Workshop Biscarrosse May 2010 Proceedings

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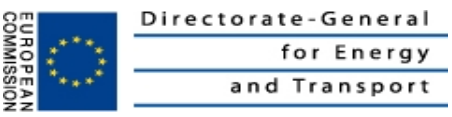

Control Page

This version supersedes all previous versions of this document.

Versio	Date	Author(s)	Pages	Reason
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Contents

List of figures

List of tables

Introduction

The FUSETRA consortium organized a workshop in Biscarrosse, France on 14th May 2010 to gather information about seaplane/ amphibian operational experience and to enlarge its network of stakeholders involved in the seaplane/ amphibian transport system. It was the first of three workshops to be held in Europe within the timeframe 2010 – 2011. The second workshop aims at aircraft related issues and is to be held in Malta in September 2010. The third workshop aims at regulatory issues and will be held in the Baltic Area in 2011.

The following speeches have been given during the Biscarrosse Workshop:

- Project Overview (Benedikt Mohr - Technische Universität München)
- Reintroduction of seaplane aviation in Hungary (Sandor Varga - Varghson Ltd.)
- Seaplane operations based in the US Pacific Northwest Region (Reed Hansen)
- Seaplane operation in Malta (Speaker: Barry Lightening – Harbor Air Malta)
- Certification, Licensing, Operation of Seaplanes and Amphibians (Manfred Reichel – EASA)
- Seaplane operation possibilities and limitation at the French Riviera (Sakhr Naal – AEROMER)
- Aspects of Seaplane operations in France, objectives in changing regulations, noise abatement, insurances (Olivier Ripoche - Commission Hydraviation de l'Aéro Club de France)

This paper gives a summary of contents discussed by speakers and participants. All papers can be found on the Fusetra website – www.fusetra.eu.

1 FUSETRA Project

It can be observed that seaplane and amphibian operation and manufacturing are very well established in the US and Canada and business opportunities for seaplane operators do exist in a wide variety.

On the other side of the Atlantic the story looks different. Operators in Europe are very scarce and the European seaplane transport system seems to be sustained by enthusiasts. The future requirements towards a sustainable seaplane / amphibian transport system will be investigated in the FUSETRA work packages and workshops. The main FUSETRA goals are:

- Identification of the State of the Art of Seaplane/ Amphibian transport system
- Identification of strength and weaknesses of the European Seaplane / Amphibian transport system
- Demonstrate the needs and quantify the potential of seaplane traffic business development
- Propose recommendations for the introduction of new seaplane / amphibian transportation system to improve passenger's / customer's choice as well as better time and cost efficient travel and transport
- Roadmap for future improvement

1.1 Project Funding

FUSETRA is an FP7 (Seventh Framework Program for Research and Technological Development) funded Support Action (CSA). FP7 is the EU's main instrument for funding research in Europe and it runs from 2007 to 2013. FP7 offers a budget for research on transport of €4.1 billion. FP7 is made up of 4 main blocks of activities:

- Cooperation - Collaborative research
- Ideas - European Research Council (ERC)
- People - Human Potential, Marie Curie
- Capacities - Research capacities

FUSETRA is located in the ideas block which has the goal to develop a portfolio of projects to understand the impact of the ERC based on exploratory, state-of the art, scholarly work on broadly defined topic areas and questions. The need for new transport networks and infrastructures in Europe is growing and development costs are increasing. Their development at the European level can

become a reality only through the collaborative activities of the various RTD providers. CSA help to build networks among relevant stakeholders investigating relevant future topics which contribute to:

- reducing the impact of transport on climate change
- intermodal regional and national transport
- environmentally efficient aviation
- integrative architectures

1.2 Project Background

The annual air traffic growth rate of 5% and higher was nearly constant over the last decade and IATA forecasts the same or even higher rate for the coming years. As a consequence, the capacity overload of current airports and the demand for point-to-point connections even to destinations away from existing airports has considerably grown. Furthermore, the EU offers a large number of lakes and shorelines suitable for seaplane and amphibian traffic increase. Stakeholders in the seaplane / amphibian aviation system deem Europe as a high potential market for an international air traffic system using seaplanes and amphibians.

1.3 FUSETRA topics

The following paragraphs describe the main topics within the FUSETRA scope to be dealt with. Some of the topics have already been completed at the time of the Biscarrosse workshop; others still have to be elaborated.

1.3.1 Operational Aspects

FUSETRA will exemplarily identify regions where transport connectivity could be improved with seaplane operations (coverage of peripheral areas). Another option would be to identify routes to be improved with seaplane transportation to de-congest highly frequented routes.

Seaplane park infrastructure will be investigated to determine the current status of different infrastructures used in Europe for seaplane operations. Future improvements for cost efficient and secure seaport operations will be discussed.

To exemplify the results of this task, a detailed scenario for future use of a seaplane in the chosen region will be worked out with a commercial view on passenger / cargo / special mission / environmental issues.

1.3.2 Aircraft Aspects

FUSETRA's aim is to identify the State-of-the-Art of the seaplane / amphibian transport system. Therefore, it is important to identify current aircraft types available for commercial transport as well as current modes of operation. Other issues to be identified are:

- Total demand for aircraft in 2020
- Possibilities for conversion of existing non-seaplanes
- Seaplane requirements derived from operational issues
- European mission profile of Seaplanes / Amphibian

1.3.3 Regulatory Aspects

Maybe the main part of the discussions during the project will deal with regulatory aspects as a result from the obvious hurdles commercial seaplane operators have to deal with. Topics are:

- Legislative aspects (infrastructure, airworthiness, national differences)
- Legislative aspects of seaplane / amphibian operation
- Safety
- Pilots training & certification; Availability of pilots
- Uniform legislation within Europe

2 Workshop Results

The following paragraphs present the results of the presentations held during the Biscarrosse workshop and respective discussions among participants.

2.1 Seaplane Aviation and Authorities worldwide

Seaplane operators in Canada have been operating continuously for many years, and as the regulators have advanced in complexity and sophistication, so the seaplane industry has moved on a parallel course. As the seaplane operators had been around for a long time they had influence and were able to input valuable information gained from operational experiences to their local regulators regarding the decisions they have had to make in the advancement of safety regulating commercial seaplane operations.

The Republic of Maldives Civil Aviation Department can be described as a somewhat young Aviation Authority, but its development has grown almost totally alongside the local seaplane industry which is very active. As such, they have a far better understanding of the industries requirements and the industry has been in a position to have positive input to the Civil Aviation Department in its safety regulating activities. The Maldives Civil Aviation Department, Transport Canada and the FAA are responsible to one government.

In Europe the safety regulators and standardization teams have a responsibility to a group of different states often with different priorities. As a result, many difficulties arise in Europe in the commercial operation of seaplanes both from an operational point of view and with the various authorities. In addition, the Joint Aviation Requirements, the regulatory requirements for commercial aviation operations in public transport, have not been established with wide input from seaplane operators.

The Joint Aviation Authority has been programmed around a number of independent states, all with differing criteria and it will be difficult enough coordinating a common basis from which to manage commercial seaplane operations within Europe let alone trying to emulate or introduce regulations or methodology gained from states outside the European Union where there is a better understanding between operators and the regulators.

FUSETRA aims at developing a culture of trust and understanding between the seaplane operators, and the different aviation and maritime authorities.

2.2 Operational Aspects

2.2.1 Landing areas

Seaplanes and Amphibians need landing areas suitable for a safe take off and landing. Sahkr Naal from Aeromer states that within France the following limitations apply for “Hydrobases” and “Hydrosurfaces” (permanent or temporary):

- VFR only
- 300 m off coastline
- 350 m diameter free of boats and swimmers
- During TKOF/LDG no over flying of boats or persons (conglomerates) below a minimum allowed height of 500 ft.

To apply for a new landing strip the operator needs to file a request at the Prefecture Maritime.

FUSETRA aims at collecting data on the application process for new water landing sites throughout Europe. The database shall contain:

- Name and contact details of all relevant authorities
- Required documents
- Estimated Cost

Differences in the requirements will be discussed with the authorities.

2.2.2 Weather

Seaplane operations mainly depend on the weather conditions and impose the main stress on the pilot. Therefore, the area for seaplane operation have to chosen carefully. Sahkr Naal (Aeromer) states that sea and wind conditions can vary heavily from one “Hydrosurface” to another (Cannes, Nice, Marseille). The mistral in the Mediterranean usually blows from the north or northwest, but in certain pre-alpine valleys and along the Côte d' Azure, the wind is channelled by the mountains so that it blows from east to west. The different sea and wind conditions in which Aeromer operates safely are indicated in Table 1 (green: operable for seaplanes at Aeromer).

Beaufort wind scale with corresponding sea state codes					
Beaufort number	**Wind velocity (kts)**	**Wind Description**	**Sea State description**	**Sea State**	
				Term and Height of Waves (feet)	**Condition number**
0	Less than 1	Calm	Sea Surface smooth and mirror like	Calm, glassy 0	0
1	1-3	Light Air	Scaly ripples, no foam crests	Calm, glassy 0	1
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Calm, rippled 0 – 0.3	2
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Smooth, wavelets 0.3 - 1	3
4	11-16	Moderate Breeze	Small waves, becoming longer, numerous whitecaps	Slight 1 - 4	4
5	17-21	Fresh Breeze	Moderate waves, taking longer form, many whitecaps, some spray	Moderate 4 – 8	5
6	22-27	Strong Breeze	Larger waves, whitecaps common, more spray	Rough 8 – 13	6

Table 1 Beaufort wind scale with corresponding sea state codes

2.2.3 Other Activities in the Water

Safe seaplane operation is often threatened by other water activities. Especially in the registration process of new water landing strips the high frequentation by other means of transport and activities can become a vital issue for operators. Strategies for safe seaplane operation adapted to the local situation should be available. Other water activities can include:

- Helicopters
- Banner flying
- Jet skis
- Parachutes
- Sailboats, Motorboats

- Swimmers
- Fishers
- Others (area specific)

2.3 Aircraft Aspects

2.3.1 Corrosion

Corrosion is a daily threat for seaplane operators especially if operation takes place in salt water. While airframe structure of a seaplane is built out of aluminium, it is held together with stronger steel bolts and hinges and bearings, and the amphibious landing gear is made with steel to withstand the heavy loads. These dissimilar metals generate an electrochemical process where the aluminium becomes the reactive anode and the steel becomes the cathode, and it is all conducted by the electrolyte water. The more salt in the water the better the conductive properties.

To prevent the electrolyte from forming a conductive path between the dissimilar metals can be alleviated by continuous maintenance:

- Anti corrosion means at every 100 hr and annual inspection
- Fresh water rinsing after every water landing
- Continuous Greasing and Waxing
- A sacrificial anode is attached to the floats and kept conductive (Zinc plates)

2.4 Regulatory Aspects

Manfred Reichel from EASA gave an overview about currently existing regulations. Furthermore, coming parts of rules have been introduced and the process of rules establishment / refinement has been shown.

Figure 1 shows the exemplary structure of currently existing EASA regulations.

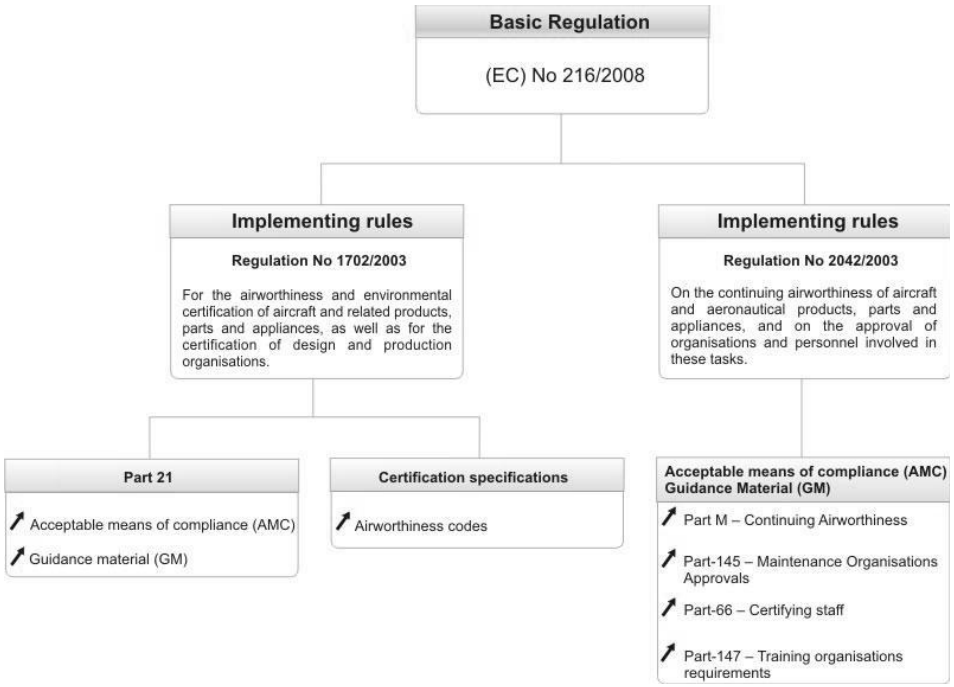

Figure 1 Exemplary structure of EASA rules

2.4.1 Seaplane Certification

Depending on the class of the aircraft, a different set of rules applies:

- CS-LSA, not yet adopted
- CS-VLA, Very Light Aeroplanes
- CS-23, Small Aeroplanes
- CS-25, Large Aeroplanes
- Foreign requirements (FAR, RP)

However, not all codes have adequate requirements for seaplanes. Seaplane certification on water loads only exists for CS-VLA and CS-25 aircraft. Special conditions on performance are only accepted for CS-25 aircraft. Noise for (pure) seaplanes is not considered.

2.4.2 European Air Operation Classification

European Air Operations are classified and defined in the Basic Regulation (Article 3). A commercial operation would usually be an air taxi or On-demand charter or aerial work against remuneration. A non-commercial operation would usually be a corporate operation or private owner operation. The categorization can be found in Figure 2.

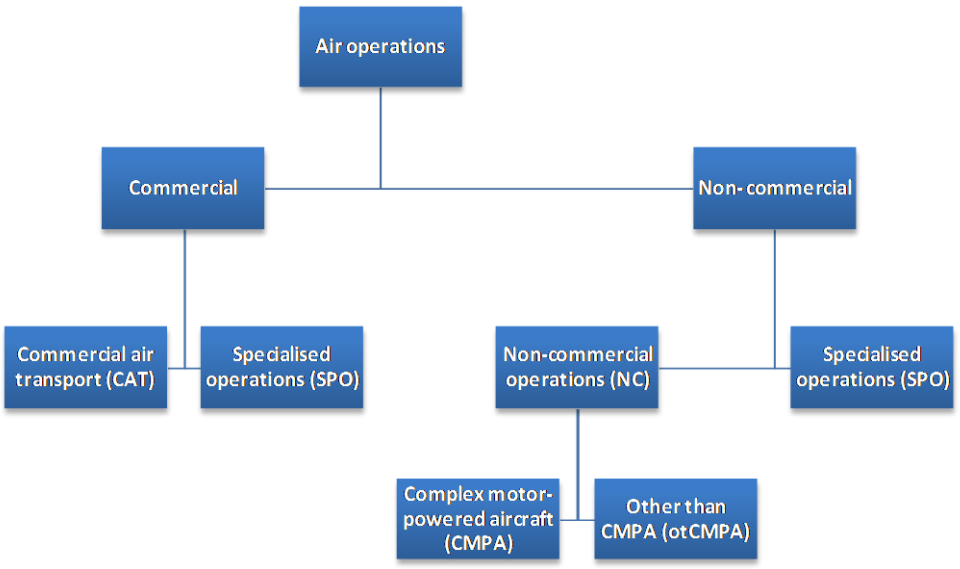

Figure 2 European Air Operation Classification

EASA rules are applicable to operators with their principal place of business in Europe, regardless if their aircraft is registered in the Community or outside of the Community. The scope of rules varies according to type of air operation:

Commercial operators	Part-CAT or Part-OTO, Part-SPA, Part-OR (i.e. OR.GEN, OR.OPS)
Non-commercial operators	Part-NCC or Part-NCO or Part-SPO, Part-SPA; if CMPA, Part-OR (i.e. OR.GEN, OR.OPS)

Table 2 Scope of EASA rules

2.4.3 Coming Parts of Rules

EASA is updating existing rules and implementing new rules according to market demands in a continuous process in order to:

- Establish and maintain a high uniform level of safety
- Align rules with ICAO SARPS and the content of existing rules as far as possible
- Promote performance based rulemaking
- Consider the proportionality of rules
- Provide flexibility to address diverse operational needs and circumstances
- Promote cost-efficiency in the certification and oversight processes

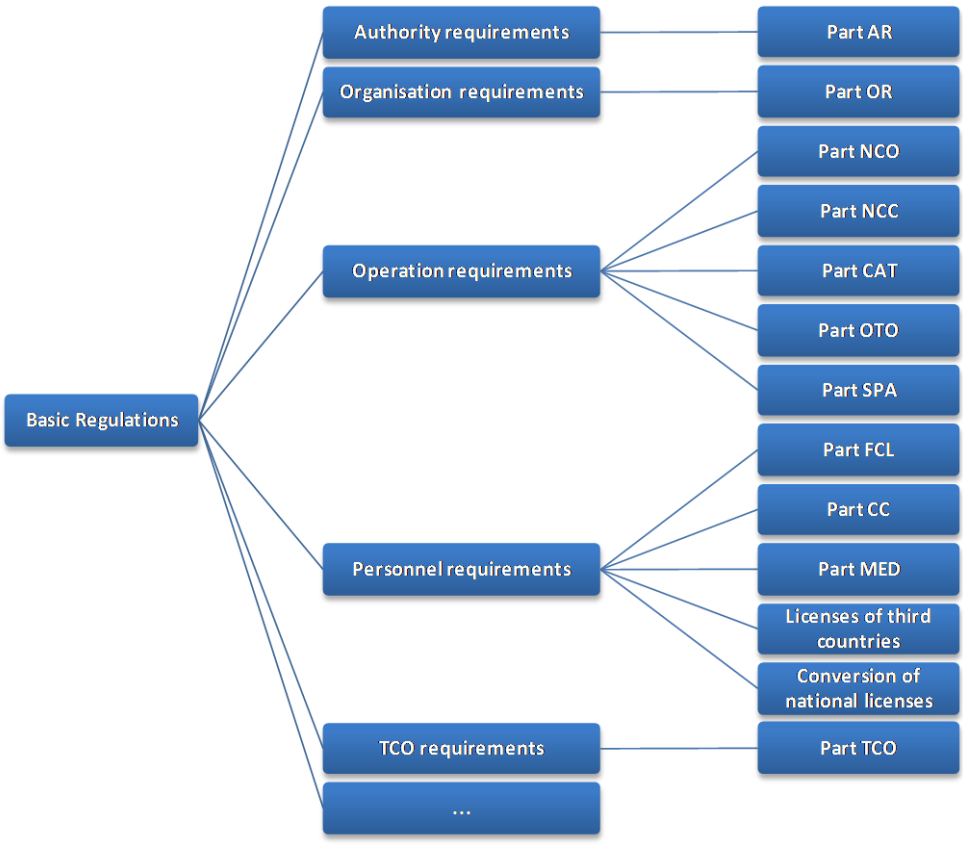

Figure 3 Coming EASA regulations

2.4.4 Pilots Licensing

The EASA flight crew licensing (FCL) structure is defined as follows:

- Subpart A – General Requirements
- Subpart B – Light Aircraft Pilot License
- Subpart C – PPL / SPL / BPL
- Subpart D/E/F – CPL / MPL / ATPL
- Subpart G – Instrument Rating -IR
- Subpart H – Class and Type ratings
- Subpart I – Additional Ratings
- Subpart J – Instructors
- Subpart K – Examiners Appendices
- Acceptable Means of Compliance (AMC) and Guidance Material (GM)

The basis for the regulation of flight crew licensing in Europe can be found in FCL.001:

- Article 7: Pilots
- Article 21: Pilot certification
- Annex III: Essential Requirements

- Training
  - Theoretical knowledge / Practical skill / Language proficiency
  - FSTDs/ Training course / Instructors / Examiners
- Experience requirements
- Training organizations
- Medical fitness

At present, North America is the single catchment area of pilots with an acceptable range of experience according to Harbor Air Malta (HAM). For HAM experience means a fair amount of practice in assessing the surface conditions for acceptability.

Currently, pilots are required to gain 200 hours of seaplane experience with 200 landings and take offs in 6 months. HAM states that this requirement should be subject to discussion: in comparison 100 hours of seaplane flying with 300 landings and take offs spread over at least one year in order to expose the pilot to the weather conditions of a full year season. In addition to that, seaplane experience that has been gained only within the fresh water lakes in the mountains is not as valuable as exposure to harbor or close inshore operations.

For successful seaplane operations qualified pilots are a must. Therefore, the discussion of seaplane pilot regulations, describing the pilot requirements for safe seaplane operations, is highly encouraged.

As most seaplane pilots come from North America, they don't hold a JAR-FCL (Flight Crew Licensing). However, JAR-FCL 1.015 allows for an authority to issue a validation of North American licenses for use on aircraft in its state. This may only be issued for 1 year provided the basic (North American) license remains valid. But, the minimum requirement for a pilot is to have completed 1000 hours pilot in command time since obtaining an instrument rating. At present most sea planes are prohibited from entering known icing conditions, as a result all operations are day VFR only.

Very experienced seaplane pilots do not necessarily hold an instrument rating and therefore do not have the possibility to get their JAR-FCL (if they would like to go through the process of examinations required to get a JAR-FCL license).

Another issue is the transfer of non-JAA seaplane endorsements onto the JAR license. Harbor Air Malta states, that there is no common way of getting the aircraft on the pilot license as a seaplane rating as shown in the JAA Administration and guidance material section 5 Part 2.

2.4.5 Landing Sites

It is a requirement in Europe that all landings and takeoff strips on water or land must be at a licensed aerodrome, or on a site approved by the authorities.

Harbor Air Malta experienced that the Civil Aviation Directorate and Maritime Authority of Transport in Malta have gained confidence in its operations. Therefore, only few complications have arisen when it came to the approval of a further landing site. However, they experienced also a tendency by both authorities to stall on a decision. This was a result of a lack of common guidelines on which to base their decisions on and made the establishment of seaplane operation in Malta more time consuming than necessary.

Currently, Harbor Air Malta tries to establish a new service into Sicily, Italy. They approached regional authorities for approval of a new landing site. It became clear that the lack of guidance material (i.e. regulations) on how the landing site is to be set up and how it is to be managed became a showstopper for the time being. The National Aviation Authority and needs to be satisfied as to the suitability of a landing site where aircraft registered in their state are to land for commercial operations. This authority will in turn be satisfied as to the landing sites suitability provided the authority in the state where the landing site is situated is satisfied as to its levels of safety. The maritime authority during all this, having no guide lines, becomes uncertain as to what is required and where the final decision lies and as such become a showstopper in the process of establishing a new landing site.

Operations to licensed aerodromes, provided they are within the operating area stated in the Operations Manual and Air Operator Certificate (AOC) fall under normal EU legislation. For this reason, the same should apply to water landing sites which are shown to be properly managed, and can provide safe operations.

HAM states that Appendix 1 of OPS 1.005(a) gives a few pages of alleviations granted to operations of performance B aircraft. These alleviations originate from operators of performance B aircraft who showed that it was not possible to operate without these alleviations. What seaplane operators need in the EU-OPS is a similar set of alleviations to cover seaplane operations, which should result seaplane operations under Appendix 1 (or other appendices for seaplane operations).

Operators require the adoption of some EU-OPS to cover seaplane operations and for a specific alleviation on some of the current regulations. Furthermore, a

standard set of rules, requirements and acceptable means of compliance for all member states for the guidance and co-ordination of both maritime and aeronautical authorities is required from the European authorities.

2.4.6 Facility Regulations

Landing sites have to be equipped with reasonable facilities in the event of accidents. Guide lines on an acceptable level of rescue equipment and training have to be set up Europe wide.

2.4.7 Flight Time Limitations

Harbor Air Malta states that the limitations as published in Part Q of EU-OPS are too strict for a seaplane operator. Seaplane operation only takes place in VFR conditions during daylight hours and therefore, reduces the pilots stress level dramatically. HAM mentions that safe relaxation of some of the restrictive conditions imposed by Part Q should be discussed within the FUSETRA project together with authorities. The alleviation on flight time limitations are needed to better meet the requirements of seaplane operations by making them more financially sustainable without any resultant erosion of flight safety standards.

2.4.8 FAA regulations

As a reference a list of relevant FAA regulations is given here to provide a complete overview of regulations concerning seaplane operations.

- FAR Part 119 (Certification of Air Carriers and Commercial Air Operators); Part 119 specifies two types of air operator certificates: 1. Air Carrier –under which the operator is permitted to conduct interstate, foreign, and overseas transportation; 2. Operation Certificate –under which the operator is permitted to conduct intra-state transportation. Part 119 also references passenger seat configuration and payload capacity to determine applicable operating rules.
- FAR Part 121 (Operating Requirements for Domestic, Flag Common Carriers and Supplemental Operations -with aircraft of more than 30 seats and a payload exceeding 7,500 pounds engaged in common carriage).
- FAR Part 125 (Operating Requirements for US Civil Aircraft with a seating capacity of 20 or more seats and maximum payload capacity of 6,000 pounds or more when not engaged in common carriage).
- FAR Part 129 (Operating Requirements for Foreign Air Carriers and Foreign Operators of US Registered Aircraft).

- FAR Part 135 (Commuter and On-Demand Regulations and Rules – including both scheduled and non-scheduled operations. In general, commuter and on-demand operations, both scheduled and non-scheduled, limited to 30 or fewer seats, excluding each crewmember seat, and a payload capacity of 7,500 pounds or less, are conducted under Part 135.) As such, Kenmore Airline, for example, is authorized to operate under FAR Part 135.
- FAA guidance on establishing or modifying a seaplane base is provided in the following Advisory Circular.
- FAA Advisory Circular 150/5395-1, dated 6/29/94 (Establishment or Modification of Seaplane Base – indicates procedures required including from other permitting agencies and governments.)

The French Seaplane Association requested the concentration to only one national authority responsible for licensing seaport and seaplane traffic and common European rules binding for all EC states, at least.

3 Results

The discussion during the Biscarrosse workshop of the above topics resulted in the following statements:

1. General:

   FUSETRA aims at a better common understanding of the seaplane pilots / operators requirements for safe and economic operations. It is meant to streamline requirements for future training, licensing and recurrent checking of seaplane aircrew intending to operate within Europe on a European basis. This is meant to be achieved by intensive discussion with all relevant stakeholders.

2. Seaplane Operation:

   Operators intend to establish a European controlled and regulated system of approving or licensing seaplane operating bases acceptable for all commercial seaplane operations (as regular airfields). They should have an accepted method of classification when risk assessment is taken into consideration and remove the need for an operator to negotiate with various authorities other than their own authority when extending operations within Europe.

3. Pilots

   Facilitate seaplane pilot licensing process and adoption of non-JAA licenses and type ratings.

4. Seaports

   Set up an achievable minimum level of training and acceptability of Dock Operating Crew so as to be multi-functional with regard to, assisting in the arrival and departure of aircraft on pontoons or piers, passenger handling, as well as manning the requirements of Rescue and Fire Fighting activities.

   A system of Security management at and around seaplane bases which would be financially achievable to the operating companies and acceptable to the travelling public.