropriate actions to restore operation of ship.
- 7.2. *Sets-up emergency and damage control plans and handles emergency situations and is able to:*
  - 7.2.1 initiate preparations for rescue plans of different types of emergencies in order to instruct the crew correctly;
  - 7.2.2 train on methods to prevent fire, recognition of origin of fire and fire fighting according to different competencies of crew members;
  - 7.2.3 training with life saving appliances;
  - 7.2.4 give instructions on rescue plans, escape routes and internal communication and alarm systems.
- 7.4. *Ensures compliance with requirements for environmental protection and is able to:*
  - 7.4.1 take precautions to prevent environmental pollution and use relevant equipment;
  - 7.4.2 adhere to valid environmental protection laws to prevent pollution of the environment;
  - 7.4.3 use equipment and materials in a economical and environmental friendly way;
  - 7.4.4 instruct and monitor sustainable waste disposal.
- 8. *apply the required social administrative requirements. This sentence is already part of STCIN supplement for IWT entrepreneur (Council Directive 87/540/EEC).*

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