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DE NAVEGANTES
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TRADUCCIÓN RESPUESTA ISAF
a consultas realizadas por ANAVRE

Estimado Jaime:

Reglas Especiales para Regatas de Altura de la ISAF

En respuesta a las cuestiones planteadas en tu carta de 30 de noviembre de 2009, dirigida a Patrick Lindqvist, Presidente del subcomité de Regulaciones Especiales de la ISAF. Tras consultar con Patrick y Alan Green, Presidente de la Comisión Reguladora Internacional de la ISAF, te detallo a continuación nuestras respuestas:

1. ¿Tienen otros países además de España regulaciones que sometan la celebración de regatas a la solicitud de autorización a las Autoridades Marítimas por parte de sus organizadores?

   Sí, el procedimiento es normalmente sencillo y bien entendido por los organizadores de regatas y autoridades locales que están acostumbradas a trabajar conjuntamente. Por esta y razones similares la ISAF anima a ambas partes a establecer y mantener relaciones fluidas.

2. ¿Cuáles son las diferencias entre los requisitos de las Categorías 2 y 3 definidas por las OSR?

   En general, requisitos con respecto a Construcción del Casco, Instalación permanente de inodoro, Bombas de achique, Motor, Transpondedor AIS, Radiobaliza, Balsa Salvavidas, Boya salvavidas adicional, Mayor de tormenta, Tormentín, Entrenamiento de la Tripulación, Número de Tripulantes y Entrenamiento en primeros auxilios.

3. ¿Quién es el responsable de establecer la categoría de una regata, la organización o su Federación Nacional de Vela (MNA)?

   El Organizador de la regata, la regla OSR 1.01.3 establece "… los Comités de Regata pueden seleccionar la categoría que estimen más adecuada para el tipo de regata que se celebrará.

4. ¿Son los requisitos de entrenamiento establecidos por las OSR de la ISAF aplicables a todas las regatas de altura, así como en solitario y a dos

independientemente de su categoría, o solo a aquellas incluidas en las Categorías 0, 1 y 2?

La Sección 6 de las OSR sólo especifica la necesidad de cubrir los requisitos de entrenamiento ISAF para las regatas de categorñía 0. 1 y 2"

5. De acuerdo con el Apéndice G, Regla 7.5 de las OSR ¿Puede el organizador de una regata aceptar certificaciones de entrenamiento acorde a lo establecido en la Regla 6.01 de las OSR distinto de los cursos homologados por la ISAF?

   Sí, el Apéndice G 7.5 de las OSR establece que " A menos que así se especifique en el Anuncio de Regata, no es obligatorio que un curso para el cumplimiento de los requisitos de la Regla Especial 6.01 sea "Aprobado por ISAF", aunque se recomienda que así sea donde resulte posible.

6. De acuerdo con las Reglas 6.01, 6.02,y 6.03 en relación con los Programas de las Titulaciones Náuticas Oficiales expedidas y certificadas por el Estado Español adjuntos al presente escrito, puede considerarse que los patrones españoles en posesión de las titulaciones oficiales de Patrón de Yate y Capitán de Yate han recibido la instrucción teórica y entrenamiento práctico requeridos por la ISAF?

   Nuestra interpretación acerca de la información remitida por Vds. muestra que las titulaciones de Patrón y Capitán de Yate incluyen los requisitos prácticos de la OSR 6.03. Sin embargo, entendemos que los títulos de Patrón de Embarcación de Recreo y Patrón de Navegación Básica no incluyen los requisitos prácticos referidos al uso de balsas salvavidas.

7. En el caso de considerar que estar en posesión de una titulación oficial de Patrón de Embarcación de Recreo o Patrón de Navegación Básica no acredita haber recibido la suficiente formación teórica o práctica ¿Qué formación adicional se requiere para ello?

   Entendemos que PER y PNB no incluyen las necesarias prácticas relativas a balsas salvavidas. Por ello deberían recibir formación práctica en relación al uso de balsas salvavidas.

8. ¿Puede una MNA ISAF impedir que otras organizaciones puedan promover cursos de formación y proveer certificados de entrenamiento acordes a los requisitos establecidos en las OSR?

   No. No hay limitación en cuanto a entidades que puedan proveer dicha formación siempre que la misma se atenga a lo dispuesto en la regla 6.01 de las OSR, ni tampoco existe limitación alguna en cuanto al formato de certificación de dicha formación excepto que la concesión del certificado de homologación ISAF y el permiso para el uso del logo de la ISAF en un certificado está sometido a la aprobación de la MNA ISAF.

9. ¿Está una MNA ISAF obligada a reconocer certificados homologados ISAF expedidos bajo la autoridad de otra MNA ISAF?

   Sí, la OSR 6.01.4 establece "Excepto que se indique de otro modo en el Anuncio de Regata, un certificado no caducado obtenido en un Curso de Entrenamiento OSR Homologado por la ISAF será aceptado por la autoridad organizadora de una regata…."

Saludos Cordiales.

Simon Forbes
Secretariado ISAF

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Order FOM 3200/2007 from 26th October

Note: all programmes are cumulative, this meaning that every Skipper Certificate's programme includes the full contents of the immediately inferior one. Issues related to safety and survival at sea theoretical knowledge and practice have been highlighted in yellow.

ANNEX III

Programmes of theoretical and basic practical training in safety and navigation, and radio communications training to qualify for the titles (sailing certificates) set out in this Regulation.

BASIC NAVIGATION SKIPPER (for operation of pleasure crafts up to 8 m L.O.A., up to 5 nautical miles off shore, PNB or Patrón de Navegación Básica)

A) Theoretical Knowledge.

1. Nautical Terminology.

1.1 Parts of the boat: bow, stern, port, starboard, hull, waterline, upper works, bottom, sides, bows, quarters, deck and bilge.

1.2 Dimensions: Concepts: Length Over All, Maximum beam, draft, trim.

1.3 Structure, accessories and auxiliary parts: Keel, guard rail, rudder, propeller, limbers, cleats and mooring bitts.

1.4 Mooring and anchoring parts: line, working end, bight, loophole, standing end and turn. Bollard, moorings, buoys, fenders, boat hook. Anchor types.

2. Safety.

2.1 Flooding prevention elements: sea cocks, stern tube bearing. Drains and limbers. Bale out means for pleasure crafts sailing up to 5 miles off shore.

2.2 Keeping Stability: concepts of heel, roll and pitch. Crew distribution on board. Avoiding getting across to the seas. Douglas and Beaufort Scales. Coastal local breezes.

2.3 Safety equipment for crafts within Zone 5 navigation limits (up to 5 NM from nearest haven) as defined in Regulation FOM/1144/2003 of 28 April 2003:, baling out, firefighting, salvage material and first aid kits.

2.4 Emergencies. MOB. Cautions: manoeuvre to keep MOB free from propellers. Rescue manoeuvre for MOB. Giving or taking tow to or from another boat. Risks while fuel bunkering. Spillage. Explosive gases in enclosed spaces. Sailing in bad weather.

2.5 Notions on pleasure craft discharges and spillages into the sea, according to Regulation FOM 1144/2003, and on delivery of waste generated by pleasure crafts, according to Spanish Royal Decree 1381/2002, from 20th December 2002 .

2.6 Notions on Marine Ecology: environmental impact: identification, extent and causes. Fishing. Tourism. Protected areas in marine environments.

1) Specially Protected Areas of Mediterranean Importance (SPAMI).
2) Natural park/Reserve, monument, protected landscape.
3) Marine reserve area of fishing interest
4) Place of interest for the community.
5). The Mediterranean case: Poseidonian algae areas.

2.7 Hoisting and lowering sails, sail load center, wind force decomposition on the sail's load center. Drift center. Drifting momentum. Correct sail orientation. Interaction amongst sails.

2.8 Manoeuvres under sail: hoisting and lowering sails, correct hoisting and lowering order. Lift anchor under sail. Tacking and jibing, advantages and disadvantages. Beat broad beat, close reach, reach and downwind sailing. Stopping the boat: nose into the wind, hove to. Reducing sail area: reefing, sail changing, storm gib and trysail. Need to control heeling.

2.9 Bad weather manoeuvring under sail. Caution measures to adopt before the arrival of a storm front. Manoeuvres according to type of sailing: beat, reach or down wind. Search manoeuvres under sail when looking for unseen MOB. Sailing with a damaged boat.

3. Navigation.

3.1 Hazards to navigation: shoals. Concept of Nautical Mile and Knot.

3.2 Landmarks.

3.3 Navigation in shallow waters. Breakers. Cautions versus swimmers and divers. Cautions when approaching beaches.

3.4 Cautions when anchoring: sea bottom nature (sand, lime, rocks…), mooring swing circle. Landmarks. Anchoring with one anchor. Hoisting the anchor.

3.5 Low visibility: measures to undertake in order to avoid big ships' courses.

4. Propulsion.

4.1 Features of outboard, inboard and turbine engines, according to their installation.

4.2 Engine and instrument controls.

4.3 Pre-start check: fuel level, engine and transmission oil, refrigeration fluid level in closed circuits, refrigeration sea cock and filter, explosive gases, fuel filter, neutral gear.

4.4 Electrical system: brief description; service and engine batteries, fuses and switch board. Battery care and maintenance.

4.5 Calculating the cruising range based on engine consumption, speed, fuel tank capacity and weather conditions.

5. COLREG: Rules 3, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 30, 32,, 34, 35 and 37.

6. Beacons and markings
6.1 Lateral marks for daylight, “A-Region”. Meaning and identification.

6.2 Isolated hazard mark: meaning, shape, stop, colour and lights.

6.3 Special marks.

6.4 Navigable water mark.

6.5 Cardinal Marks.

7. Legislation.

7.1 Attributions of this title.

7.2 Forbidden or limited sailing areas: natural reserves, cliffs, beaches. In- port sailing limitations.

7.3 Rescue: mandatory aid and assistance to any person in danger.

7.4 National Rescue and Maritime Security Company, local and regional SAR Centres, location and service areas, contact.

7.5 Tow request at sea, responsibility. Coverage of compulsory insurance for civil liability.

8. Radio communications.

8.1 Basic expressions and definitions.

8.2 GMDSS. Basic concept. Navigation Zone 5 and its relationship with A1 national maritime zone, as defined in paragraph 4 of Royal Decree 1185/2006 of 16th October 2006, regulating radio communications for Spanish civilian vessels. DSC basic concept. SOS, emergency and security message

transmission and reception on VHF. Radio frequencies and channels used. Portable VHF systems.

8.3. Radio equipment for pleasure craft in 5, 6 and 7 navigation zones. Installation of equipment and ship radio station license.

B) Basic safety and navigation practical training:

1. Use of life jackets, fire extinguishers, pyrotechnic signals and signal mirror.
2. Use of lines on board.
3. Pre-start check: explosive gases, transmission and engine oil level, fuel filter, refrigeration sea cock, starting the engine in neutral gear.
4. After-start check: engine alarms, controls and refrigeration.
5. COLREGS and marks/beacons identification.
6. In port manoeuvring. Cautions when there are lines in the water. Forward and reverse manoeuvring. Stopping the craft. Propeller effect when reversing. Evolutions and manoeuvres. Effects of rudder manipulation. Approach to dock sideways and bow to, approximation to anchoring spot. Docking and undocking. Anchoring.
7. Steering using landmark references.
8. MOB manoeuvres.

C) Radio Communications Basic Training.

Practical procedure for transmitting and receiving SOS and DSC calls on VHF. Practical use of handheld VHF radios. Although not compulsory, basic training in the use of EPIRB is recommended with a view to reduce the amount of false SOS alerts given the rising popularity of such device among pleasure craft skippers .

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***PLEASURE CRAFT SKIPPER* (For operation of pleasure crafts up to 12 m LOA and up to 12 miles off shore, PER or Patrón de Embarcación de Recreo)**

A) Theoretical Knowledge.

1. Naval Technology.

1.1 Parts of the boat: bow, stern, port, starboard, hull, waterline, upper works, bottom, sides, bows, quarters, deck and bilge.

1.2 Dimensions: Concepts: Length Over All, Maximum beam, freeboard, draft, trim, maximum displacement and tonnage.
1.3 Structure,: hull, keel, stem, frames, beam, gunwale, bulkhead, guard rail.

1.4 Concept of water tightness: Brief description and importance of water tightness accessories and hull maintenance: cockpit, limbers, drains, sea cocks, engine exhaust, rudder hole, portholes, deck lights, hatches and ventilation pipes.

1.5 Accessories: Hand rail, cleats and mooring bits, Anchor types. Windlass: cable lifter, clutch and brake. Rudder: ordinary and compensated. Propellers: pitch, diameter, cavitation.

1.6 Mooring parts working line end, bight, loophole, sling. Bollards, moorings, fenders, boat hook. Artificial fibre lines: using each type.

1.7 Terminology: heeling, righting, windward, leeward. Lines charging, drawing, paying out, hoisting and lowering.

2. Manoeuvres.

2.1 Kinds of mooring lines. Use of mooring lines. Knots.

2.2 Steering with helm or wheel, steerage way, propeller influence in reverse. Effect of propeller's main current on a vessel without steering way. Manoeuvring with two propellers.

2.3 Agents that influence manoeuvring: wind, current and waves. Free to leeward. True and apparent wind.

2.4 Mooring manoeuvres: bow to dock, mooring alongside, mooring on a dock or jetty, mooring on a buoy. Undocking from a dock or jetty.

2.5 Anchoring: election of bottom, depth sounder, length of anchoring line, anchoring circle, anchor dragging. Marks, depth sounder alarm. Auxiliary line to anchor. Anchoring with one or two anchors. Hoisting the anchor.

3. Safety at sea.

3.1 Bad weather: wind and seas. How to steer to avoid rolling, pitch, sea hits and not compromise stability. Concept of stability. Concept of synchronism. How to break synchronism. Use of deflectors to trim vessel.

3.2 Measures to be implemented on board in bad weather: check of portholes, hatches, deck lights, ventilation pipes and other openings. Stowage and latching. Closing of sea cock. Course to steer. Weathering or riding out the storm. Risks of a leeward coast. Drift anchor. Manoeuvres sailing in stormy weather under engine power.

3.3 Protection against electric storms and their influence on the compass.

3.4 Low visibility: cautions when sailing in the fog, radar reflector, avoiding maritime traffic. Cautions for night-time navigation.

3.5 Cautions when sailing in shallow waters.

3.6 Compulsory safety material for Navigation in Zone 4: brief description, stowage and revisions.

3.7 Emergencies at sea.

3.7.1 Personal accidents: emergency treatment of wounds, bruises, haemorrhages, burns and sea sickness. Radio medical messages: operational regulations and wording. First aid kit for Navigation in Zone 4.

3.7.2 MOB: prevention, safety harness, lighting, propeller clearance, signalling of MOB, personal beacons, launch of personal aids (Jon buoy, etc.). Approximation to MOB. Searching for lost MOB. Satellite navigation system use in case of MOB. Recovering of MOB. Hypothermia. MOB treatment and resuscitation: rescue breathing and cardiac massage.

3.7.3 Breakdowns: steerage breakdown, emergency rudder (tiller). NUC Vessel.

3.7.4 Towing: approximation manoeuvre, giving and taking of tow lines, navigation under tow or when towing another vessel.

3.7.5 Collision: assistance and damage control.

3.7.6 Involuntary beaching: how to get back under way.

3.7.7 Water entry and flooding: major risk points: stern tube bearing, helm port, sea cocks, liners, clamps and exhaust. Manual and electric bilge pumps, engine refrigeration pump. Emergency actions for control and repair: plugs and mats.

3.7.8 Fire and explosion prevention. Risk areas: galleys, engine chambers, fuel intakes, batteries, electrical systems, paint lockers. Combination of elements to cause a fire. Fire fighting procedures: extinguishing a fire and general procedures. Course to obtain zero apparent wind, positioning of vessel so that fire is on leeward side.

3.7.9 Measures prior to abandoning ship: risk of early abandon, clothing, equipment and material to take when abandoning ship, measures to be adopted before abandoning ship. Message to transmit. Use of pyrotechnic signals.

3.7.10 National Rescue and Maritime Security Company, local and regional SAR Centres, location and service areas, contact.

3.7.11 Tow request at sea, responsibility. Coverage of compulsory insurance for civil liability. Complementary towing insurance.

3.8 Notions on Marine Ecology: environmental impact: identification, extent and causes. Fishing, Tourism. Protected areas in marine environments.

1) Specially Protected Areas of Mediterranean Importance (SPAMI). 2) Natural park/Reserve, monument, protected landscape.
3) Marine reserve area of fishing interest
4) Place of interest for the community.
5) The Mediterranean case: Poseidonian algae areas.

3.9 Hoisting and lowering sails, sail load center, wind force decomposition on the sail's load center. Drift center. Drifting momentum. Correct sail orientation. Interaction between sails.

3.10 Manoeuvres under sail: hoisting and lowering sails, correct hoisting and lowering order. Lift anchor under sail. Tacking and jibing, advantages and disadvantages. Beat broad beat, close reach, reach and downwind sailing. Stopping the boat: nose into the wind, hove to. Reducing sail area: reefing, sail changing, storm jib and trysail. Need to control heeling.

3.11 Bad weather manoeuvring under sail. Caution measures to adopt before the arrival of a storm front. Manoeuvres to undertake depending on the tipe of sailing: beat, reach or down wind. Search manoeuvres under sail when looking for lost MOB. Sailing with a damaged boat.

4. Navigation

4.1 Theoretical Knowledge.

4.1.1 Axis, poles, equator, meridians and parallels. Greenwich Meridian, local meridian. Latitude and longitude.

4.1.2 Coastal navigation charts, approach, port descriptions. Information in charts: coastal and terrain marks, reference points, land marks, beacons, hazards, restricted areas. Main signs and abbreviations used in navigation charts: lighthouses, depth, bottom composition, depth lines, magnetic declination.

4.1.3 Nautical publications of interest: brief description of pilot and nautical guides, and lighthouse books.

4.1.4 Coastal navigation charts: Meridians, parallels, latitude and longitude scales, declination.

4.1.5 Nautical Mile. Knot. Distance measuring on the chart.

4.1.6 Courses: circular and quadrant.

4.1.7 Elemental notions on Earth magnetism.

4.1.8 Magnetic declination, how to update it.

4.1.9 Brief description of the compass. Installation. Perturbations.

4.1.10 Compass deviation. Compass deviation chart.

4.1.11 Total correction. Calculation from declination and deviation.

4.1.12 Kinds of course: True, magnetic and compass. Relationship amongst them.

4.1.13 Log coefficient, its application.

4.1.14 Quarter (compass). Wind, drift, course over surface. Currents and their influence.

4.1.15 Position lines: visual bearings, oppositions, bearings, distance, depth lines. Obtaining position lines with compass and converting them into true lines to be drawn on the chart. Use of visual bearings, bearings and depth lines as safety position lines.

4.1.16 Concept of marking, how to find them. Relation betweencourse, marking and bearing.

4.1.17 Navigation aids: marks. Maritime lights and signals: lighthouses and beacons.

4.2 Practical exercises on the navigation chart.

4.2.1 Finding the coordinates of a given point on the chart, and vice versa.

4.2.2 Distance measuring. How to draw and measure courses.

4.2.3 Elementary concept of navigation by graphical estimation on the chart.

4.2.4 Course to keep a given clearance to the coast or a hazard. Course correction with drift and/or current.

4.2.5 Drawing and measuring of bearings and visual bearings with the angle transporter.

4.2.6 Visual seamarks and opposition as true bearings. Calculation of total correction from a visual seamark or opposition.

4.2.7 Positioning the vessel on the chart by the intersecting two simultaneous position lines: isobathic, bearing, visual bearing, opposition and distance. Conditions required for position lines to be trustful.

5. Meteorology.

5.1 Importance of weather in navigation safety. Atmospheric pressure and its measuring with an aneroid barometer.

5.2 Isobaric lines. High and low pressures. General wind circulation and specifically in these pressures in the Northern Hemisphere . Low pressure systems trajectory.

5.3 True wind, shift, fall, refresh, gust and calm.

5.4 Coastal breezes.

5.5 Beaufort wind scale: anemometer, weather vane and tell-tales.

5.6 Douglas wave scale: intensity, persistence and fetch.

5.7 Concept of temperature and its measuring with a mercury thermometer, centigrade scale.

5.8 Weather forecast: how to get it. Storm warning. Forecast with barometer and thermometer. Shoals and windstorms. Signs.

6. Radio Communication.

6.1 Basic expressions and definitions.

6.2 Concept of radio frequency and channel. Radio frequencies and DSC channels used for assistance, emergency and safety in VHF.

6.3 GMDSS and basic concept of DSC. Radio communication equipment in Navigation in Zone 4. SOS, urgency and safety messages emission and reception in VHF. 406 MHz EPIRB and handheld VHF systems.

6.4 VHF national coastal stations.

6.5 Radio communication equipments for Navigation in Zones 4 to 7. Installation and vessel radio station license.

7 Engine propulsion.

7.1 Differences among outboard, outboard/inboard and inboard engines regarding their use and installation. Differences among two and four-stroke petrol engines, diesel engines, lubrication and cooling.

7.2 Pre-start check: fuel, engine and transmission oil levels. Coolant level in closed circuits. Cooling sea cock and filter. Explosive gases, fuel filter. Neutral gear.

7.3 Start. Post-start check: alarm and control instruments, engine cooling check.

7.4 Manoeuvre and power controls, and engine control instruments.

7.5 Electrical system. Brief description: service and engine batteries, fuse and switchboard. Battery care and maintenance.

7.6 Fuel Bunkering: fire and explosion prevention measures.

7.7 Calculating cruising range based on engine consumption, speed, fuel tank capacity and weather conditions.

8. Legislation

8.1 COLREGS, Rules 1 to 37 and Annex IV

8.2 Signals and beacons. Lateral system A Region, cardinal system, isolated hazard, navigable and special waters.

8.3 Pleasure craft rules for maritime traffic and in port navigation.

8.4 Navigation limits in beaches, near coast, signalled beaches, access channels and marine reserves.

8.5 Notions onpleasure craft discharge and spillages into the sea, according to Order FOM 1144/2003, and about delivery of waste generated by pleasure crafts, according to Royal Decree 1381/2002. Skipper's responsibility, how to proceed in case of spillage sighting.

8.6 Pleasure craft registry, inspections, navigability certificate for crafts under 24 m LOA. Attributions of this title. Spanish flag. Salvage: obligation to assist persons in danger.

B) **Basic practical training in safety and navigation**
1. Use of life vest, fire extinguishers, pyrotechnic signals, signal mirror.

2. Preparation to go out to sea. Water tightness, steering and propulsion check. Weather forecast. Safety and water tightness elements check: bale out systems, portholes, hatches, deck lights, bilges, sea cocks, helm port, stern tube bearing and steering system. Logistics: water, fuel and food. Radio equipment, navigation lights, etc…

4. Pre-start check: explosive gases; fuel and oil levels, fuel filter, engine cooling circuit. Starting engine in neutral gear.

5. Post-start check: lubrication, cooling, battery charge level. Making sure that there are no fuel or oil leaks.

6. Use of ropes and mooring lines.

7. In port manoeuvring: cautions in case of ropes or lines in the water. Forward and reverse manoeuvring. Stopping the vessel. Effect of propeller when reversing. Different types of manoeuvres. Effects of rudder in vessel's evolutions. Approaching a berth alongside or bow first, approaching a mooring. Docking and undocking manoeuvres. Anchoring. Mooring to a buoy. Use of boat hook. Effects of wind and current on manoeuvring.

8. Course and steering rules application, safety speed, marks and signals surveillance and identification.

9. Steering using landmarks and compass. Inverse rhumb. Obtention of total correction for a given course by using a visual seamark.

10 Positioning using simultaneous position lines. Identification of remarkable coast points. Safety navigation: safety bearings and depth lines.

11 MOB manoeuvre. Use of GPS MOB function.

12 Electronic navigation: Depth sounder alarm programming. Fixing your position with a GPS:

C) Basic Radio communication practice.
Practical procedure for transmitting and receiving SOS and DSC calls on VHF. Practical procedure of public radio communications. Practical use of radar transponder and handheld VHF radios. Although not compulsory, basic training in the use of EPIRB is recommended with a view to reduce the amount of false SOS alerts given the rising popularity of such device among pleasure craft skippers.

YACHT SKIPPER (For operation of yachts up to 20 m LOA and up to 60 NM off shore, PY or Patrón de Yate)

A) Theoretical Knowledge.

1. Safety.

1.1 Stability and floatability: concept and definition of floatability reserve and free board. Concepts and definitions of initial stability, volume, vessel's bottom and its centre, drive, maximum displacement in yachts. Gravity centre, notion of the influence of meta-centre height on transversal stability. Concept of influence of weight loading, unloading or motion on stability, heel, trim, without calculations.

1.2 Manoeuvres - off shore towing manoeuvres: tow giving and taking, towing line tying and length. Towing in bad weather. Steering while towing or under tow.

1.3 Safety gear for Navigation in Zone 2. Use of a life raft: stowage, launching, inflating in upright position, climbing on board, how to use the equipment provided in the life raft.

1.4 Emergencies at sea: steering failure.

1.5 Safety procedures. Rescue. MOB Search. Abandoning ship. Survival: MOB behaviour in the water, life organisation on a life raft: surveillance, watches, rationing, drift anchor. Nearest coast. Helicopter evacuation. SAR zones. MOB: manoeuvres to undertake, approach to MOB.

1.6 First aid: first aid kit for Navigation in Zone 2. Composition of a radio medical message. Bandages, immobilization and splinting of broken limbs. Possible accidents on board and measures to adopt: poisoning, animal bites, extraction of fishing hooks.

1.7 Engine propulsion.

1.7.1 Electrical system. Brief description: alternator, service and engine batteries, shore power intake, switchboard, lighting services, power and instruments.

1.7.2 System breakdowns: short-circuits, magnetothermic fuses and switches. Poor insulation. Electrical system care and maintenance. Voltage and intensity of loaded batteries. Battery coupling, series and parallel. Battery care.

1.7.3 Calculation of total fuel consumption and range knowing specific consumption and engine power. Specific consumption in two and four-stroke petrol engines, and in diesel four-stroke engines.

1.7.4 Malfunctions: purging fuel circuit in a diesel engine. Lubricant contamination in oil cooling system. Start problems. Brief description of open and closed cooling systems. Cooling system breakdowns: sea cock filter, thermostat, water pump.

2. Navigation.

2.1 Theoretical knowledge.

2.1.1 The Earth: axis, poles, meridians, parallels, first meridian and equator. Longitude and latitude . Point positioning on the navigation chart. Differences in latitude and longitude.

2.1.2 Terrestrial magnetism. Local variation. Compass: brief description of a yacht's compass. Compass deviation and its chart. Calculation of total correction from visual seamarks and Polar star.

2.1.3 Tide causes. Using the Spanish tides yearbook. Depth references, calculation of depth at any moment. Direct and inverse calculation case.

2.1.4 Measuring time: civilian time, universal time, legal time, time zones, official time, on board's clock time, passing from one time system to another, time difference between locations.

2.1.5 Publications: pilot, light house and fog signals books. Radio signals book. Notice to mariners. Chart corrections.

2.1.6 Basic notions on radars. Range, how range is affected. Presentation of returns on screen, coastal profile: bow or North up. Errors and disturbances. Rain and sea filters, loss of image caused by rain or seas. Radar marks, bearings and distance. Fixed and variable rings. Racon.

2.1.7 Satellite navigation systems: set up, situation, course, approach point. Alarms, MOB, errors and corrections to be introduced . Plotters and electronic charts.

2.1.8 Currents: calculation of an unknown current, true and estimated position. Calculation of COG, knowing surface course and current course.

2.1.9 AIS system principles. Application to navigation.

2.2 Practical knowledge and practice on the nautical chart.

2.2.1 Course and distance between tow points, drawing and measuring, course to keep a given distance from a given point.

2.2.2 Wind influence over course, course on surface, correction of course.

2.2.3 Concept of a current's course an hourly intensity, effective speed and course. Graphic calculation of the current's effect on vessel's course from a true position to a second true position.

2.2.4 Position lines; position through marks and bearings, bearing translation. Positioning through simultaneous and non-simultaneous measuring of bearings to one or two points of the coast.

2.2.5 Position through distances, visual bearings, isobathic lines and horizontal angles.

2.2.6 Loxodromic course: direct course and distance. Graphic estimation including current. Estimated and true position. Analytic estimation. Solving direct and inverse calculation cases, particular cases.

2.2.7 Calculation of depth at any given moment. Direct and inverse case.

3. Meteorology and oceanography.

3.1 Air masses. Clouds: types.

3.2 Isobars, pressure gradient. Baric centres, high and low pressure systems, associated weather.

3.3 Wind: gradient, Coriolis effect and friction.

3.4 Weather fronts.

3.5 Concept of absolute and relative humidity. Dew point. Psychrometer. Fog formation, types, prevision, propagation and dispersion.

3.6 Weather forecast: bulletins, types. Basic interpretation of weather charts.

3.7 Waves: formation. Length, height and period. Intensity, fetch and persistence.

3.8 Marine currents: general notions, kinds and causes. General currents on Spanish coasts.

4. Radio communications.

4.1 Basic expressions and definitions.

4.2 Radio frequency. Concept of radio frequency and cannel. Subdivision of the most important part of radio-electric spectrum. Radio telephone and DSC VHF frequencies used for SOS, emergency and security communications in DGMSS and public correspondence.

4.3 Date and time nomenclature. Interferences. Tests. Secret of communications. Radio stations identification. Formation of call ID and MMSI numbers.

4.4 VHF public correspondence operational procedures.

4.5 DGMSS. Navigation Zone 2 in relationship with Spanish Maritime Zones A1 and A2. Communication systems, DSC: basic concept. Operational procedures for SOS, emergency and security messages through VHF and MF: alert,

messages, confirmation of receipt, and traffics SOS, emergency and security transmission and retransmission. Involuntary alert messages cancellation. Test of equipment used for SOS and security calls.

4.6 COSPAS-SARSAT system: basic concept.

4.7 General knowledge of other radio gear: EPIRB's, portable VHF and radar transponders.

4.8 Maritime radio communication centres. Radio-medic service.

4.9 Radio-electric regulations for pleasure crafts in Navigation Zones 2 to 5. Ship Radio station License and other service documents. Installation of radio equipment.

5. Legislation.

5.1 Definition, drawing, measuring of interior waters, territorial sea, adjacent zone, economic exclusive zone and off shore waters. States rights and duties regarding all said waters.

5.2 Peripheral Maritime Administration: Port Authorities: functions and attributions. Ship's registration: definition and legal effects. Navigation Patent, Role, Navigation License. Ships' registration: procedure. Ships' Registry: nature, organisation, content. Mobile Property Registry: nature, organisation, content.

5.3 Assistance, rescue, tow, findings, extractions and collisions at sea: legal differences and concept, procedure and competent official bodies for the processing of files. Compulsory civil liability insurance: covered risks. Maritime protest. Navigation logbook.

5.4 Prevention of Maritime Pollution: elementary notions about MARPOL Treaty Annexes I, IV and V. Notions on pleasure craft discharge and spillages into the sea, according to Order FOM 1144/2003, and about delivery of waste generated by pleasure crafts, according to Royal Decree 1381/2002. Skipper's responsibility, how to proceed in case of spillage sighting. Emergency contingency plan in case of maritime pollution caused by vessels collision or beaching.

5.5 Maritime safety. Safety, rescue, fire fighting and navigation gear for pleasure crafts as per Order FOM 1144/2003. Pleasure craft revisions and inspections: authority, types of inspections as set out in Royal Decree 1434/1999 of 10th September. Navigability certification. Brief description of International Signal Code: single flag signals and flash signals.

B) Basic safety and navigation practice.

1. Recognising lights, light houses, beacons and other vessels' lights. Approach.

2. Radar practice: positioning by bearing, mark and distance: Marks to other vessels. Coast recognition. Disturbances.

3. Abandon ship practice. Use of life raft: stowage and loosening, launching, inflating, righting and boarding; use of gear included in life raft. Survival at sea. Shipwrecked: how to behave in the water; living on a liferaft: watches, rationing, drift anchor. Nearest coast. Knowledge and use of a life vest. Knowledge and use of a life raft and its equipment.

4. Track organisation: use of charts, pilot books, light house books, tide yearbooks and radio stations nomenclature. Track drawing. Water, food and fuel calculations. Checklists.

5. Coastal navigation. Dead reckoning off shore navigation.

6. MOB search and collection.

7. GPS navigation: set up, situation, track and waypoints introduction, errors and corrections.

8. Low visibility navigation with radar and GPS:

9. Bad weather: election of safest track.

C) Basic radio communications practice.

Practical procedure for sending and receiving VHF radio telephone and DSC distress calls. Practical procedure for VHF public correspondence calls. Practical use of EPIRB's, radar transponders and portable VHF gear.

YACHT CAPTAIN (For unrestricted operation of yachts of any size, CY or Capitán de Yate)

A) Theoretical Knowledge.

1. Astronomy and Navigation.

1.1 Firmament: Main sky lines. Vertical line or Nadir-Zenith. Rational or true horizon. Horizon types. Vertical semicircle. Almucantar. World's axis or Pole lines: elevated and depressed Pole. Celestial equator. Celestial meridians. Local meridians. Superior and inferior. Meridian zero or first meridian. Parallels. True NS and EW lines. Primary vertical.

1.2 Coordinates of heavenly bodies: horizontal coordinates, height and azimuth. Diferent ways to count azimuth. Zenith distance. Amplitude. Hourly coordinates. Declination and Schedule. Angle on the Pole. Polar distance or co-declination. Ascension difference. Study of apparent sun movement. Ecliptic. Uranographic equatorial coordinates. Declination and straight climb. Sidereal angle. Earth's orbit around the sun. Zones. Climates. Seasons.

1.3 Position triangle: its parts.

1.4. Apparent movement of heavenly bodies: generalities. Day and night time. Dawn and set of heavenly bodies. Pass of heavenly bodies through local inferior and superior meridian.

1.5 Moon phases.

1.6 Stars: bearing to find major stars from Ursa Major, Orion, Scorpio, Pegasus square and Southern Cross constellations. Catalogues and planispheres.

1.7 Universal time. Time difference among different locations. Reduced time. Time zones. Legal time. Official time. Relationship among UTC, local civilian time and legal time. Time chronometer in a digital clock, adjusted to UTC. Date ion 180º meridian. International date change line.

1.8 Nautical almanac: description. Greenwich solar schedule and declination calculation. The same, with planets and stars. Passing from UTC time to local time and vice versa. Calculation of sun passing through local meridian time. Idem for planets and stars: particular cases. Calculation of sunrise and sun

dawn time with the almanac. Dawns. Sextant: description, reading. Index correction. Observation of a heavenly body's height with the sextant: sun, planet or star. Particular case of meridian height. Correction of observed heights.

1.9 Heavenly bodies recognition. Particular case in superior or inferior or their proximity. Heavenly bodies identifiers.

1.10 Projections: Projections used in naval navigation. Idea of Mercator projection. Charts scale. Classification according to scale. Port guides. Blank charts.

1.11 Height line.

1.12 Position using height lines.

1.13 Loxodromic track: Loxodromic equation. Calculation of direct and inverse case.

1.14 Concept and calculation of orthodromic track.

1.15 Kinematics: generalities. Absolute and relative movement. Speed triangle. Manoeuvring rose. Study of other vessel's relative movement. Finding other vessel's course and speed knowing its relative movement. Reaching another vessel as quickly as possible. The same, without altering our course. The same, in a given time period. Steering to pass or situate ourselves at a given distance from another vessel. Radar kinematics.

1.16 Earh magnetism: terrestrial magnetic parts. Distribution.

1.17 Compass deviation: Cause. Magnetic fields that interact with vessel's compass. Calculation of Polar Star's azimuth using the nautical almanac.

1.18 Radar: basics. Description and operation. Screen interpretation. Marks and bearings. Distance measuring. Shadow zone. False returns. True movement radar. Practical use.

1.19 GPS navigation. Generalities, description and operation.

1.20 Nautical publications: books of currents. Track organization. Pilot charts.

2. Meteorology and oceanography.

2.1 Atmosphere: composition.

2.2 Pressure: main and secondary isobaric formations. Atmospheric pressure variations.

2.3 Temperature: Temperature in the atmosphere. Air temperature. Variation with height.

2.4 Humidity: relative humidity. Hygrometer. Psychrometer. Changes in the state of water. Condensation. Dew point.

2.5 Clouds: classification. Cloudiness. Visibility.

2.6 Falls: classification and forecast.

2.7 Storm forms: Squalls. Water spots. Tornados. Electric, acoustical and optical phenomena.

2.8 Wind: wind general systems. Pressure and wind distribution. Trade winds and general western winds. Equatorial and tropical doldrums. Polar winds. Monsoons.

2.9 Air masses. Fronts: air masses, classification, cycles. Warm and cold fronts: meteorological variables.

2.10 Low and high pressure systems: Standard low pressure system. Life cycle. High pressure systems. Associated weather. Extra tropical low pressure systems: formation, development and disappearance.

2.11 Tropical cyclones: formation, trajectory and life cycle. Danger and manageable semicircles. How to handle cyclones.

2.12 Weather charts and bulletins, forecast: international, general and local weather forecasts and reports. Weather forecast zones. Basic interpretation of a meteorological chart.

2.13 Maritime currents: causes, formation, tidal, classification, counter currents. Main World currents. Gulf current, its influence on Spanish coasts.

2.14 Waves: formation, characteristics. Wind and ground swell.

2.15 Floating ice: origin, limits and types. Areas and time of the year where they are most frequent. Navigation in ice zones.

3. Theory of the vessel .

3.1 Static transversal stability.

3.1.1 Stability: definition and classification.

3.1.2 Balance cases.

3.1.3 Initial stability: concept and stability par momentum calculation.

3.1.4 Stability criteria: concept.

3.1.5 For big heeling. Calculation and drawing of righting arms curve.

3.1.6 Effect of water over deck on transversal stability.

3.1.7 Rolling period: relationship with initial stability, soft and hard vessels.

3.1.8 Transversal synchronism: concept and ways to avoid it.

3.1.9 Pitching synchronism, consequences and how to avoid it.

3.2 Transversal static stability curve.

3.2.1 Calculation of transversal static stability curve.

3.2.2 Main curve parts.

3.2.3 Importance of AVS and maximum value for righting arm.

3.2.4 Importance of beam and free board for stability.

3.2.5 Concept and use of hydrostatic curves.

3.3 Dynamic stability.

3.3.1 Concept and calculation of dynamic stability and its importance.

3.3.2 Action of wind on dead Works.

3.3.3 Wind caused heeling par.

3.3.4 Maximum theoretical and practical heeling angle, caused by wind.

3.4 Longitudinal static stability. Variation of trim by movement, load or unload of weight. Unitary trim momentum.

3.5 Free surfaces. Influence on transversal static stability. Correction.

3.6 Dry docking and running aground.

3.6.1 Operations to refloat vessel after running aground.

3.6.2 Draft and heel in order to enter a dry dock.

3.7 Resistance

3.7.1 Resistance against movement.

3.7.2 Effects of hull appendixes and hull fouling state.

3.7.3 Resistance resulting from sea conditions.

3.7.4 Resistance in shallow waters and channels.

3.8 Prevention of Maritime Pollution: elementary notions about MARPOL Treaty Annexes I, IV and V. Notion about pleasure craft discharge and spillages into the sea, according to Order FOM 1144/2003 from April 28, and about delivery of waste generated by pleasure crafts, according to RD (Royal Decree) 1381/2002 from December 20. Skipper's responsibility, how to proceed in case of spillage sighting. Emergency contingency plan in case of maritime pollution caused by vessels collision or beaching.

3.9 Maritime safety. Safety, rescue, fire fighting and navigation gear for pleasure crafts according to Order FOM 1144/2003.

4. English

4.1 English knowledge for translation into Spanish of nautical publications in English.

4.2 Sending and receiving messages using IMO's Standard Marine Communication Phrases: introduction, generalities, Parts A, B1 and B2.

5. Radio communications.

5.1 Expressions and definitions used in radio communications.

5.2 Radio frequencies. Concept of frequency, radio cannel and wavelength. Radio electric spectrum. Different kinds of wave propagation. Modulation and emission types. DSC and Inmarsat frequencies for distress, urgency and security calls in DGMSS and for public correspondence. Batteries for radio equipment. Care and basic maintenance.

5.3 Regulations about maritime services. Date and time nomenclature. Measures against interference. Tests. Secret of communications. Communications priority order. Radio station identification. Formation of call ID and MMSI numbers.

5.4 Operational procedures for public correspondence.

5.5 DGMSS: Concept and functions. Introduction and plan of system. Navigation Zone 1 and its relationship with maritime zones A1, A2, A3 and A4. Used communication means. Terrestrial services of short, medium and long range. Satellite services. Basic concept of DSC.

5.6 Operational procedures for distress, emergency and security communications in DGMSS in VHF, MF, HF and Inmarsat. Alert transmission and retransmission, receipt confirmation and assistance traffic. Cancellation of involuntary alerts. Communications for SAR coordination. Communications in accident location. Location signals. Maritime security information diffusion.

General communications. Bridge-to-bridge communications. Test of equipments used for assistance and safety.

5.7 Inmarsat system: general concept. Space segment. Types of vessel terrestrian stations. Group Calling System.

5.8 NAVTEX: general concept and system configuration. Types of messages. Emissions schedules. National Navtex stations.

5.9 COSPAS-SARSAT. General concept and system configuration. Coverage types.

5.10 DGMSS subsystems: 406 MHz EPIRB's, portable VHF, Radar transponders and Navtex receivers.

5.11 Radio maritime Communication Centres and Maritime SAR Coordination Centres. Radio medical service.

5.12 Radio electric regulations for pleasure crafts. Inspections. Ship Radio Station Licenses and other service documents. Equipment installation.

B) Basic navigation and safety practice.

1. Radar kinematics. Reaching a vessel as quickly as possible. Passing at a given distance form another vessel.

2. Fuel, water, food calculations and checklist for an ocean cruise.

3. Oceanic track preparation: track organisation, chart preparation. Use of pilot guides in English, Maritime Radio Stations nomenclature and Sailing Directions, Notice to Marines, List of Lights and Fog Signals and Pilot Charts. Abbreviations and symbols.

4. Use of sextant.

5. Practical use of radar in navigation.

6. Approaching exercise in day and night time. Light house, beacon and other vessels' lights recognition practice.

7. MOB search and collection exercises. Bad weather: running the storm, selection of safest track. Abandon ship exercise. Survival at sea. Knowledge and use of life vests and life rafts.

8. Logbook upkeep.

C) Basic radio communication practice. Practical procedure for sending and receiving radio telephone and DSC distress, emergency and security calls in VHF, MF/HF and C type Inmarsat terminals. Practical procedure for public correspondence calls in the aforementioned systems. Practical use and care of EPIRB's, radar transponders, portable VHF systems and Navtex receivers.

ANNEX IV

Compulsory practice for operation of pleasure sailing crafts.

A. Specific sailing practice will be performed in only one session. This is valid for all certifications, except Basic Navigation Skipper, according to the following scheme:

A.1 Knowledge of a Marconi rig. Mast, spreaders, boom, pole, stays and shrouds. Halyards, topping lifts, vang, sheets and retentions. Main sail and jib. Battens, parts of the sail. Winches.

A.2 Sail hoisting and lowering manoeuvres: free to leeward, need to head into the wind, order to follow when hoisting or lowering sails.

A.3 Steering under sail: start, dead angle, beat, reach, close reach, downwind. Stopping the craft.

A.4 Influence of sail and drift centres on steerage drifting. Keel. Correcting course to windward.

A.5 Difference between jibing and tacking. Heel control. Mainsheet traveller, flattening the sails. Reducing sail area: changing sails, reefing, furlers. Anchoring and anchor hoisting under sail.

A.6 MOB manoeuvre under sail.

A.7 Bad weather: use of harness, trysails and storm jib.

B Specific sailing practice for Basic Navigation Skipper will follow this program:

B.1 Knowledge of a Marconi rig: mast, boom, shrouds and stays. Halyards, vang and sheets. Mainsail and jib.

B.2 Hoisting and lowering sails. Starting and stopping the craft under sail. Beat, reach and close reach. Gibing and tacking. Anchoring and anchor hoisting manoeuvres under sail.

B.3 MOB manoeuvring under sail.