City University London

Andreas Cordes
andreas.cordes@online.de

Job profile and training requirements for European Flight Dispatchers

Submitted as part of the requirements for the award of
MSc in Air Transport Management at City University London

I certify that this project is wholly my own work and that
all material that has been extracted from others has been clearly referenced

Signed 

Supervisor: Professor Roger Wootton

January 2007

Word Count: 14266

Unrestricted circulation

Executive Summary

While operational control and flight dispatch responsibilities are tightly regulated in the United States and in other parts of the world, European regulators leave room for individual solutions of air operators. No training requirements for dispatchers are specified in Europe and there is no common level of qualification. The regulatory background for this situation and recent industry developments are presented.

During the conduct of IATA Operational Safety Audits (IOSA) it was observed that many operators employed staff that was not adequately trained to fulfill their assigned tasks. This has resulted in a significant number of findings.

A comprehensive survey is in the centre of the project. It was conducted among European operators in order to determine the job profile of operational control staff. This includes qualification, tasks and duties as well as interfaces and tools. Operators have been grouped into categories and existing differences have been determined.

Training requirements have been determined corresponding to the job profile which has been established in the survey. The survey results indicate that European operational control personnel have an important role in achieving the goal of safe and efficient operation, but should be thoroughly trained according to ICAO provisions. The outline of a suitable training programme is presented and its market chances are analyzed. Several existing courses have been analyzed.

The industry has recognized the need for adequate training of operational control staff as many operators have increasing difficulties in hiring competent individuals. Nevertheless, the lack of regulatory requirements for a formal basic dispatcher's training makes it difficult for training providers to fill their courses to a level which is required to make the product financially viable.

Content

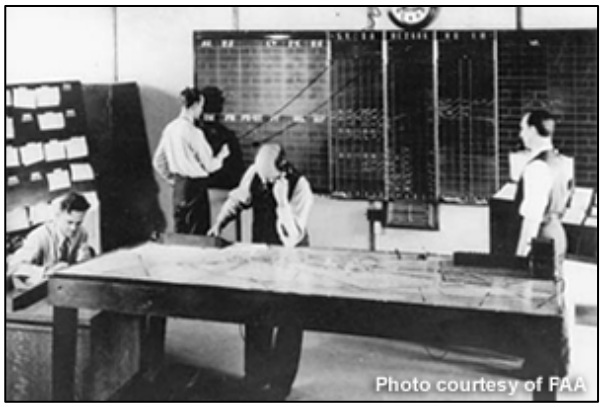
Annexes

1. Introduction

1.1 Outset

Mr. Herb Kelleher, President and CEO of Southwest Airlines stated in front of a Safety Symposium in 1993: "Dispatchers are the heart of the Airline". There is some truth to this exaggerated statement.

The development of the flight dispatching profession had gone a long way until this point. In 2006, the face of the profession still changes at rapid speed, following industry and technological trends.



In 1938 the US Civil Aeronautics Act gave birth to the Aircraft Dispatcher as a profession. The idea was to support flight crews by providing information relevant to the flight. This included weather, infrastructure, and route information as well as fuel calculations. This notion is still valid, even after 70 years of technological development.

Figure 1: Dispatchers in the 1930s. Source FAA

Until today, dispatchers gather all information, analyze the data and use the results in order to determine the route to be followed as well as the minimum fuel requirements for this route. The final product of these pre-planning activities is the so called operational flight plan (OFP), which is handed to the crew together with all other flight information. It is one of the key responsibilities of dispatchers to file the flight plan with the Air Traffic Service Authorities.

However, the profile of the dispatching profession has become more complex. Just as before, dispatchers are responsible for gathering all relevant data pertinent to the flight. Another vital task in today's environment is operational control. Following the actual operation and reacting on irregularities is a function which needs to be taken care of by all air operators. In most cases this task is delegated to flight dispatchers. At least in the U.S. assisting crews in-flight and acting as a focal point in case of an emergency is another area of responsibility of dispatchers.

However, outside the United States this clear picture of the dispatch profession does not exist. Within Europe, there is no standardization whatsoever regarding aircraft dispatch and operational control. Standards vary from country to country and even from operator to operator. This is not only true for responsibilities delegated to dispatchers, but also for the training, competence and skills of the dispatchers themselves.

The captain of a U.S. carrier describes professional dispatchers like this: “My guess is, the average passenger probably has no idea that dispatchers even exist, but to pilots they are absolutely indispensable members of the team, along with mechanics, customer service reps, load planners, ramp workers and many other groups that are an airline's "unsung heroes." They're our "big brother" or "big sister" watching over us from the flight's planning stages until we're parked safely at the destination.” [1]

The captain of a European cargo operator said during an interview: “We fly on a repetitive flight plan which stays the same for the whole season. I receive all weather information via ACARS[2] on the ground as well as in-flight. I can get fuel data from the flight management system. By using my laptop computer I have access to all performance and route data. I believe that operational flight plans and dispatchers are a thing of the past.”

These two opinions are the two extremes. At the time of writing the approach of air operators towards dispatch and operational control on both sides of the Atlantic continue to diverge.

1.2 Purpose

Countries across the globe have found different ways of coping with their responsibility to ensure safe and effective flight planning and supervision. Nevertheless, the basic tasks which need to be accomplished are the same for all operators, regardless of the regulatory environment. It is the intention of this paper to evaluate the working environment of flight operations officers/ flight dispatchers (FOO/FD)[3] in Europe in order to determine their training needs. It is the goal of the study to determine a bottom line of training requirements which is applicable to FOO/FDs in as many European countries

[1] USA Today, online version, 05 SEP 2005
[2] ACARS (Aircraft Communications Addressing and Reporting System). On-board communication system.
[3] FOO/FD: Flight Operations Officer/Flight Dispatcher

as possible. In a second step the outline of a marketable training product shall be presented which can be adopted by suitable training institutions.

1.3 Methodology

Any training for FOO/FDs must be in conformity with legal requirements. Hence, the regulatory framework has been analyzed first, complemented by the international industry standard IOSA[4]. This has only been done to the extent necessary to understand the boundaries of responsibilities and duties and in order to get an understanding of existing concepts of operational control.

The heart of the project is the evaluation of a comprehensive survey that has been undertaken in the European air transport industry. The results of this survey give a representative picture of the status of FOO/FD activities in Europe. This industry practice, embedded in regulations and requirements forms a picture of the job profile of European FOO/FDs.

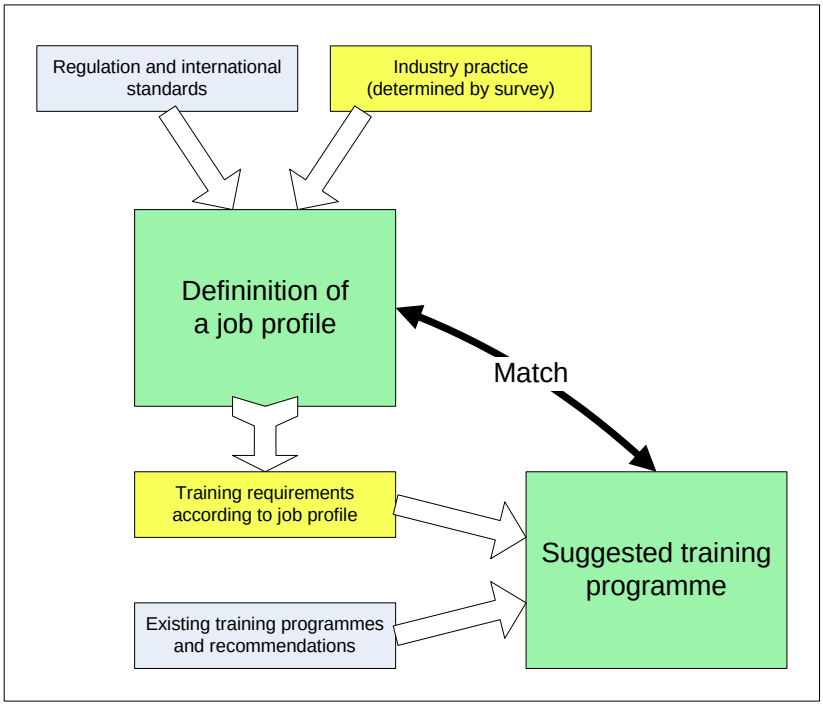


Figure 2: Project Methodology

Training requirements have been established according to this job profile. Selected existing training programmes have been analyzed in order to asses their suitability to meet industry needs. The result is the outline of a proposed training programme for FOO/FDs

[4] IATA Operational Safety Audit. www.iata.org/iosa

working in the European air transport industry and an assessment of the market chances of such a programme.

2. The regulatory framework

2.1. ICAO Provisions

The International Civil Aviation Organization (ICAO) has developed so called SARPS (Standards and Recommended Practices), which are laid down in 18 Annexes. The content is binding for all contracting states, with the exception of “recommended practices”, which are not mandatory. Contracting states may file a notification of differences, wherever a national regulation differs from ICAO provision.

Applicable provisions for dispatchers can be found in Annex 1 (Personnel Licensing) and Annex 6 (Operation of Aircraft). The duties of flight operations officers (FOO)/ flight dispatchers are laid down in Annex 6 Chapter 4.6.1:

4.6.1 A flight operations officer/flight dispatcher when employed in conjunction with a method of flight supervision in accordance with 4.2.1 shall:
•a) assist the pilot-in-command in flight preparation and provide the relevant information required;
•b) assist the pilot-in-command in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit;
•c) furnish the pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight; and
•d) in the event of an emergency, initiate such procedures as may be outlined in the operations manual.

Figure 3: ICAO Annex 6 Chapter 4.6.1

This points out the four basic elements of dispatch and operations control, which are

a) assistance in flight preparation
b) assistance in flight plan filing
c) provision of information in-flight
d) initiation of emergency procedures.

The following passage of Annex 6 Chapter 10, especially the note to 10.1 is root cause for the dispatch related confusion and diversity in the industry today.

10.1 A flight operations officer/flight dispatcher, when employed in conjunction with an approved method of flight supervision requiring the services of licensed flight operations officers/flight dispatchers, shall be licensed in accordance with the provisions of Annex 1.

Note.— The above provisions do not necessarily require a flight operations officer/flight dispatcher to hold the licence specified in Annex 1. In accordance with 4.2.1 the method of flight supervision is subject to approval by the State of the Operator which may accept proof of qualifications other than the holding of the licence.

Figure 4: ICAO Annex 6, Chapter 10.1

The above note gives room for operators to find alternate means of operational control, that do not rely on licensed dispatchers. Many countries use this provision extensively.

Annex 1 Chapter 4.5 outlines in detail the requirements which an applicant has to meet in order to obtain a flight operations officer/ flight dispatcher license. Applicants shall not be younger than 21 years and have to satisfy criteria for knowledge, experience and skills. Competence must be demonstrated to the applicable authority.

The ICAO document Doc 7192-AN/857 Part D3[5] (Flight Operations Officers/Flight Dispatchers Training Manual) describes adequate training which is based on the provisions of ICAO Annexes 1 and 6. The document is 116 pages strong and is divided into 16 chapters outlining training elements for theoretical and practical training. It has been developed over decades and has not been amended since 1998. Since then navigational procedures have changed and the capabilities of computerized flight planning systems have developed significantly. Furthermore, the airline industry has a new face since the arrival of low cost carriers.

2.2 United States (Federal Aviation Regulations)

In order to fully understand the situation in Europe, it is indispensable to be familiar with the approach of the United States towards operational control. This is especially true, as the FAA Dispatchers license has gained growing importance in Europe over the last years.

The United States, as a contracting state to the Chicago convention have translated the ICAO provisions into national legislation in the form of Federal Aviation Regulations (FARs). FAR 121 specifies operating requirements for domestic and flag operations, meaning international air transport. Operations control is covered in FAR 121.533 for

[5] Abbreviated: ICAO Doc 9192-D3

domestic operations and in 121.535 for international operations. Both regulations are identical in defining the responsibility for operations control:

•(b) The pilot in command and the aircraft dispatcher are jointly responsible for the preflight planning, delay, and dispatch release of a flight in compliance with this chapter and operations specifications.
•(c) The aircraft dispatcher is responsible for--
(1) Monitoring the progress of each flight;
(2) Issuing necessary information for the safety of the flight; and
(3) Cancelling or re-dispatching a flight if, in his opinion or the opinion of the pilot in command, the flight cannot operate or continue to operate safely as planned …

Figure 5: Federal Aviation Regulation 121.535

FAR 121.593 (for domestic operations) and 121.595 (flag operations) deal with the authority to release a flight. For this purpose the term "dispatch release" is introduced.

121.593 (domestic operations)
Except when an airplane lands at an intermediate airport specified in the original dispatch release and remains there for not more than one hour, no person may start a flight unless an aircraft dispatcher specifically authorizes that flight.

Sec. 121.595 (Flag operations)
•(a) No person may start a flight unless an aircraft dispatcher specifically authorizes that flight.
•(b) No person may continue a flight from an intermediate airport without re-dispatch if the airplane has been on the ground more than six hours.

Figure 6: Federal Aviation Regulation 121.593 and 595

The above regulation puts U.S. dispatchers into a very strong position. The duties of dispatchers go beyond the tasks described in ICAO Annex 6, which give dispatchers a mere supporting and assisting role. The FARs allocate a high degree of responsibility to dispatchers that interlinks with the responsibility of the pilot-in-command. This system of operational control is known in the industry as system of "shared responsibility" or "joint responsibility". In this system the dispatcher is indeed in the heart of operations, as he is the hub for information flowing from and to the aircraft, ATS[6] units, meteorological offices and the various departments within the airline which have a link to operations control.

The second important feature of the U.S. system is the requirement to actively monitor the progress of each flight. In order to satisfy this requirement, most U.S. Operators are equipped with automatic flight-following systems which depict the exact in-flight position of all aircraft on a monitor along with weather and other relevant information. Dispatchers have a saying in all operational decisions even while the aircraft is en-route and pro-

[6] ATS: Air Traffic Service

actively relay flight safety related information, such predicted turbulence and icing conditions.

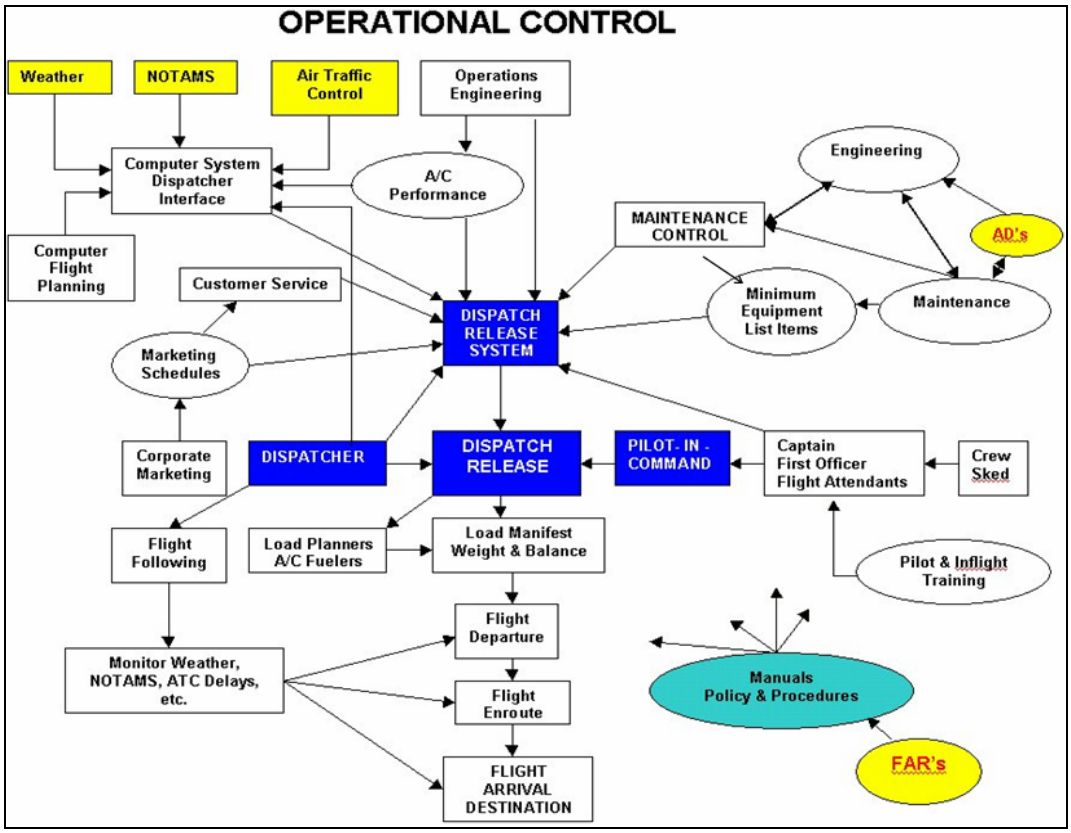


Figure 7: Typical example of a system of operational control according to US requirements. Source: FAA

Due to the high amount of responsibility delegated to dispatchers, the FAA has established stringent training requirements.In the United States all dispatchers must be formally licensed.

> *No person may act as an aircraft dispatcher (exercising responsibility with the pilot in command in the operational control of a flight) in connection with any civil aircraft in air commerce unless that person has in his or her personal possession an aircraft dispatcher certificate.*

Figure 8: Federal Aviation Regulation 65.51

FAR requirements for skills, training and competence meet the ICAO provisions as they have been set out in Annex 1. However FAR 65 Subpart C gives more detail and specifies necessary training elements for flight dispatchers. A training curriculum is described requiring a minimum of 200 hours of classroom training. In order to become fully licensed, an applicant must give evidence of two years working experience in an area related to flight operations.

A formal training course must be completed in order to obtain a license. But holders of such a certificate may only act as fully licensed dispatchers after having gained two years of relevant experience.

In order to keep the dispatch license current, dispatchers have to pass an annual competency check, a familiarization flight on the flight deck and have to attend a recurrent training of a minimum of 20 hours.

2.3. Followers of the U.S. system

Canada has adopted a system that is quite similar to the U.S. Canada has established a system of three steps of operational control, depending on the type of operation and size of the aircraft[7]. The system that applies for all commercial passenger flights conducted by large jets is a full scale operational control system including licensed dispatchers, joint responsibility and a system of flight monitoring. The Canadian regulations have been modified to a more stringent system after the so called “Dryden” accident, where a lack of assigned responsibility and poor communication with the operational control centre contributed to the crash of a Fokker 28 in March 1989.

The Peoples Republic of China and South Korea both have a tradition of following Federal Aviation Regulations. Both countries have adopted a system of shared operational control that includes flight-monitoring and licensed dispatchers.

FAA based regulations have also prevailed in the Middle East for decades, especially in Saudi-Arabia. Presently a trend towards European regulation can be observed in the region. But still, several Arab countries have operational control systems that follow the U.S example. Russia requires dispatchers to be licensed but has not implemented a system of shared operational control.

As North America alone is responsible for about 40% of the world’s air traffic, it can be assumed that globally approximately 50% of today’s flights are operated under a system of operations control with joint responsibility of licensed dispatchers.

[7] Canadian Commercial Air Service Standard 725

2.4. Europe (Joint Aviation Requirements)

For the purpose of this study, Europe has been defined as the area of the 33 JAA[8] full member states as of December 2005. 25 of them are EU member states. They are complemented by Bulgaria, Croatia, Iceland, Monaco, Norway, Romania, Switzerland and Turkey.[9]

This is an appropriate definition, as JAR-OPS1[10] is the governing regulatory document for air operations in the region. JAR-OPS1 is not directly binding for member states, but has been adopted by most national parliaments and must be followed by its operators.

JAR-OPS 1.195 specifies the JAA requirement for operational control. It does not define any method, but only requires the system to be approved by the competent authority, which are the national aviation authorities.

An operator shall:
Establish and maintain a method of exercising operational control approved by the Authority; and…

Figure 9: JAR-OPS 1.195

An ACJ[11] to JAR-OPS 1.195 further explains the intent of the JAA:

•1 Operational control means the exercise by the operator, in the interest of safety, of responsibility for the initiation, continuation, termination or diversion of a flight. This does not imply a requirement for licensed flight dispatchers or a full flight watch system.

•2 The organization and methods established to exercise operational control should be included in the operations manual and should cover at least a description of responsibilities concerning the initiation, continuation, termination or diversion of each flight.

Figure 10: Advisory Joint Circular to JAR-OPS 1.195

The above regulation allows national authorities to approve almost any type of operational control system. With the exception of Turkey, all countries have adopted an operational control system based on the “sole responsibility of the pilot-in-command”. This notion puts dispatchers into a mere supporting role.

[8] JAA: Joint Aviation Authorities
[9] Source: Website of the JAA: http://www.jaa.nl/introduction/Annex1-JAAMemberStates-December2005.pdf
[10] JAR-OPS 1: Joint Aviation Requirements for Commercial Air Transportation (Aeroplanes)
[11] ACJ:Advisory Joint-Circular

From the regulatory standpoint, there is no requirement to have supporting staff for dispatch or operational control purposes at all, provided that flight crews or others effectively solve all dispatch related problems. Nevertheless, almost all operators employ staff in operational control functions, because it is the most efficient way to accomplish the tasks of flight-planning and movement control.

European authorities have no common view on dispatcher's licenses. Albatross Aviatics, in their "Study on Flight Operation and Dispatch"[12], have done extensive research in this area in the year 2001. The study identifies three different policies that exist in Europe. Some countries do not issue licenses at all (e.g. France, United Kingdom). Other countries recognize the licenses of other countries (e.g. Italy, Spain, Finland, and Switzerland). The majority of national authorities issue national licenses based on ICAO recommendations (Germany, Austria, Portugal and several Eastern European countries).

However, the fact that Germany issues a national license does commit operators to employ licensed dispatchers. With the exception of a few prominent carriers, most operators in Germany and Austria employ unlicensed staff.

The recognition of licenses issued by other countries has no practical meaning at all. The majority of dispatchers in Italy and Spain are unlicensed. It can be summarized that the national licensing policy has very little influence on the hiring practices of operators throughout Europe.

The bandwidth of staff policies in Europe is very wide. Some carriers solely use highly trained licensed dispatchers and run a full-scale operational control system with comprehensive pre-flight and in-flight support. Other operators employ untrained administrative staff who assemble predefined briefing packages, without being fully familiar with the content.

[12] Albatross Aviatics, Study on Flight Operation and Dispatch, 28 FEB 2001

JAR-OPS 1.205 is the only paragraph that addresses training requirements for this type of personnel.

An operator shall ensure that all personnel assigned to, or directly involved in, ground and flight operations are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole.

Figure 11: JAR-OPS 1.205

No duration or content is specified. It is often argued by operators that no further detailed training is necessary, as the responsibility for the whole of operational control lies with the commander of the aircraft. The survey results will help answering the question, whether this argument is valid.

3 Recent developments

3.1 IATA Operational Safety Audit

IATA's Operational Safety Audit (IOSA) is an industry standard which has reached the status of a global quality label. IOSA has been developed in order to establish a standardized auditing tool to replace the increasing number of code-share audits. 750 standards have been developed by task forces comprised of industry and regulator representatives. IOSA is open for all operators, regardless of IATA membership. IATA has set a fixed timeline for all members to undergo an IOSA audit until the end of 2007.

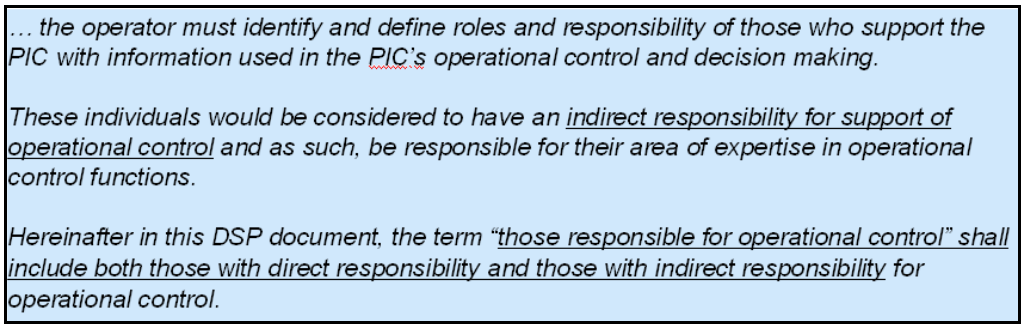
At the time of writing, 129 Operators were registered as IOSA Operators on the IOSA website[13]. At least 100 carriers will follow in 2007. This massive industry trend has reached almost every Operator in Europe.

IOSA standards are subdivided into eight scopes, one of which is "Operational Control – Flight Dispatch". The standards have been derived from ICAO Annexes, FARs, JARs and industry best practices. In order to make IOSA acceptable for authorities throughout the world, the highest requirement has been adopted where differences existed. In the area of dispatch, the United States regulations set the most stringent rules.

[13] http://www.iata.org/ps/services/iosa/registry.htm

As Europe is unable to cope with the FAR requirements in the dispatch arena, special provisions were made for those operators having a system of sole responsibility of the pilot in command. Hence, IOSA has no mandatory requirement for active flight-monitoring, licensed flight dispatchers and shared responsibility of operational control.

The wording of ICAO Annexes has been adopted to a very large degree. IOSA acknowledges that many operators do not employ licensed dispatchers, but in the guidance material to the IOSA standards, it is made clear that the standards are applicable to all personnel working in association with operational control:



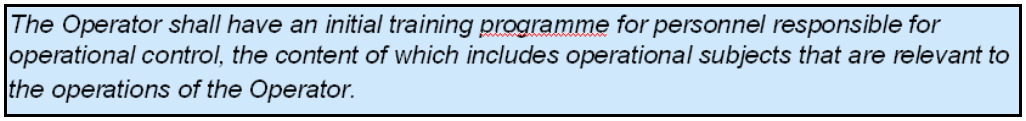
… the operator must identify and define roles and responsibility of those who support the PIC with information used in the PIC's operational control and decision making.

These individuals would be considered to have an indirect responsibility for support of operational control and as such, be responsible for their area of expertise in operational control functions.

Hereinafter in this DSP document, the term "those responsible for operational control" shall include both those with direct responsibility and those with indirect responsibility for operational control.

Figure 12: IOSA Guidance material for Dispatch

This is especially true for training requirements. IOSA requires operational control staff to undergo initial and recurrent training. The requirement for initial training is specified in the standard DSP 4.4



The Operator shall have an initial training programme for personnel responsible for operational control, the content of which includes operational subjects that are relevant to the operations of the Operator.

Figure 13: IOSA Standard DSP 4.4

The standard does not distinguish between licensed and unlicensed staff. It includes all operational control staff that either directly or indirectly has responsibility for operational support. The content of the training is outlined in detail in the guidance material to DSP 4.4. It is almost identical with the ICAO Dispatch training document 7192-AN/857 Part D3. IOSA also has a requirement for an annual recurrent training.

i) Civil air law and regulations;
ii) Aviation indoctrination;
iii) Aircraft performance;
iv) navigation, special navigation;
v) special airports;
vi) Air traffic management;
vii) meteorology, including:
a) flight into icing conditions;
b) flight into hazardous weather conditions;
viii) mass (weight) and balance control;
ix) aircraft systems and MEL/CDL;
x) transport of dangerous goods by air;
xi) Flight Planning;
xii) Flight Monitoring;
xiii) Communication;
xiv) Human factors, CRM/DRM;
xv) Security;
xvi) Emergency and Abnormal procedures;
xvii) fuel supply (aircraft and fuel type requirements);
xviii) De-icing/anti-icing procedures.

Figure 14: IOSA Guidance material for standard 4.4

While U.S. operators have always been in full conformity with the above requirements, it is no surprise that European operators were facing difficulties. Many operators were unable to provide sufficient evidence of an appropriate initial and recurrent training. For this reason, dispatch training has been one of the areas causing the highest number of findings during audits. Since North American operators have no problem in this area, it can be assumed that Europe is responsible for the majority of these findings.

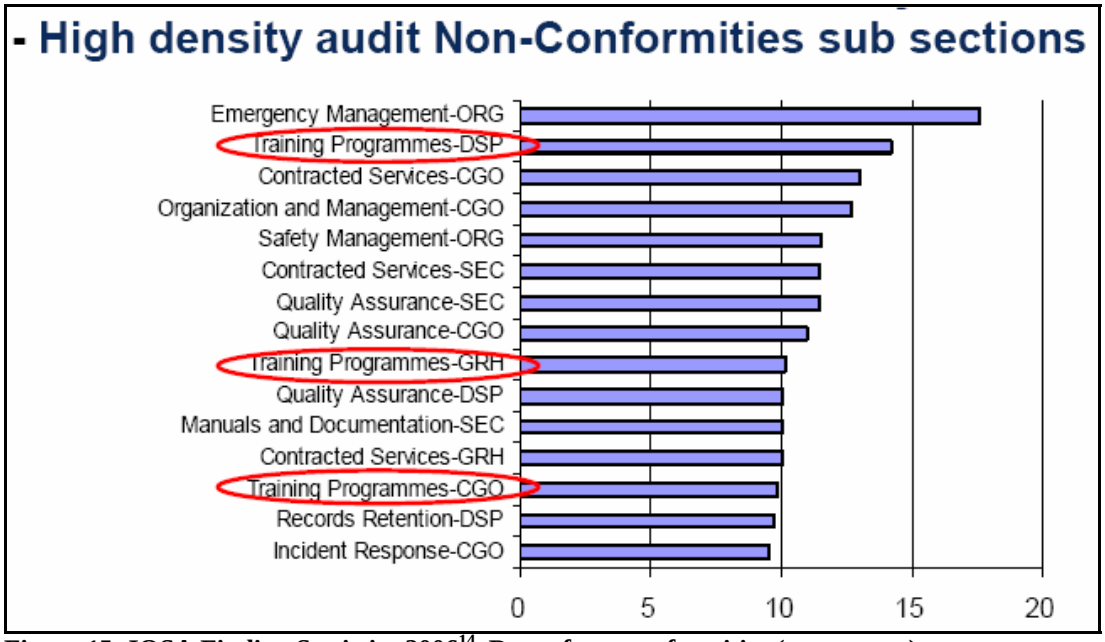


Figure 15: IOSA Finding Statistics 2006[14], Rate of con-conformities (percentage)

[14] IATA presentation for the IOSA Oversight Committee, Montreal, September 2006

IOSA renewal audits are due every two years. The first wave of renewal audits has started in 2006. While the number of findings has decreased by 50% in the seven other scopes, the number of findings has slightly increased in the dispatch section.

The two key training standards DSP 4.4 and DSP 4.5 have been evaluated in detail, as they contain the requirements for initial and recurrent training. 118 IOSA reports form the database of these statistics. 50 of these audit reports are from European operators.

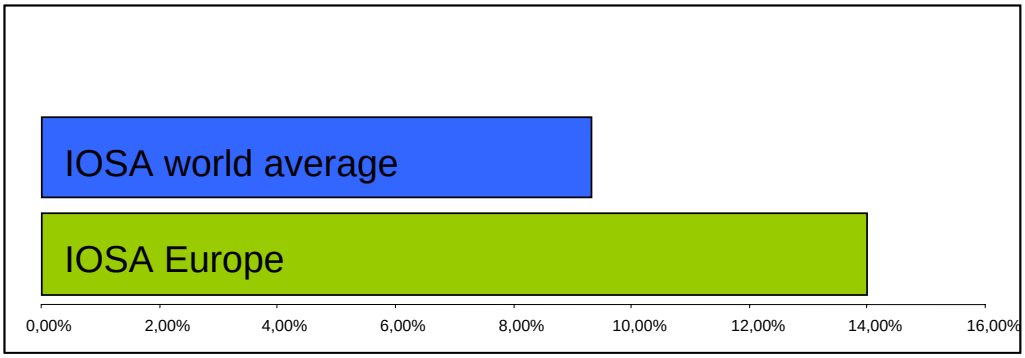


Figure 16: Percentage of IOSA Reports with findings in DSP initial training (DSP 4.4). [15]

The above picture clearly shows that the number of findings in Europe is above the industry average. The same picture can be observed in the area of recurrent training (DSP 4.5). Only Russia and Africa have higher values, while no findings at all have been recorded in North America.

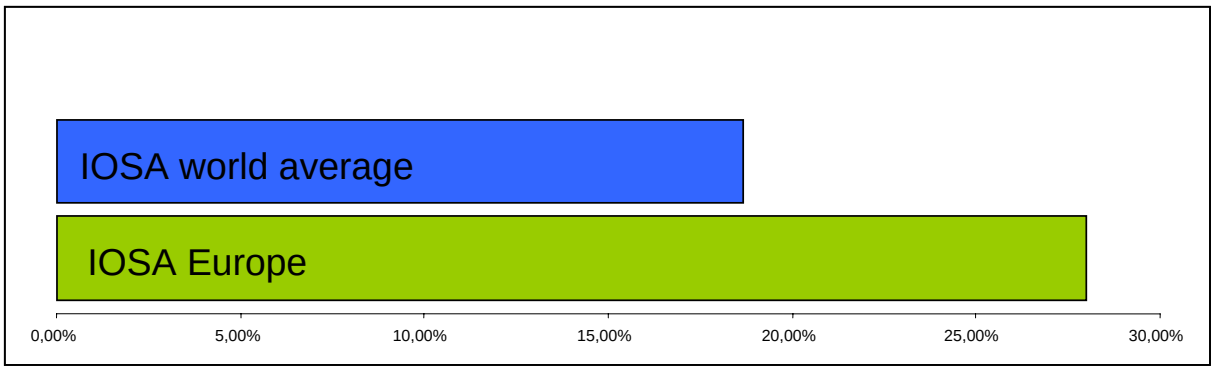


Figure 17: Percentage of IOSA reports with Findings in DSP Recurrent training (DSP 4.5). [16]

Another problematic standard for European operators is the hiring requirement as specified in DSP 5.1.3.

[15] Source: IATA
[16] Source: IATA

The Operator shall have a process that ensures applicants hired in operational control functions hold a valid Flight Operations Officer or Flight Dispatcher license, or meet one of the following specified minimum operational prerequisites:

•i) a total of two years experience in any combination of the following, with a minimum of at least one year active in any single capacity:

a) flight crew member in air transportation;
b) meteorologist in an organization dispatching aircraft;
c) air traffic controller;
d) technical supervisor of flight operational officers/flight dispatchers;
e) technical supervisor of air transportation systems,

or

•ii) at least one year as an assistant in the controlling and/or dispatching of air transport flights;

or

•iii) have satisfactorily completed a formal training course as a flight operations officer or flight dispatcher.

Figure 18: IOSA Standard DSP 5.1.3

The wording of this standard is a copy of ICAO Annex I Chapter 4.5. However, for European operators it is very difficult to be in conformity with any of the three possible options. Staff who fall under category i) are not available on the market. Not many applicants have accomplished a formal training course. Furthermore, such a formal training course does not even exist in several countries.

Some carriers have chosen option ii) and employ dispatchers as assistants for the first 12 months. It is to the benefit of many operators that IATA later decided to consider structured company training courses as “formal training courses”. By establishing such an in-house course conformity with option iii) of the standard could be achieved. Often these courses have a mere alibi function and are far from fulfilling the requirements of ICAO Doc 7192-D3 in duration and content.

Apart from the training requirements themselves, findings in dispatch also occurred in several operational areas. The following examples shall give a quick overview[17]:

[17] Findings revealed by the market leading audit organisation during the conduct of IOSA audits in Europe

Lack of a clear definition of the interface between operational controllers and pilots:	Pilots not being aware of the fact that the flight plan might have been processed by untrained individuals and might not have been checked for suitable aerodromes, route restrictions and performance limitations.
Lack of defined processes and procedures for duties and activities:	Duties not performed in a standardized manner and without giving regard to operational procedures
Lack of knowledge regarding aircraft performance, especially engine-out and depressurization scenarios.	No route analysis undertaken to ensure that aircraft are clear of obstacles at all times. Several routes found inappropriate over the alps, especially for turboprop aircraft.
Lack of knowledge about all weather operations.	Alternate airports filed that were unsuitable. No awareness that U.S. minima apply in the U.S.A., which are completely different from JAR-OPS minima.
Unclear definition of duties for the emergency case.	Personnel not well prepared for their roles as described in the emergency response plan.

Table 1: IOSA Operational Problems

After ongoing discussions about the various difficulties that auditors encountered when auditing operational control centers in Europe with the existing standard, the IOSA standard for dispatch has been changed completely in late 2006.

The major difference is the introduction of flight operations assistants (FOA) and administrative personnel in addition to flight operations officers (FOO). While administrative staff is not subject to initial and recurrent training, FOAs have to be trained and held current in their area of expertise or specialization[18]. The stringent hiring requirements have been eliminated for FOAs. FOOs are subject to full initial and recurrent training as before.

Flight operations Assistants are not defined in any of the ICAO provisions. However, the new approach is covered by the previously mentioned note to Annex VI Chapter 10.1.

[18] IOSA Standards Manual, 2nd Edition, effective March 2007, table 3.1 and 3.5

It will have to be observed, whether operators and authorities adopt this system of three levels of qualifications. Nevertheless, the discussion over IOSA training requirements will continue. Most operators call their dispatch staff Flight Operations Officers (FOO), which is the group requiring the highest level of qualification under IOSA. Operators will argue that these FOOs are in fact acting as FOAs.

3.2. The 2006 Amendment of ICAO Annex 6

In 20006, for the fist time in decades, ICAO has changed the most important provisions relevant for FOO/FDs. The amendment follows an initiative of the FAA and can be seen in the light of an attempt of the FAA to tighten the training requirements for FOO/FDs, especially in the field of practical on-the-job training.

The FOO/FD has been incorporated into the directory of definitions. This definition goes beyond the task description in Chapter 4.6. It is important to notice that only a suitably person qualified in accordance with Annex I can be considered as an FOO/FD, regardless whether he is licensed or not.

Flight operations officer/flight dispatcher:
A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified in accordance with Annex 1, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.

Figure 19: ICAO Annex 6, Amendment 30, Chapter 1, FOO/FD Definition

A new statement has been added in Chapter 3 of Annex VI. This statement requires further interpretation. The provision expresses the notion that a system of joint responsibility shall only be used, if the system requires the use of FOO/FDs, as defined above. Consequentially this requirement means that other systems are possible which do not require the use of FOO/FDs.

Responsibility for operational control shall be delegated only to the pilot-in-command and to a flight operations officer/flight dispatcher, if an operator's method of control and supervision of flight requires the use of flight operations officer/flight dispatcher personnel.

Figure 20: ICAO Annex VI, Amendment 30, Chapter 3.1.4

Chapter 10 of Annex VI specifies the training requirements for FOO/FDs. 10.2 expresses that a person can only act as an FOO/FD if he is either licensed or has been

trained in accordance with Annex One, which basically means that training according to ICAO Document 7192-AN/857 Part D3 has to be performed.

In accepting proof of qualification other than the option of holding a flight operations officer/flight dispatcher license, the State of the Operator, in accordance with the approved method of control and supervision of flight operations, shall require that, as a minimum, such persons meet the requirements specified in Annex 1 for the flight operations officer/flight dispatcher license.

Figure 21: ICAO Annex VI, Amendment 30, Chapter 10.2

Chapter 10.3 contains a new requirement for an operator training course that goes beyond the basic training and prepares FOO/FDs for duties that are specific for the operator concerned.

A flight operations officer/flight dispatcher shall not be assigned duty, unless that person has:
a) satisfactorily completed an operator-specific training course that addresses all the specific components of its approved method of control and supervision of flight operations specified…

Figure 22: ICAO Annex VI, Amendment 30, Chapter 10.3

The new provisions became effective in November 2006. It is too early to identify the consequences yet. The status of unlicensed FOO/FDs in Europe must be seen in a new light after ICAO provisions have been changed. As the majority of unlicensed personnel in Europe are not qualified in accordance with Annex 1, these staff can no longer be regarded as FOO/FDs under the definition of ICAO Annex VI.

4 Survey Evaluation

4.1 General

In early September, a comprehensive survey has been sent to 141 European air operators of various types. Operators of all 33 JAA full member states were addressed, with the exception of Monaco. The questionnaire was sent to network and leisure carriers as well as to executive operators and low-cost carriers. Different channels were used in order to reach the appropriate personnel within the operators.

1. Approximately 60 surveys were mailed to safety and quality managers of IATA airlines and managers of operational control centers.

2. About 100 copies were sent to operator headquarters on a CD-ROM via regular mail. The CD-ROM had been commercially produced for this purpose in order to give the survey a professional appearance.

Two tests of the questionnaire revealed that several systematic changes had to be performed in order to enhance the evaluation process. Where operators had reported difficulties, the questions were clarified. The test candidates needed approximately 25 minutes to answer the questions.

The return flow of questionnaires was crucial for the success of the survey. It was expected that only a small percentage of carriers would return the form due to the additional workload and limited availability of resources. For this reason it was decided to spread the survey over as many operators as possible. It was estimated that at least 20 copies were required in order to obtain a database large enough to produce representative data.

Operators were given approximately three weeks of time to return the paper. In total, 43 filled in questionnaires have been received (return flow of 31%). Several operators claimed that their data should not be published. As stated in the questionnaire itself, no operator specific information will be made public. The filled in questionnaires have been made available to the University but will not be copied or distributed. A copy of an empty questionnaire is attached in Annex A.

The questionnaire itself is divided into four subparts:

1. Operator Information
2. Staff training and Qualification
3. Operations Control and Dispatch Environment
4. Duties related to Dispatch and Operational Control

4.2 Operator Information

The majority of the forms have been filled out by the managers responsible for operations control and dispatch. 14% were filled out by FOO/FDs themselves. 9% of the forms were submitted by others (quality, safety or training managers). Ambiguities, where they existed, have been cleared in e-mail correspondence.

The operators which have returned the questionnaire operate 1807 aircraft in total and employ 972[19] FOO/FDs.

Average number of FOO/FD per aircraft in fleet	0.54

Table 2: Dispatcher - Aircraft ratio

Feedback was received from 24 countries. No feedback was received from Bulgaria, Cyprus, Czech Republic, Estonia, Finland, Hungary, Lithuania and Romania. Apart from the above mentioned countries the lowest rate of feedback was recorded from the U.K, where only one out of 17 operators responded.

Figure 23: Country of origin of participating operators

[19] Note: This information contains an estimated number of 30 employees working for one operator that had not given information on staff size.

For the purpose of data evaluation the operators have been divided into four groups, depending on the size of their fleet. The distribution is represented in the adjacent figure. 43 aircraft is the average fleet size of the operators.

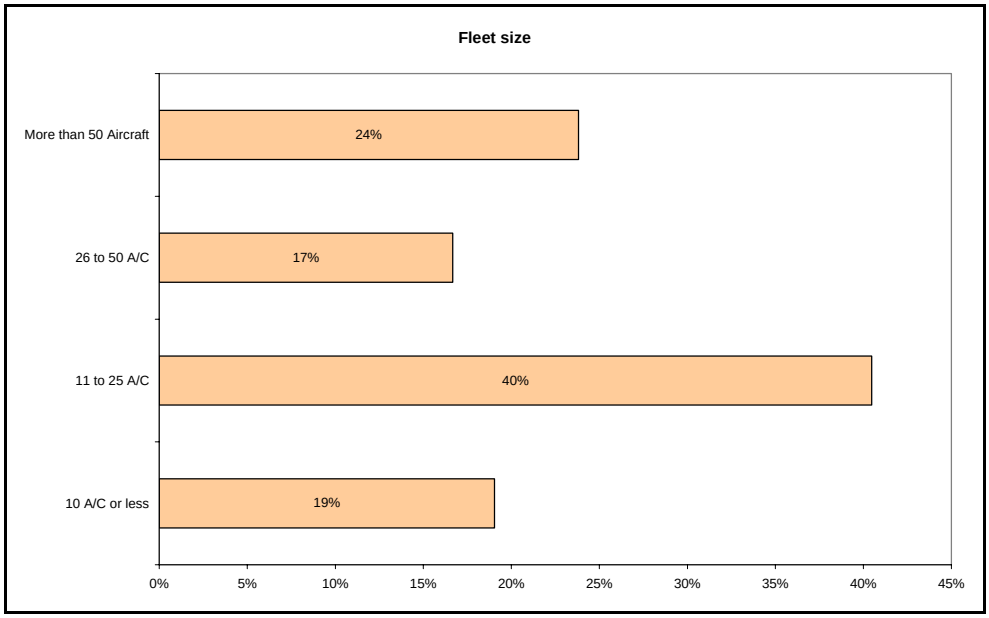


Figure 24: Fleet size

The fleet information received from the operators is grouped into four classes of aircraft. The first category contains executive jets only. Many operators operate aircraft of two or more categories. The picture reasonably reflects the market; however, the group of business jets is underrepresented.

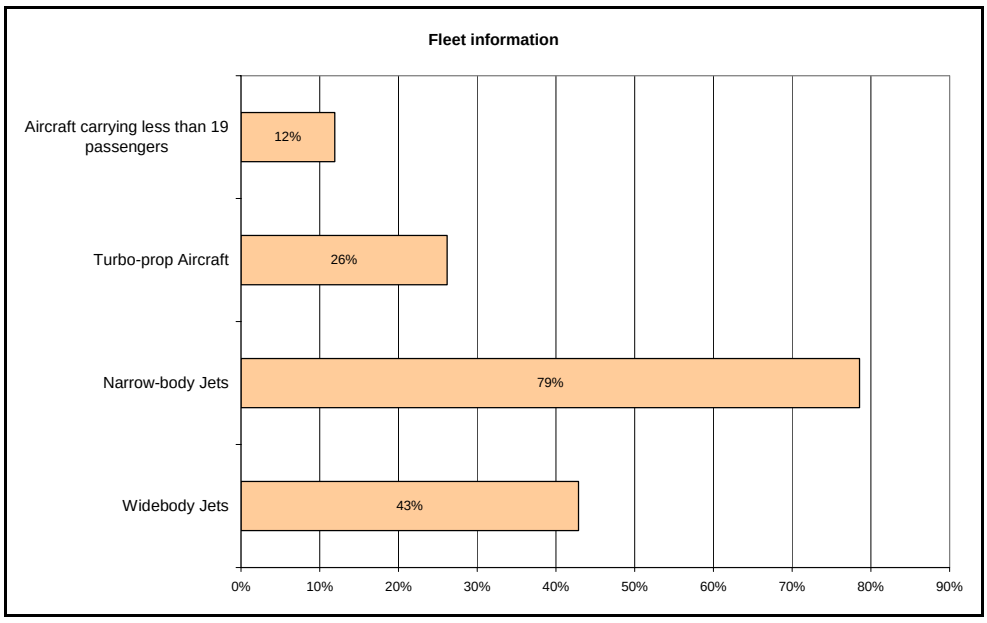


Figure 25: Fleet information

The operators were asked to specify one business model that is the most adequate one. Some operators ticked more than one box. This has been accepted in some cases. However, where operators had ticked the box “cargo operator”, this information was deleted, when cargo was only a side business in the form of belly cargo on passenger aircraft. In some instances the OCC[20] is responsible for the operation of subsidiaries. For the above reasons, the sum of percentage values in the figure “Business Model” is more than 100%.

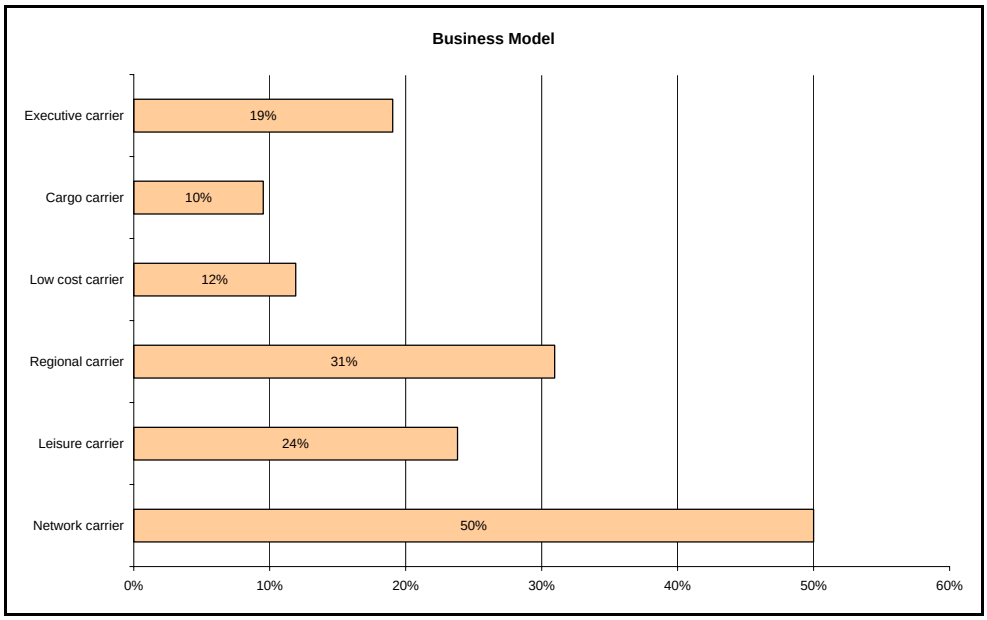


Figure 26: Business Model

All operators are involved in operations in Europe. This is not trivial, because operators from overseas colonies took part in the survey, when they were holding a JAR-OPS 1 AOC[21]. 74% of the operators are conducting operations outside Europe too, while the remaining 26% operate entirely within European territory.

[20] OCC: Operations Control Centre
[21] AOC: Air Operator Certificate

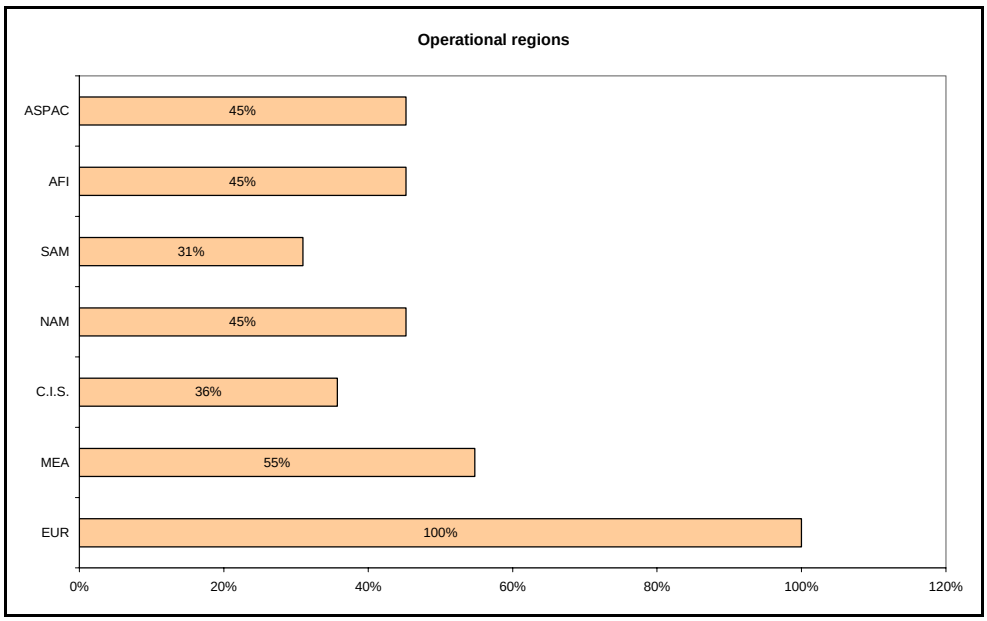


Figure 27: Operational regions

The figure representing operations specifications does not include the item RNP. The feedback of the forms revealed that operators had differing conceptions of the term. Surprisingly, some operators were obviously not familiar with the term at all. For this reason the respective data have not been included in the evaluation.

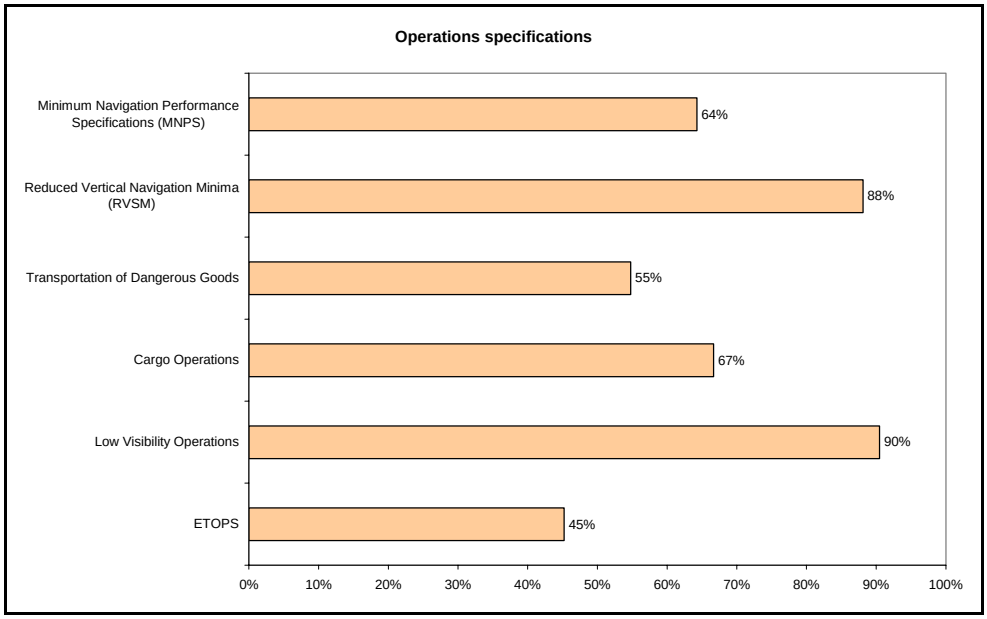


Figure 28: Operations specifications

Furthermore, all airspace within Europe is specified as RVSM[22] airspace. However, 12% of the operators are not involved in this type of operation, because they are operating turboprop aircraft below flight level 290.

[22] RVSM: Reduced Vertical Separation Minima, meaning vertical separation of 1000ft above FL290

86% of all operators involved in operations across over the Atlantic are certified for ETOPS.[23]One Operator was certified because he was flying into areas in Africa that required ETOPS.

4.3 Staff qualification

19 operators indicate that their authority issues dispatch licenses. This information was found to be consistent with the information received from other operators in the same country. The information was also confirmed by referencing to the study of Albatross Aviatics[24]of 2001. Contradictory information was found for Croatia and Latvia. It the case of Croatia, it was found that the above mentioned study contained wrong information. It could not be verified, whether Latvia had seized issuing licenses or one of the sources had given wrong information.

As presented in the figure below, the majority of FOO/FDs are not licensed. 55% of the FOO/FDs are not in possession of any license and less than 40% carry a European license. Attention should be drawn to the fact that 6% of dispatchers working for JAR-OPS operators hold an FAA dispatch license. This is astonishing, because as outlined before the philosophy and framework of operational control systems under the umbrella of the FAA differs significantly from the situation in Europe.

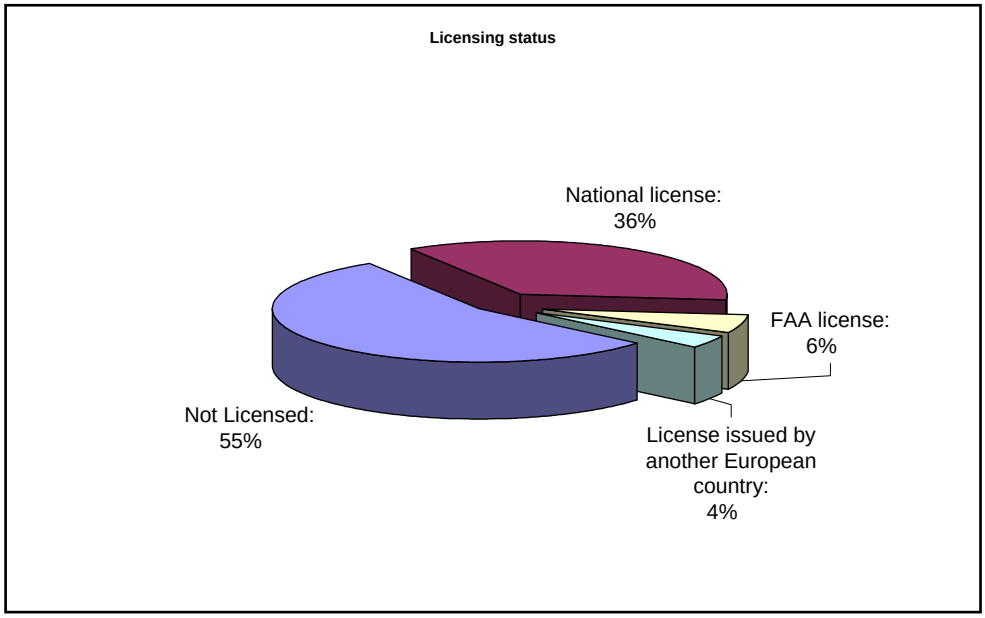


Figure 29: Licensing status

[23] ETOPS: Extended twin engine operations
[24] Albatross Aviatics, Study on Flight Operation and Dispatch, 28 FEB 2001, p. 22ff

Two facts lead to the assumption that the percentage of unlicensed staff is significantly higher than the above mentioned 55%:

- Germany, a large market with many licensed dispatchers is overrepresented.
- The United Kingdom, one of the largest markets in Europe is strongly under-represented. The United Kingdom is an environment that does not know dispatch licensing at all.

Furthermore, the study has not reached hundreds of small or very small operators across Europe. The table below clearly shows that the amount of licensed staff is largely dependant on operator size. Very small operators hardly employ any licensed staff at all. FAA licenses are more popular in the environment of small operators.

Staff licensing vs. fleet size (most significant values are highlighted)	Survey average	10 A/C or less	11 to 25 A/C	26 to 50 A/C	> 50 A/C
Not licensed	55	85%	52%	48%	55%
National license	36	3%	28%	45%	39%
FAA license	6	9%	9%	7%	3%
Other EU license	4	4%	11,0%	1%	3%

Table 3: Staff licensing vs. operator fleet size

The business model is another parameter that influences an operator's decision whether or not to insist on licensed FOO/FDs. The table below shows that regional carriers not only employ fewer staff holding national licenses, they are also more open for licenses issued elsewhere. Foreign licenses have greater presence here than the national license itself.

The area of operations specifications also contributes to the recruiting strategy of operators.

Staff licensing vs. business model (most significant values highlighted)	Survey average	Network Carrier	Regional carrier
Not licensed	55	54%	66%
National license	36	38%	16%
FAA license	6	3%	9%
Other EU license	4	5%	10%

Table 4: Staff licensing vs. business model

The data base is considered to be too small to deliver representative data for other business models. Neither any of the UK leisure carriers nor the big low-cost carriers Ryanair, Easyjet and Air Berlin have participated in the survey.

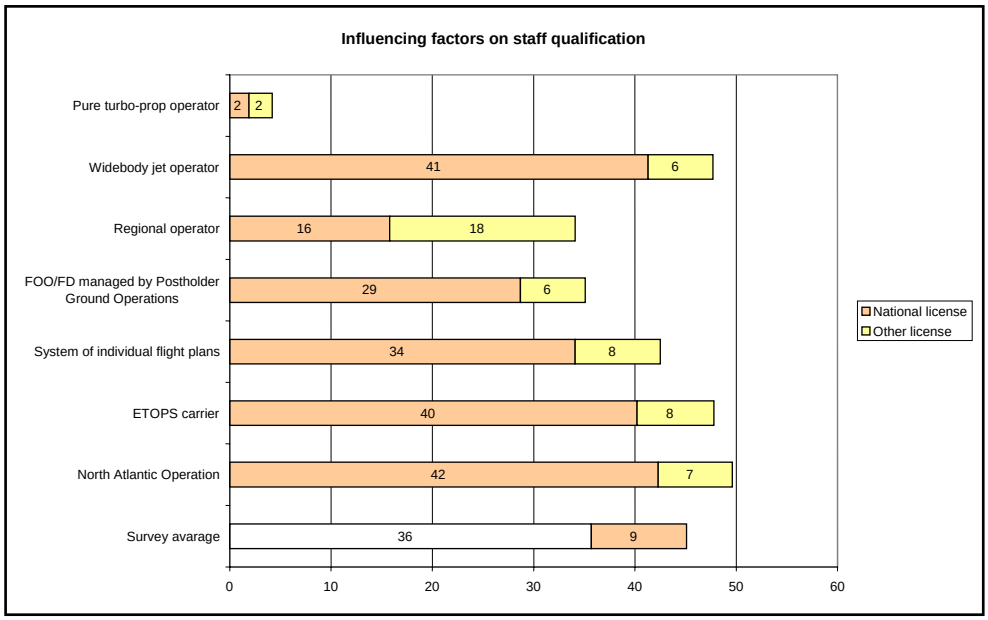


Figure 30: Influencing factors on staff qualification

The above diagram shows selected parameters having an influence on the qualification of operational control staff. It can be observed that long-haul operations (defined as operations outside EUR/C.I.S.) have a tendency to be performed with higher qualified staff. Especially North Atlantic operations have an impact, because complex tasks with regard to MNPS and the North Atlantic track system have to be performed. However, the impact on staff qualification is considerably low. It plays an important role that long-haul operators are often legacy carriers with a history of licensing, while start-up companies often involve in short-haul operations only.

It is remarkable that it has no influence at all, whether flight plans are calculated on an individual basis or in the form of repetitive flight plans stored for a long period of time. Individual flight plans require the expertise of qualified staff on a daily basis.

The strategic question, whether to allocate the OCC to the Postholder for flight operations or to the manager responsible for ground operations has a significant impact. Ground operations in general are less regulated.

The most significant parameters are the size of the operator and the type of aircraft in use. Small operators are often in a start-up situation and rarely have experienced licensed dispatchers in their ranks. Pure turbo-prop operators also hardly employ any licensed dispatchers. Contributing parameters accumulate here, because turbo-prop operations are limited to operations in Europe, not involving complex operations like MNPS or ETOPS. It can be assumed that social issues have to be taken into consideration too, because turbo-prop operators often pay lower salaries than jet operators. Fully licensed dispatchers have opportunities elsewhere and tend to stay away from this type of operation.

In Austria, Poland, Portugal, Slovakia and Turkey dispatch licenses still play an important role. In Switzerland it is common that airlines issue certificates of successful training. This is not considered as a national license in this analysis.

Many operators from those countries that issue national licenses do not mandate a license for their FOO/FDs. However, 78% of these Operators require their staff to be licensed. In the majority of cases these are national flag carriers and their subsidiaries. In one instance the operator requires staff to be licensed, but the national authority does not issue such licenses. Hence, the staff of this company holds either FAA or other European licenses.

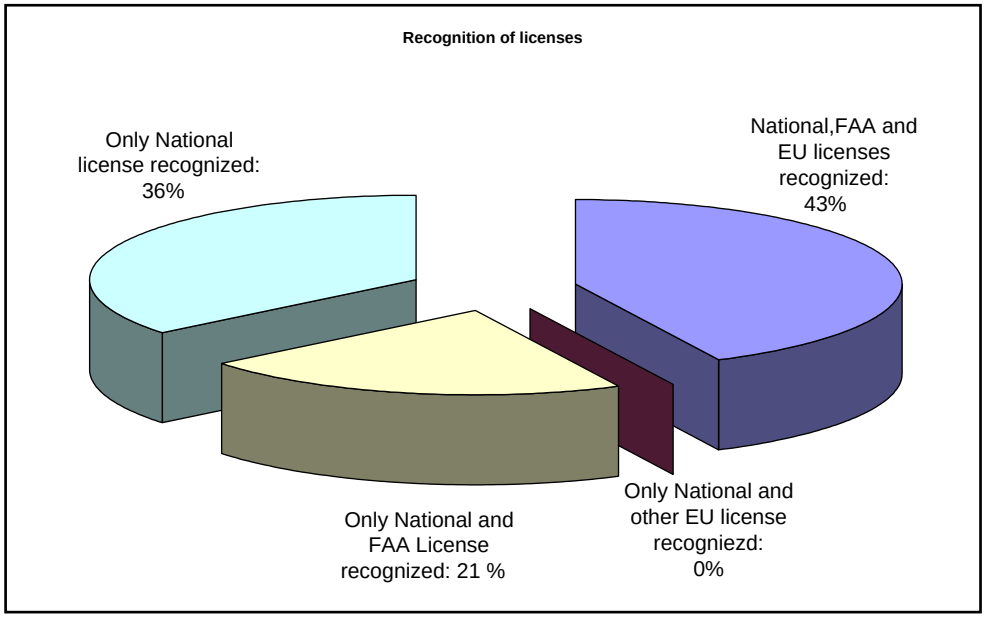


Figure 31: Recognition of licenses

As presented in the diagram above, operators are flexible with regard to the recognition of foreign licenses. Only 36% of the Operators that rely on licensed staff require a license issued in the country of the operator. Almost half of the operators accept foreign licenses. However, it is significant that preference is given to the FAA license. Certificates from other European countries are only accepted from operators that also accept FAA licenses. It is one of the main purposes of the European Union to harmonize standards in order to facilitate free movement of goods and services. At present EU licenses can be considered as having little value in other EU countries.

The majority of Operators require FOO/FDs to have previous airline experience before they work in operational control functions. Operators that work with unlicensed staff have slightly higher expectations in this area. It is remarkable that very large operators expect previous experience as well as very small operators and regional carriers. It must be assumed that the first group is attractive for applicants and can afford to have demanding hiring criteria. The second group replaces formal training by previous experience.

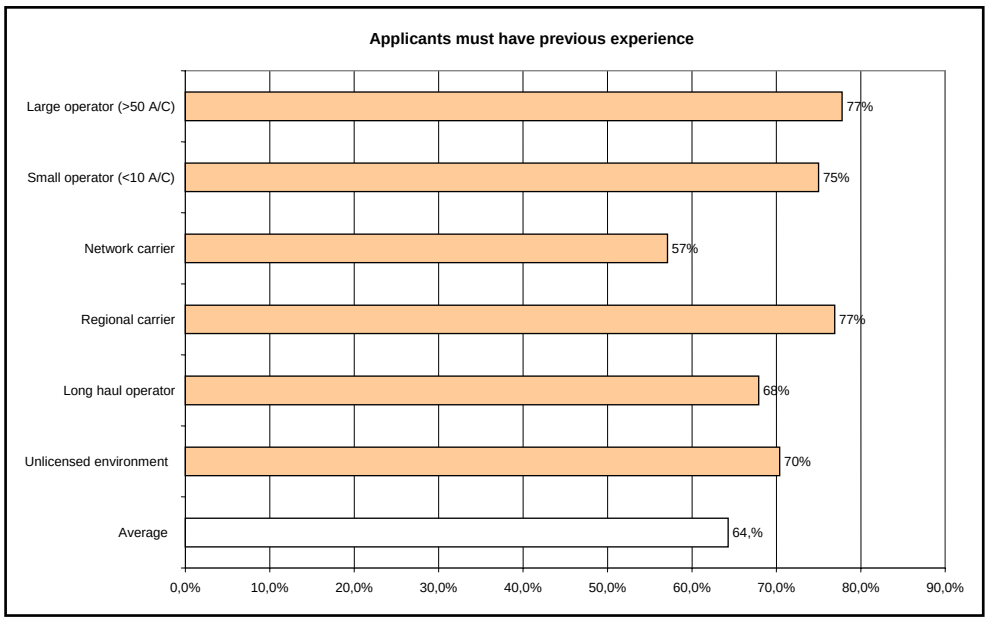


Figure 32: Previous airline experience

A large majority believes that pilot license holders are ideal candidates for jobs in an OCC, followed by mass & balance specialists and meteorologists.

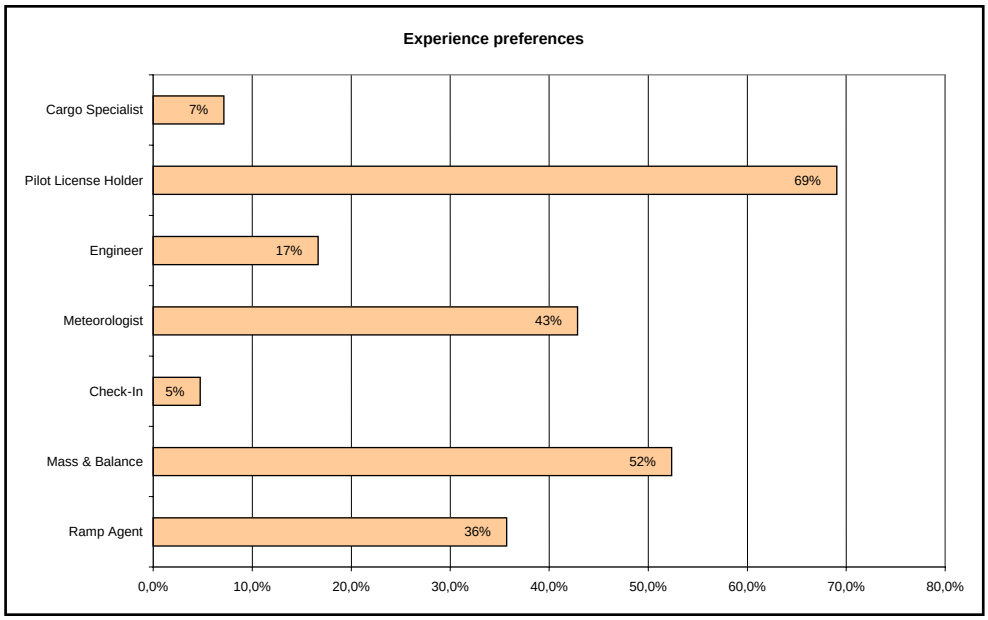


Figure 33: Experience preferences

It is remarkable that small operators not only employ the highest number of unlicensed staff, they also provide the shortest on-the-job training. It will be shown later that FOO/FDs are not necessarily tasked with fewer duties than their colleagues working for larger operators.

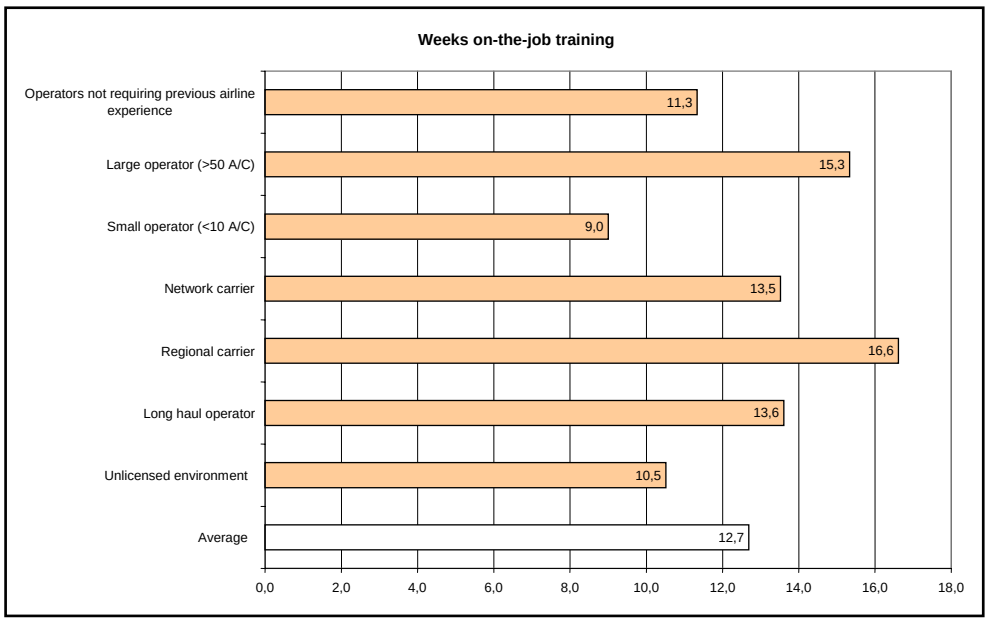


Figure 34: Weeks of on-the-job training

The above figure shows that lack of formal training in pursuance of a dispatch license is not compensated by on-the-job training. In fact, this type of training is shorter for this group of FOO/FDs than the average. Regional carriers are very active in this area, as well as very large operators. As discussed later, regional carriers are focused on operational control activities, but have limited activity in the area of pre-flight assistance. Operational control is very suitable for on-hands training in comparison to classroom training.

4.4 Operational control and dispatch environment

4.4.1 Tools, equipment and information sources

Operators were asked what kind of equipment they use in order to fulfill their tasks. This includes written material, computer programmes and communication devices. It is not surprising that weather and NOTAM information are the top ranking sources of information. This information is used to feed the flight planning software with data. Hence, flight-planning systems rank as number two on the list.

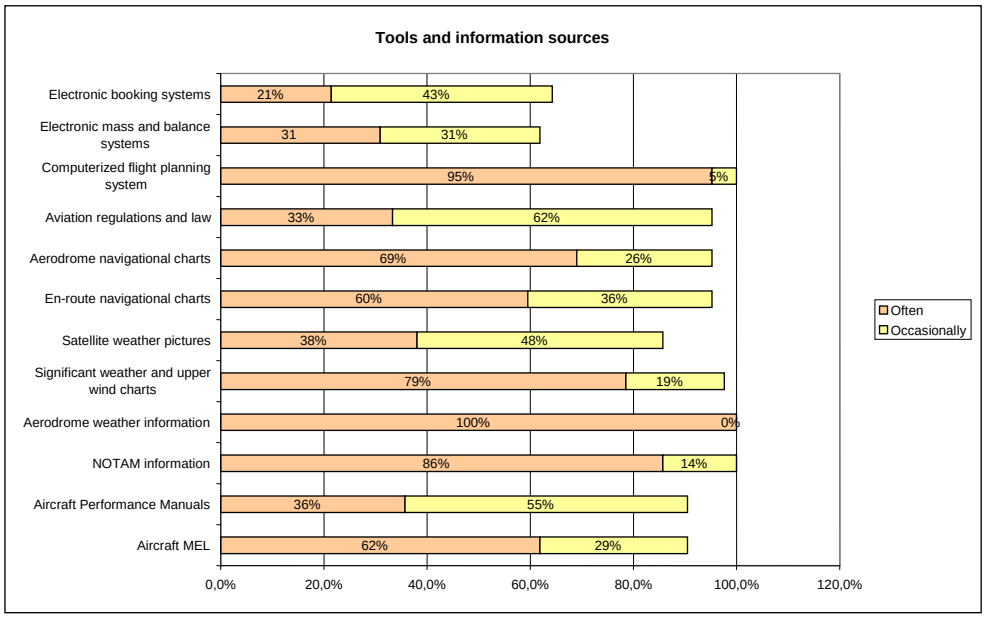


Figure 35: Tools and information sources

It is interesting to see that all of the listed items seem to have relevance. More than 50% of all FOO/FD often use the aircraft MEL[25]. 90% use aircraft performance manuals either often of occasionally. Only booking systems and “Mass& Balance” systems are of

[25] MEL: Minimum Equipment List (guidance on dispatchability with inoperative components)

less significance. Nevertheless, these programmes are occasionally used by more than 50% of operational control personnel. This large variety of material used by FOO/FDs certainly has a great effect on associated training requirements. Neither navigational charts nor MEL and performance manuals can be interpreted correctly without having received prior guidance.

In a second step the data have been broken down into special groups of operators. The following diagram shows the evaluation for the same data in an environment, where the majority of FOO/FDs are unlicensed. It can be assumed that these employees have received very little formal training. Comparison between figure 34 and figure 35 shows no significant differences. The same tools are relevant for unlicensed staff as for licensed staff. The only difference is that unlicensed FOO/FDs use certain tools less often. This is the case for charts, performance manuals and the MEL.

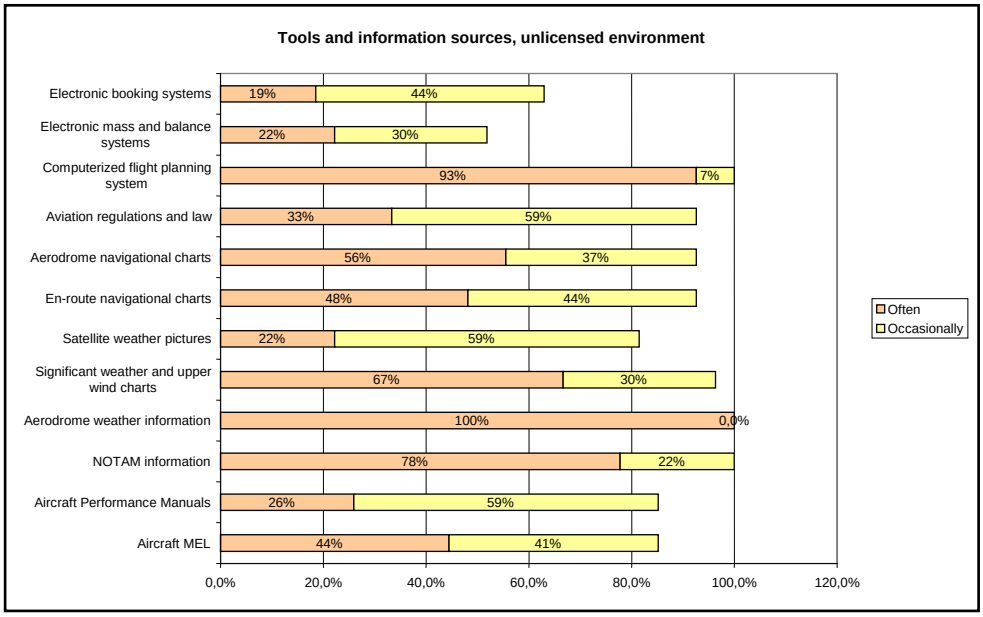


Figure 36: Tools and information sources, unlicensed environment

Comparison with very small operators also shows no major difference, but the same deviation in the frequency of the use of charts and aircraft manuals.

The above can also be said for FOO/FDs who work for regional carriers. However, the deviation of the frequency of use is more pronounced. Apart from satellite weather pictures, which are less relevant in a short-haul environment, the same tools play an important role.

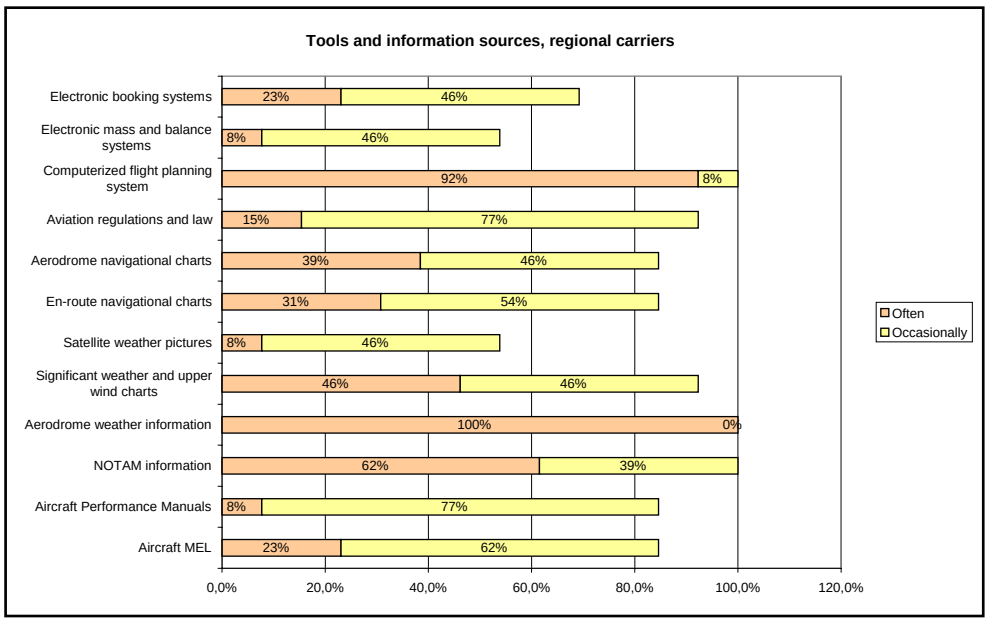


Figure 37: Tools and information sources, regional carriers

It can be summarized that the same ten out of twelve items are relevant for the work, regardless of the type of operator or qualification of staff. All of these items have a relevance of more than 80 percent. Differences can only be observed with regard to the question, if something is used on regular basis or only occasionally. Weather and NOTAM interpretation must be fully understood by all FOO/FDs, as well as the use of the flight planning software. More complex weather information as presented in weather charts is also commonly used. This is also the case for en-route and aerodrome charts; however the latter are only consulted occasionally.

Aircraft related information is also used, but with a large variance in frequency depending on the type operator. Only booking systems and mass and balance software play a minor role in the FOO/FD environment. Unlicensed FOO/FDs are confronted with the same tools as their licensed colleagues.

LIDO (21%), RODOS (14%) and SITA (14%) are the flight-planning tools which are most commonly used by participating operators. In combination they share almost 50% in the examined group of operators. Jeppessen, PPS and SABRE follow with market shares between 7% and 12 % each.

4.4.2 Communication

Almost two thirds off all FOO/FDs operate means of communication which generally allow worldwide contact with the aircraft. The possibility for communication is one of the most important prerequisites for FOO/FD duties which are related to in-flight assistance.

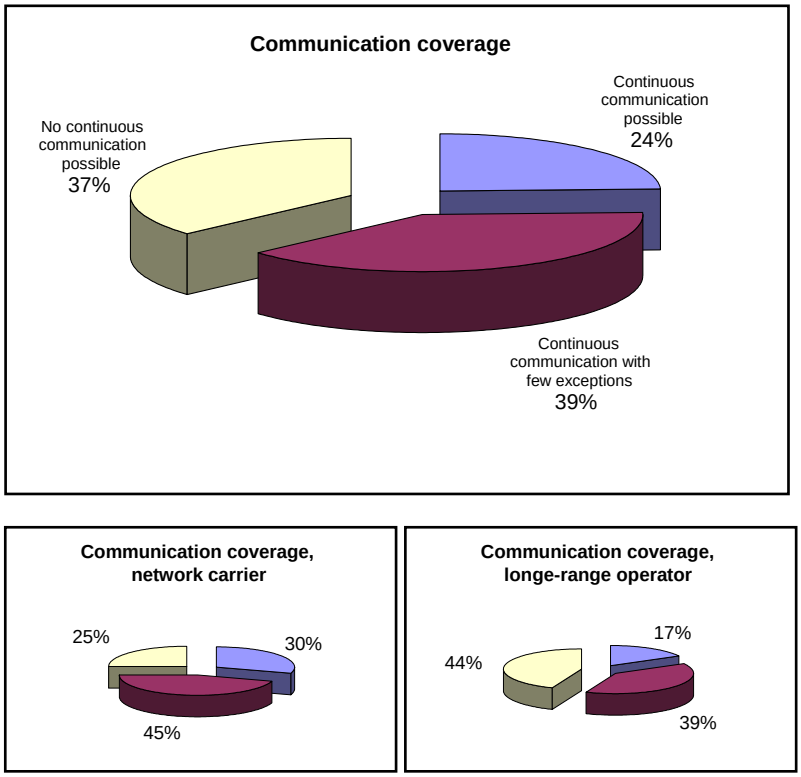


Figure 38: Communication coverage

Network carriers show the best communication coverage. It is no surprise that long-range carriers face bigger problems when it comes to worldwide communication.

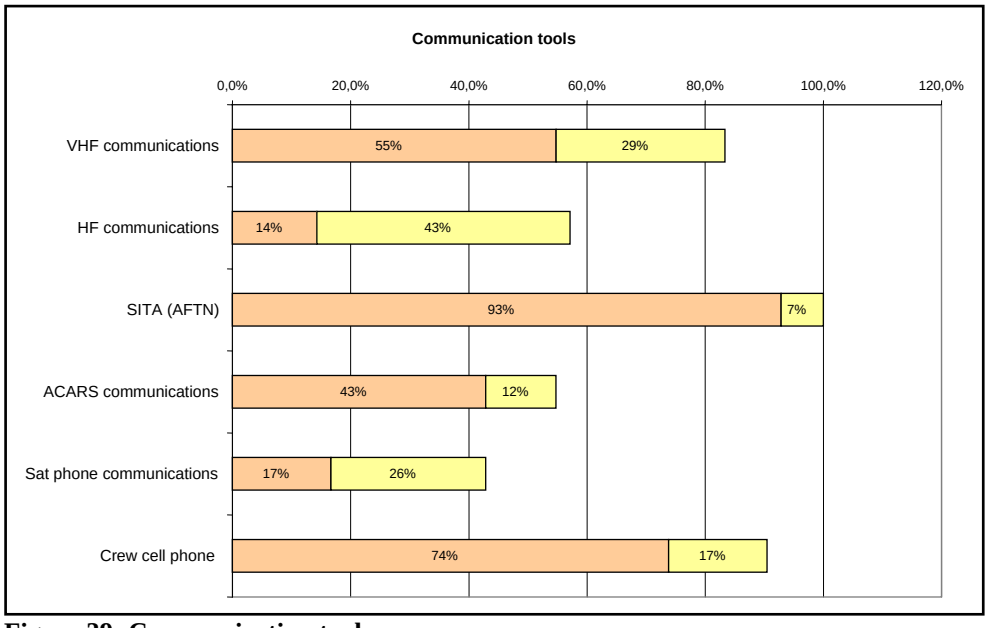


Figure 39: Communication tools

SITA (AFTN) is dominating in communications between ground units. Communication to and from the aircraft mainly rests on VHF. Crew cell phones play an important role in the communication with crews on the ground. Some carriers use it as a standard means to communicate relevant data such as take-off performance. ACARS is another important tool which is widely used. HF communication often serves as a back-up system and is only used occasionally as a last resource.

4.4.3 Interfaces

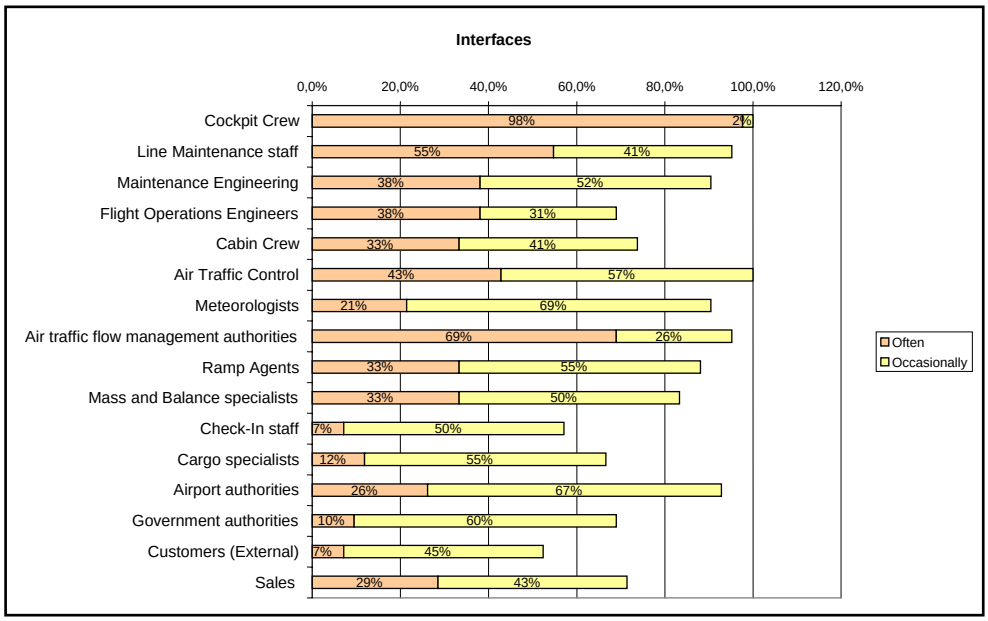


Figure 40: Interfaces

Since FOO/FDs are in the centre of operations it is quite natural that they are connected via many interfaces. FOO/FDs often act as a communication hub. As the diagram shows, all mentioned stakeholders play an important role, with the exception of external customers and check-in staff. The most important partners in daily operation are cockpit crews. This is to be expected, because cockpit crews are the main customer for FOO/FDs.

Other very important partners are air traffic flow management units and line maintenance staff. The majority of the other partners are only consulted on an irregular basis. It can be assumed that contact with these will only be established if required by an irregularity. It is surprising that direct communication with a meteorologist still plays an important role in an environment of free distribution of weather information via electronic media.

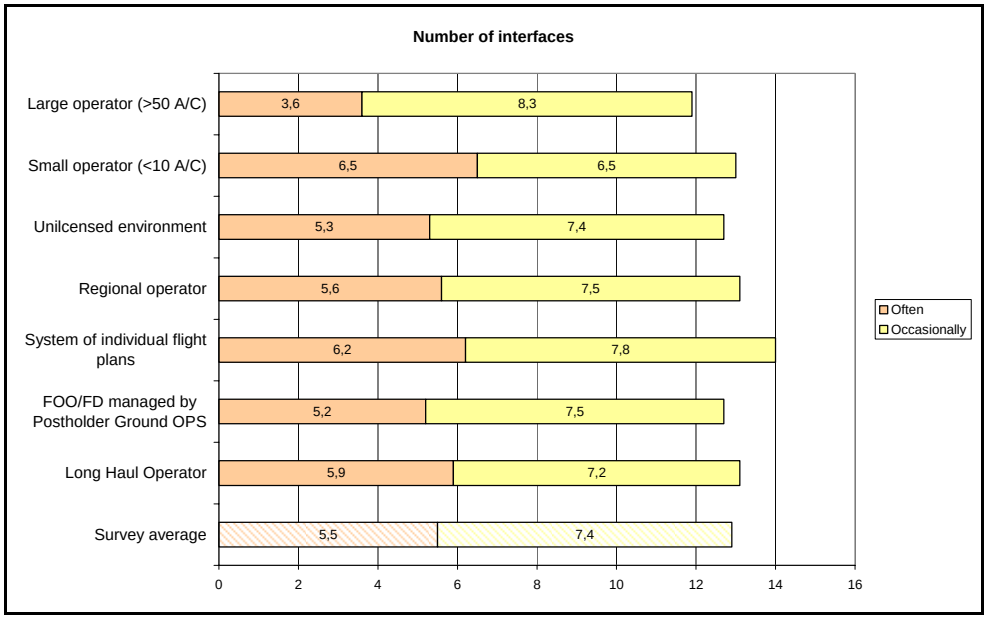


Figure 41: Number of interfaces

Figure 41 shows the number of interfaces of FOO/FDs depending on the environment of the operator. It can be seen that systems which depend on flight plans being generated on an individual basis require more interfaces. This system is more labour intense but has other economic benefits, especially with regard to fuel savings and reduction of delays.

The most important factor for the number of relevant interfaces for FOO/FD is the size of the operator. In a large operator environment, the FOO/FDs are specialized and certain tasks are delegated to other departments. FOO/FDs working for smaller operators can hardly depend on others and often act as the “fire brigade” in all areas.

4.5 Tasks and duties

4.5.1 Evaluation notes

The following analysis shows how often FOO/FDs are involved in activities commonly delegated to FOO/FDs. The list of activities is complemented by so called “other activities”. These are selected tasks that do not directly fall und the duties of FOO/FDs, but are often delegated to this type of personnel.

The questionnaire gives operators the opportunity to select whether a duty is delegated to flight crews or other departments, if they are not performed by FOO/FDs. This distinction is valuable for an analysis of dispatch support from the viewpoint of the cockpit crew and could be used in a second study which concentrates on the setup of operational control centres. However, the information is not essential when it comes to the definition of the job profile of FOO/FDs and results are presented here, only where regarded as relevant.

For the purpose of easy comparison between operators, a so called “activity index” has been established. This index is an absolute value, calculated for all four sections of tasks in the survey (pre-flight assistance, in-flight assistance, operations control, and other activities). The index is based on the simple accumulation of the number of tasks performed within each sub-group. Tasks only performed in exceptional cases are counted as 0.5 points only, while regular tasks are counted as 1.0. The “activity index” has no significance by itself and only serves as a means to compare operators.

4.5.2 Preflight assistance

Figure 41 shows the profile of all participating operators with regard to pre-flight activities.

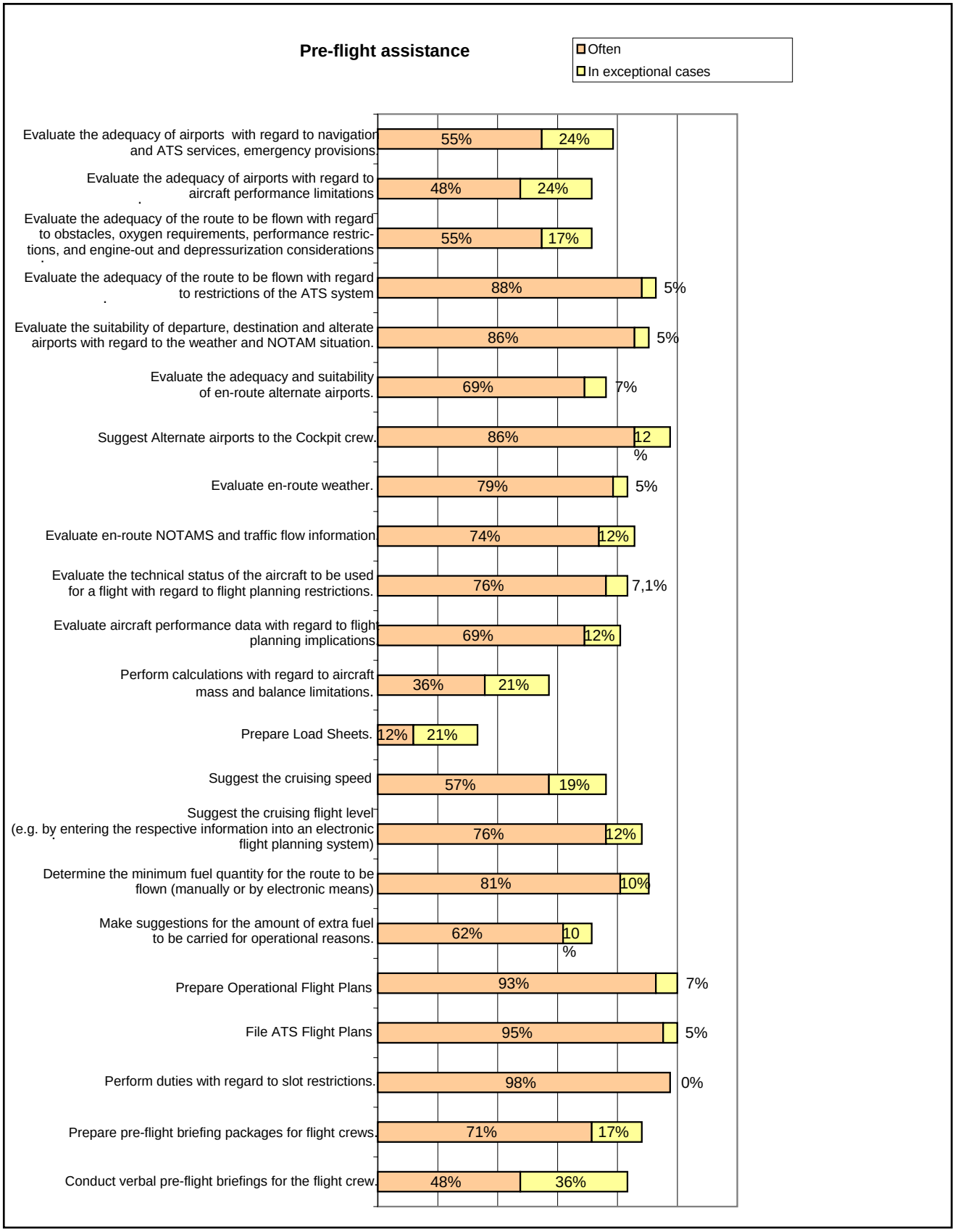


Figure 42: Pre-flight assistance

The values for tasks being performed “in exceptional cases only” is relatively small. For key activities they are mostly in the range of 10%. This leads to the assumption that the duties of FOO/FDs are clearly defined and responsibilities are allocated.

However, this is not applicable for the first three activities on the list, which may be summed up as “route and airport analysis”. These strategic tasks are independent of weather and other short-term conditions. The total percentage for these tasks is lower than average. The respective duties are often performed by flight operations engineers or even by contracted service providers. Some executive jet operators even delegate the task of route and airport analysis to the flight crews.

The short-term tactical evaluation of the suitability of routes and aerodromes is a core activity of FOO/FDs. Only the value for en-route alternate airports is lower, because en-route alternates are not required for many operators. For the determination of training requirements it is significant that 86% of all FOO/FD make suggestions for alternate airports. Another 12% do this in exceptional cases. In total, this complex duty is part of the job profile for 98% of all FOO/FDs.

Furthermore, en-route weather information and NOTAMS are in the focus of FOO/FDs, but they are of less importance than airport information. Especially the evaluation of NOTAMS is very time consuming for flight crews and is often difficult to accomplish during short transit times. A point in case is a 2003 incident in Manchester, where three arriving aircraft were not aware of a published runway shortening and had to go-around. Later, an Excel Airways aircraft, whose crew did not study the NOTAMS thoroughly enough took-off from the shortened runway. Luckily the aircraft was able to climb clear of the vehicles on the runway. In a world of shortened turn-around times it is worth considering, whether the workload of pilots could be reduced by making use of qualified FOO/FDs.

The vast majority of FOO/FDs are in touch with aircraft technical and performance information. It is no surprise that performance information is less important, because its evaluation is often a strategic task performed in the route and airport selection process. Short term performance, such as take-off or landing performance is calculated by flight crews in most cases. Three quarters of all FOO/FDs evaluate the technical status of the aircraft and take the results into consideration for flight planning.

Mass & balance calculations are the least relevant duties on the list. The majority of FOO/FDs are not involved, because the task is often delegated to the ground handling agent. 24% of all flight crews have to prepare their load sheet themselves.

Only a relatively small percentage of FOO/FDs suggest the cruising speed. In many cases a standard speed has been entered into the electronic flight planning system so that no individual inputs are required. Only the operating crew has the full authority to adjust the speed for reasons of punctuality or fuel economy. The same can be said for the cruising flight level. It must be stated that standard values for speed and flight level go hand in hand with leaner processes and require less skills to be applied by flight planning personnel. This advantage must be balanced against the benefits with regard to fuel efficiency and network stability than can be achieved by values that are customized for each individual flight. These benefits are significant for long-haul flights, but almost negligible for short regional flights.

Flight plan preparation and flight plan filing are core activities for FOO/FDs. Hence, values for these activities rank amongst the highest in the survey. Slot related duties have the highest value for standard tasks. Slotting is an activity which is crucial in the congested European airspace and can hardly be delegated to someone else.

Today, in many cases briefing packages are generated automatically by IT systems after all inputs have been made by FOO/FDs. In other cases the package is assembled by the responsible ground handling agent. Still a high percentage of FOO/FDs perform this task on a regular basis.

For the majority of flights a verbal briefing from a dispatcher to the flight crew is no longer a routine activity. Nevertheless, at least in exceptional cases many dispatchers still offer this service.

Table 5 compares all pre-flight activities between defined groups of operators. Only activities which are performed on a regular basis are considered. The table shows several significant differences for individual tasks, depending on the type of operations. The most significant differences to the average values can be found in the column for regional operators. Large operators and long-haul operators are more involved in a number of pre-flight tasks.

Pre-flight assistance **Normal duties** **(most significant values are highlighted)**	**Average**	**Unlicensed environment**	**Long haul operator**	**Regional carrier**	**Network carrier**	**Executive operator**	**Small operator (<10 A/C)**	**Large operator (>50 A/C)**
Evaluate the adequacy of airports with regard to navigation and ATS services, emergency provisions.	**55%**	48%	61%	54%	57%	60%	63%	67%
Evaluate the adequacy of airports with regard to aircraft performance limitations.	**48%**	37%	61%	31%	57%	40%	50%	78%
Evaluate the adequacy of the route to be flown with regard to obstacles, oxygen requirements, performance restrictions, and engine-out and depressurization considerations.	**55%**	41%	68%	31%	67%	40%	50%	100%
Evaluate the adequacy of the route to be flown with regard to restrictions of the ATS system.	**88%**	81%	93%	85%	95%	80%	88%	100%
Evaluate the suitability of departure, destination and alternate airports with regard to the weather and NOTAM situation	**86%**	78%	100%	62%	91%	80%	100%	100%
Evaluate the adequacy and suitability of en-route alternate airports	**69%**	52%	96%	23%	86%	80%	75%	100%
Suggest Alternate airports to the Cockpit crew	**86%**	78%	93%	78%	86%	80%	88%	89%
Evaluate en-route weather	**79%**	70%	89%	54%	81%	60%	63%	89%
Evaluate en-route NOTAMS and traffic flow information	**74%**	67%	86%	31%	71%	80%	88%	78%
Evaluate the technical status of the aircraft to be used for a flight with regard to flight planning restrictions	**76%**	67%	89%	39%	91%	40%	63%	89%
Evaluate aircraft performance data with regard to flight planning implications	**69%**	63%	82%	39%	76%	60%	63%	67%
Perform calculations with regard to aircraft mass and balance limitations	**36%**	30%	50%	8%	38%	60%	38%	33%
Prepare Load Sheets.	**12**	15%	14%	0%	5%	40%	25%	11%
Suggest the speed to be flown	**57%**	44%	71%	15%	66%	80%	75%	66%
Suggest the flight level to be flown (e.g. by entering the respective information into an electronic flight planning system)	**76%**	70%	86%	39%	76%	80%	88%	78%
Determine the minimum fuel quantity for the route to be flown (manually or by electronic means)	**81%**	74%	96%	46%	867%	80%	100%	89%
Make suggestions for the amount of extra fuel to be carried for operational reasons	**62%**	48%	75%	15%	71%	80%	75%	67%
Prepare Operational Flight Plans	**93%**	96%	93%	85%	86%	100%	100%	78%
File ATS Flight Plans	**95%**	96%	93%	85%	915%	100%	100%	89%
Perform duties with regard to slot restrictions.	**98%**	96%	96%	100%	95%	100%	100%	100%
Prepare pre-flight briefing packages for flight crews	**71%**	63%	82%	31%	67%	80%	88%	67%
Conduct verbal pre-flight briefings for the flight crew	**48%**	41%	61%	23%	57%	60%	63%	44%

Table 5:Pre-flight duties

With the exception of large operators, only a minority of operators delegate route analysis tasks to their FOO/FDs. This is a reason for concern, because the smaller operators hardly have operations engineering departments. It can be assumed that route analysis is often neglected, which confirms the findings of IOSA audits.

Also, executive operators show a higher percentage value for selected tasks. The values for executive carriers must be used with some care as only five operators participated in the survey. Table 5 also shows that the service provided by unlicensed dispatchers is slightly lower, but the effect is not very pronounced.

The activity index, as described above, summarizes the situation for the pre-flight activity section. It is remarkable that very small operators as well as very large operators show values above the average. It must be concluded that operators with a fleet between 10 and 50 aircraft have values which are significantly below the average. These operators are in a developing stage, where the FOO/FD is no longer responsible for the entire operation, but the level of service which is common for large legacy carriers is not provided.

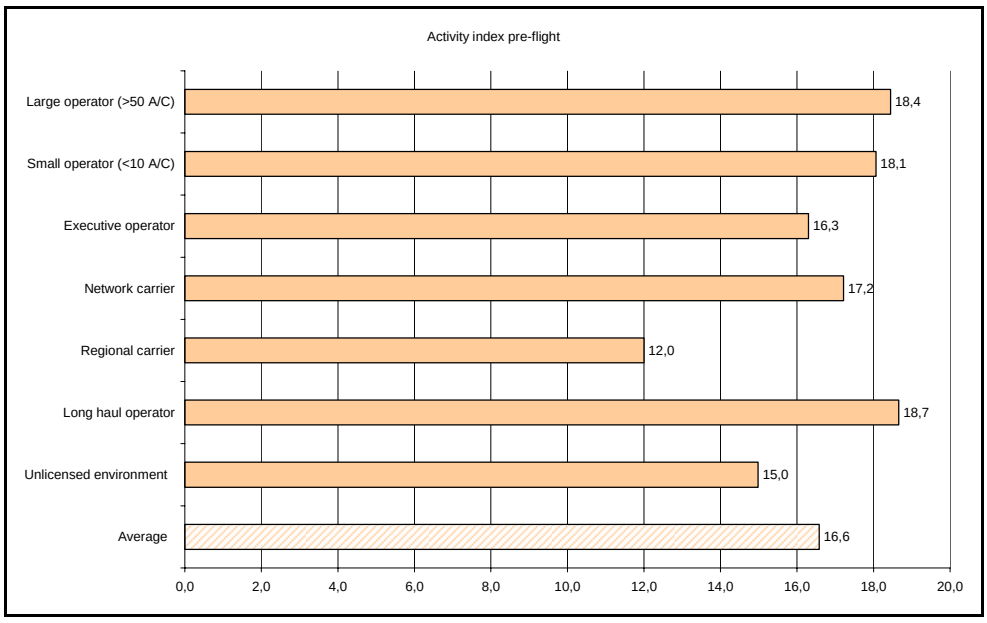


Figure 43: Activity index, pre-flight activities

4.5.3 Operational control

Operational control Normal duties	Average	Unlicensed environment	Long haul operator	Regional carrier	Network carrier	Executive operator	Small operator (<10 A/C)	Large operator (>50 A/C)
Follow the daily operations, report delays and irregularities	**98%**	100%	96	100%	95%	100%	100%	100%
Initiate re-routings, prepare or change aircraft rotations and initiate equipment changes for operational reasons	**90%**	88%	89%	100%	85%	100%	88%	100%
Decide about flight-delay or –cancellations	**88%**	88%	85%	100%	90%	60%	88%	100%
Initiate ferry flights or sub-contracting (ACMI-charter for operational reasons	**70%**	64%	69%	85%	70%	40%	63%	67%
Schedule or initiate aircraft maintenance activities	**15%**	12%	19%	15%	20%	0%	13%	33%
Pro-actively optimize short-term network capacities on the basis of the given booking situation	**38%**	32%	42%	39%	50%	0%	25%	44%
Control aircraft-handling resources and decide about handling priorities	**35%**	32%	42%	38%	35%	20%	38%	33%

Table 6: Operational control duties

Table 6 shows that the variation in the area of operational control between operator types is not as pronounced as in the pre-flight section. All groups of operators are highly involved in this area. A value of 100% is often reached for core activities. Regional carriers are very focused on operational control activities and reach the highest values in this segment.

Executive operators do not need to steer a complex network or hub. Hence, activities in this sector are limited. Network carriers are more active in this area than all other groups of operators. The activity index for operational control duties confirms this analysis. The question whether staff is licensed or not is almost irrelevant in the operational control section.

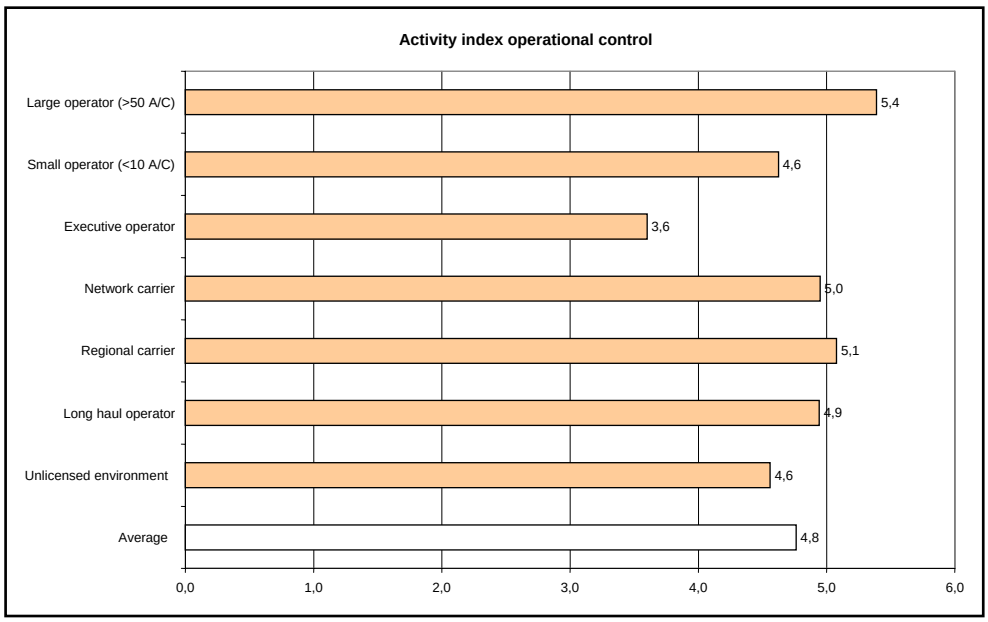


Figure 44: Activity index, operational control

4.5.4 In-flight assistance

Although not mandatory as in the U.S. system, many operators engage their FOO/FDs in activities which assist crews in-flight. FOO/FDs are available for assistance upon request. Proactive duties, such as continuous weather monitoring are performed less often. In particular, only 56% of all operators perform active flight-following. However, this number is still high considering the fact that flight-following is labor intensive and not required by regulations in Europe. It can be assumed that many operators do not perform flight following as stringent and sophisticated as their U.S. counterparts.

Initiation of emergency procedures, which is a core activity of FOO/FDs as defined by ICAO, reaches values in excess of 90%.

In-flight assistance **Normal duties** **(most significant values highlighted)**	**Average**	**Unlicensed environment**	**Long haul operator**	**Regional carrier**	**Network carrier**	**Executive operator**	**Small operator (<10 A/C)**	**Large operator (>50 A/C)**
Be available for in-flight assistance at any time an aircraft is airborne	**93%**	89%	100%	75%	100%	100%	88%	100%
Pro-actively monitor weather and other relevant operational information at any time an aircraft is airborne	**78%**	67%	85%	67%	90%	60%	63%	100%
Pro-actively provide crews with relevant operational information while the aircraft is airborne	**81%**	78%	82%	83%	90%	100%	63%	88%
Pro-actively follow the exact in-flight position of each individual aircraft at any given time (flight-following)	**56%**	48%	63%	42%	65%	60%	62%	50%
Assist crews in case of in-flight diversions upon request	**90%**	89%	93%	83%	100%	80%	75%	100%
Assist crews in case of re-routings (not diversions) upon request	**88%**	85%	89%	83%	95%	80%	75%	100%
Assist crews in-flight in when technical problems occur in a way that a recalculation of the flight plan becomes necessary	**83%**	78%	89%	58%	95%	80%	75%	100%
Initiate emergency response procedures	**93%**	88%	93%	92%	95%	100%	88%	100%
Cooperate with crews in case of security threats	**95%**	93%	93%	100%	95%	100%	100%	100%

Table 7: In-flight assistance

Variation between groups of operators is small in the area of in-flight assistance. Small operators and regional carriers show the lowest values in this area.

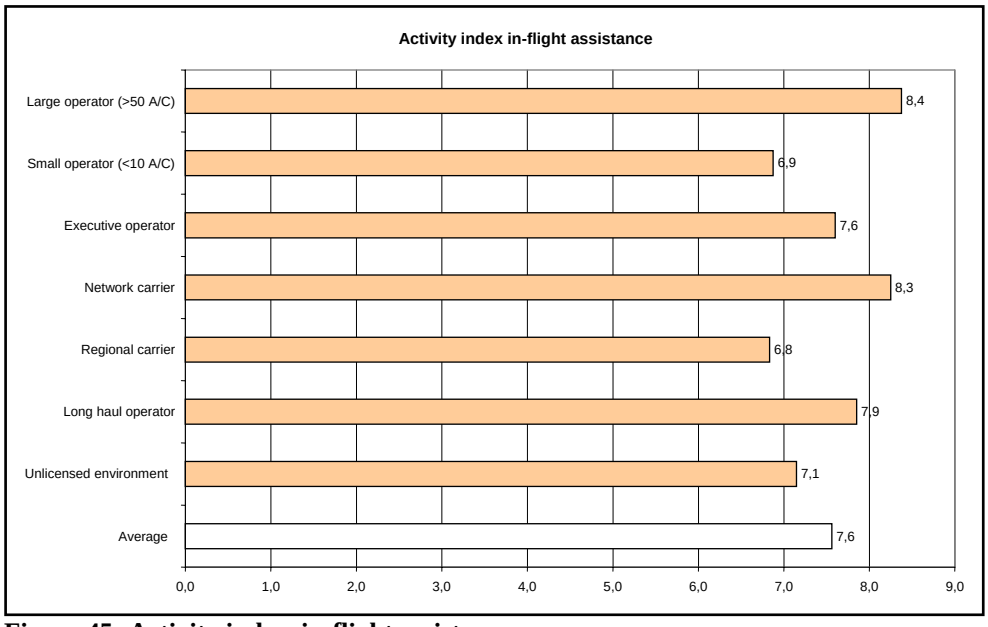


Figure 45: Activity index, in-flight assistance

4.5.5 Other activities

In general, FOO/FDs concentrate on their primary tasks, but other activities are also performed in some cases. These activities are often commercial activities which are not related to aviation safety. Crew control and traffic rights are the most important tasks in this section. It is no surprise that FOO/FDs of executive operators are highly involved in traffic rights matters. The table gives evidence that executive operators and small operators are very active in this area. FOO/FDs working in this environment cannot rely on other departments do to a lack of resources. Generally unlicensed staff are often involved in crew planning activities.

Other activities **Normal duties** **(most significant values highlighted)**	**Average**	**Unlicensed environment**	**Long haul operator**	**Regional carrier**	**Network carrier**	**Executive operator**	**Small operator (<10 A/C)**	**Large operator (>50 A/C)**
Prepare crew rotations and/or duty patterns.	**14%**	22%	4%	39%	5%	40%	25%	0%
Track or evaluate flight crew qualifications.	**19%**	26%	14%	31%	14%	40%	13%	22%
Track or calculate crew duty times (cabin and/or flight crew).	**38%**	52%	25%	69%	14%	60%	63%	11%
Initiate crew changes (cabin and/or flight crew).	**38%**	52%	21%	77%	19%	40%	50%	22%
Perform bookings for crew transport and accommodation.	**26%**	41%	11%	54%	10%	60%	50%	11%
Act as ramp agent	**0%**	0%	0%	0%	0%	0%	0%	0%
Verify or maintain electronic databases.	**31%**	44%	32%	38%	33%	20%	37%	11%
Arrange traffic and/or landing rights.	**31%**	40%	25%	38%	14%	80%	63%	11%
Calculate over-flight or landing charges.	**19%**	15%	25%	8%	24%	20%	13%	22%

Table 8: Other activities

Tasks which are performed “in exceptional cases” only are not shown in table 8, but are included in the “activity index” which is presented in figure 46. Large network carriers are the ones that are most focussed on the primary activities of FOO/FDs.

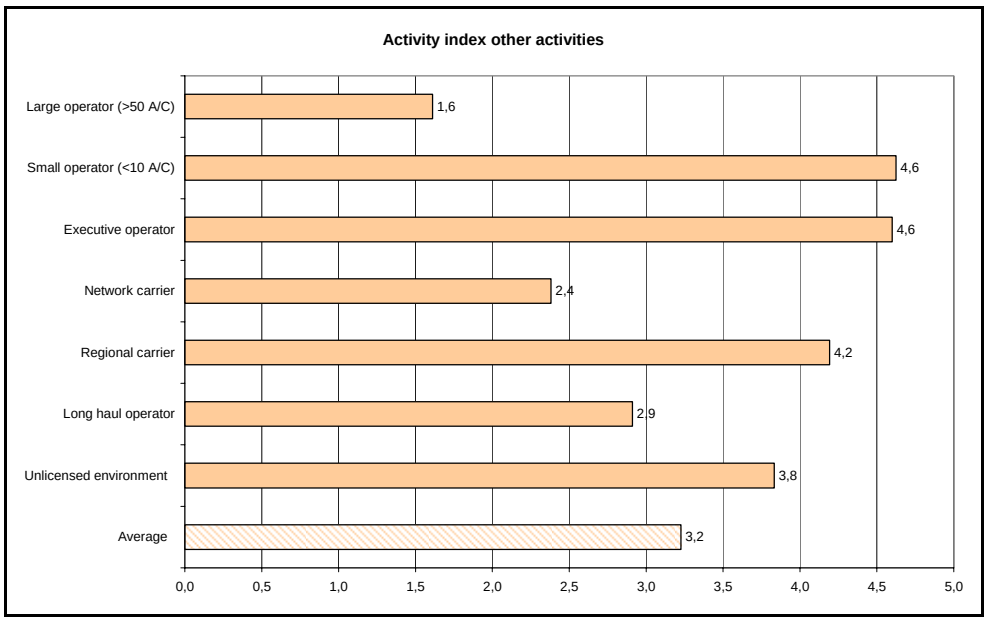


Figure 46: Activity index, other activities

5. Consequences

5.1 Identified training needs

The analysis of the data shows that FOO/FDs in Europe have a job profile which fully meets the characteristics as defined in ICAO Annex VI Chapter 4.6.1. Dispatchers in Europe are in the centre of pre-flight preparation and flight-planning activities. The level of in-flight assistance provided is lower than in the U.S., but still remarkable. With the exception of active flight-following, most European operators provide some kind of back-up for in-flight crews. More than 90% of FOO/FDs are part of the emergency response chain and initiate such activities.

With the exception of in-flight assistance it can hardly be said that European operational control systems depend less on the results of the work of FOO/FDs than U.S. systems. The fact that there are no specific training requirements in Europe is not reflected in reduced duties of FOO/FDs here. They are fully involved in all FOO/FD related activities, often without having sufficient background knowledge. This results in less use of complex material such as MEL or performance manuals, which would be required to accomplish more complex tasks of route analysis and in-flight assistance.

This situation is confirmed by a representative of a provider of flight planning software. He stated in an interview that he finds it increasingly difficult to communicate the fea-

tures of his product to potential or existing customers, because in many companies there is a lack of trained individuals.

From the operational point of view, the selection of alternate airports is a good example for the complexity of individual tasks. The decision can be very time consuming in difficult weather scenarios. In order to select a correct alternate airport at least the following steps must be taken:

- Determination of the number of required alternate airports, depending on the weather situation at the destination airport.
- Determination of political constraints which exclude the selection of certain airports
- Determination of the technical approach capability of the airplane
- Determination of the available aircraft range
- Selection of a route that is both legal and meets aircraft performance characteristics
- Evaluation of aerodrome weather minima
- NOTAM evaluation of available alternate aerodromes
- Application of the correct calculation method for alternate weather minima

In the system of sole responsible of the pilot-in-command, it is common that the flight crew has the final word about the alternate airport. If FOO/FDs make suggestions to the flight crew, this suggestion must be legal and correct. Otherwise it could be the beginning of an error-chain.

This requires the task to be performed by a trained individual. If FOO/FDs are not capable to properly accomplish a task, they should not interfere with the issue at all and the task should be completely delegated to the flight crew.

There are significant differences with regard to the job profile, depending on the type of operator. Regional operators have the lowest overall activity index with a strong focus on operational control. Large operators and network carriers engage in specialist activities, such as performance evaluation and route analysis. Small carriers and executive operators often engage their operational control staff in side activities such as crew control. To a lesser degree, it is a contributing factor, whether staff is licensed or not.

The total activity index accumulates the value for all subsections. The diagram below shows that the total activity index is almost identical for all groups with the exception of regional carriers which have the least complex operation.

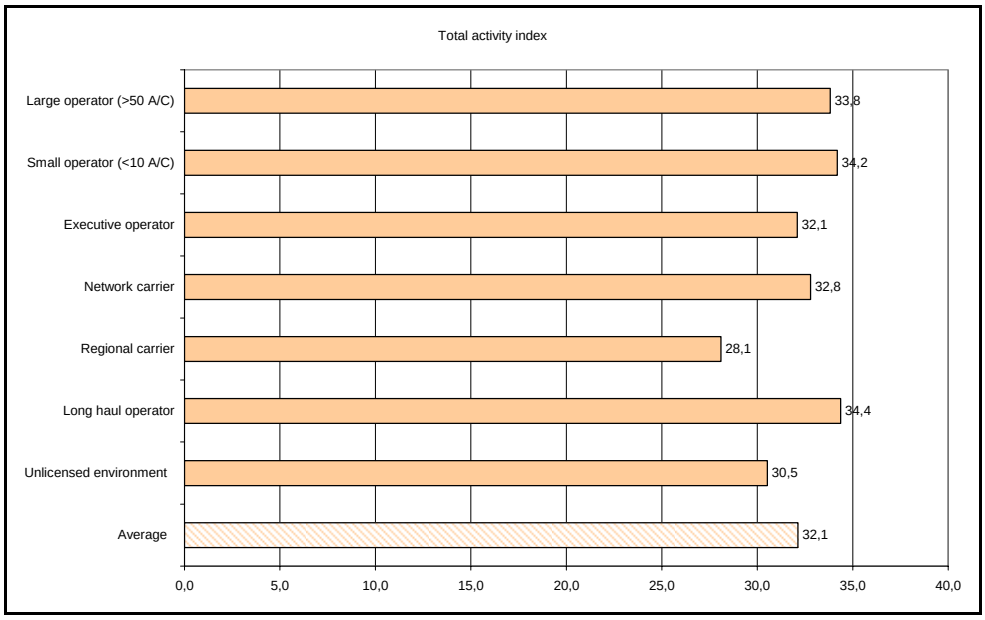


Figure 47: Total activity index

Basic dispatcher training is the type of training which is needed most, according to the survey. 90.5 percent of all operators believe that basic training should be accomplished before an individual can be assigned any responsibility in the field of operational control.

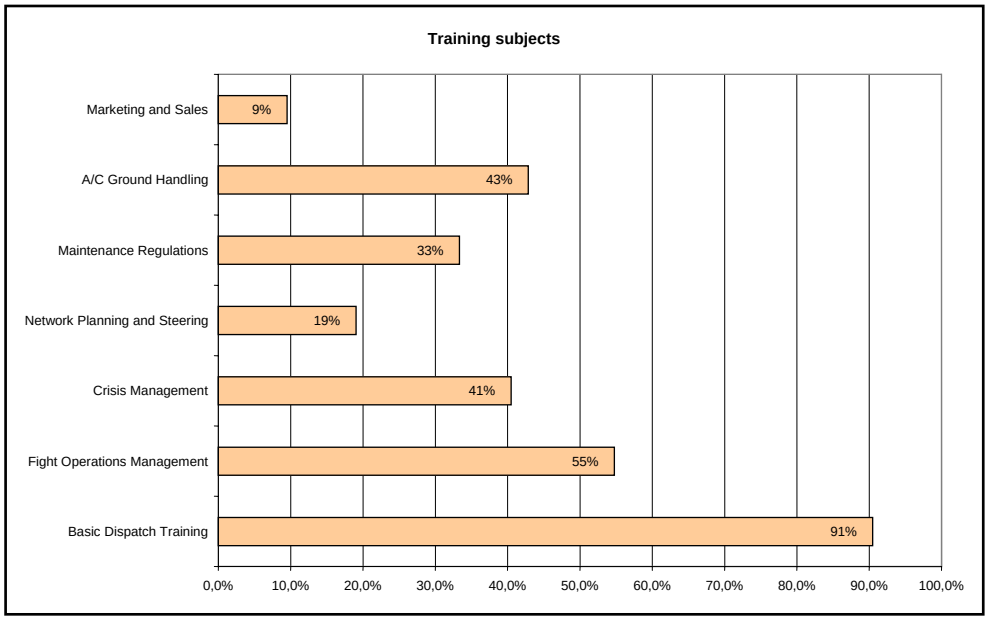


Figure 48: Training subjects

The training manual as presented in ICAO Doc 7192-D3[26] is the primary source for the content of such a basic training. The training is divided into two phases, one of which is theoretical classroom training. It covers the relevant subjects within 285 hours over a period of 9.5 weeks.

Phase two consists of practical and on-the-job-training. Phase one is subdivided into 13 areas. For each area, a recommended duration is specified. Within each knowledge area, topics are shown together with a figure which indicates the required level of understanding.

The results of the survey as presented above shows that the training contents as described in ICAO Doc 7192-D3 are valid to a very large degree. In the European context, the time spent on flight monitoring (16 hours) and communication (18 hours) could be slightly reduced, giving regard to the fact that in-flight assistance is not mandatory in Europe.

But this document does not yet contain special navigational procedures, such as RNP and RVSM. The time spent on flight planning (18 hours) is very short and might be insufficient to familiarize the inexperienced student with this key activity of his future profession. This is especially true, as the complex ETOPS subject is part of the chapter.

When establishing a syllabus for basic dispatchers training, ICAO Doc 7192-D3 should be used as the basis. The schedule should be adapted to reflect the special requirements of European operators. The total duration of the training must meet industry expectations.

It is remarkable that the industry believes that the necessary duration of a basic dispatcher's training is above ICAO recommendations. The 9.5 weeks as proposed by ICAO are almost three weeks below the survey average of 12.2 weeks. Large operators, which often are legacy carriers, propose the longest training. It is worrying, that small operators not only have the shortest on-the job-training, but also propose the shortest basic training. Figure 46 shows that FOO/FDs, working for small operators are equally or even more involved in all key activities of FOO/FDs.

[26] Chapter One of ICAO Doc 7192-AN/857 Part D3 is attached in Annex B

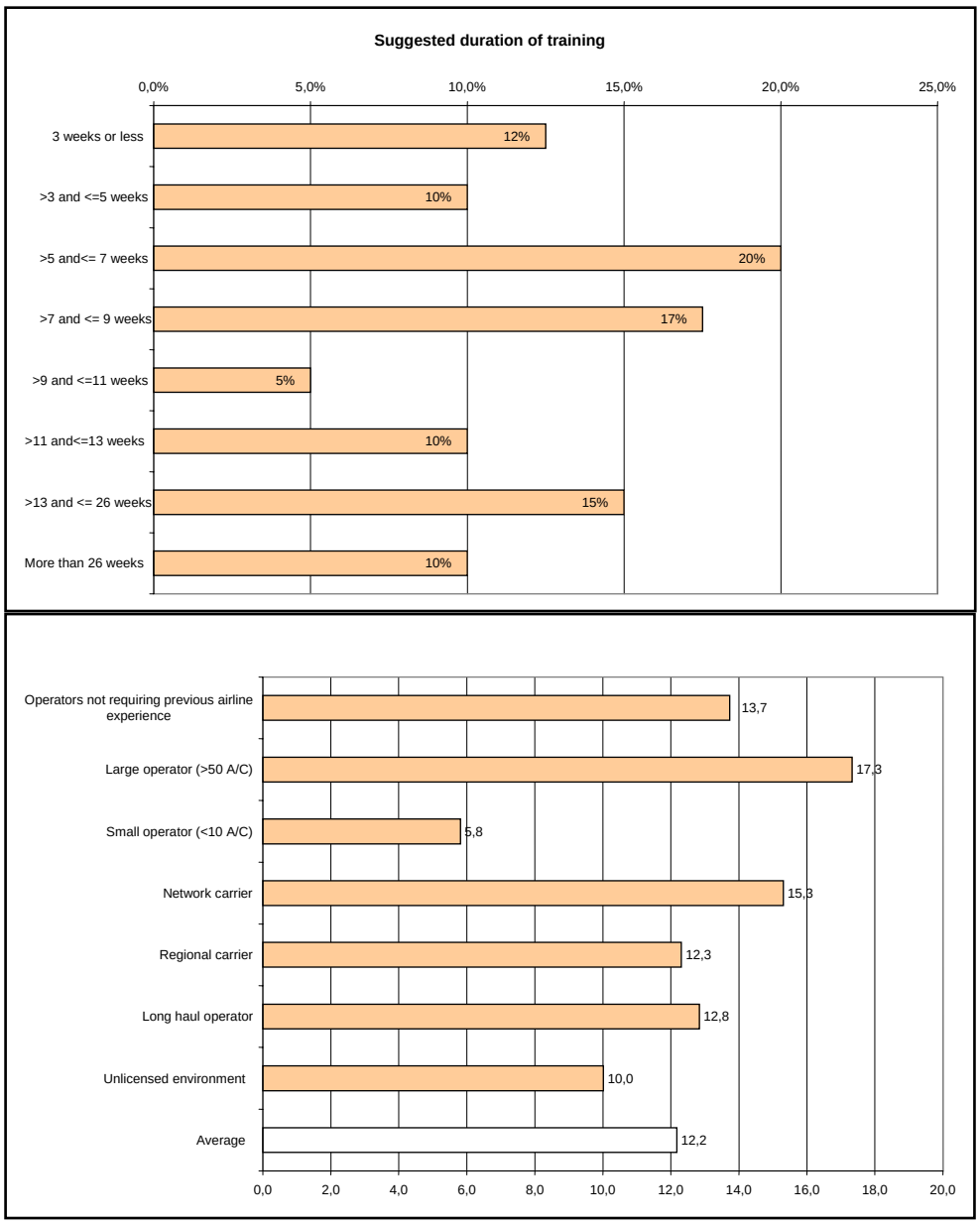


Figure 49: Proposed duration of training

The survey shows a distinct peak in the range of a proposed training duration between 5 and 9 weeks. A lower, second peak can be observed between 13 and 25 weeks.

ICAO Doc 7192-D3 also specifies minimum training hours for individuals who have an aviation background. For this group, ICAO suggests 169 hours, which equals 6 weeks. The duration of some chapters is reduced by up to 50%. However, it is problematic to use these lower figures as a guideline. Staff with experience in ground handling does not require any “Mass & Balance” training. But for the same individual, there is no justification to reduce the time required for the subject “Navigation”.

Since previous experience differs from one person to another, it is impossible to customize a training which fits the needs of all individual candidates. Hence, the recommended 9.5 weeks are the more appropriate guideline for a basic dispatcher's training course.

The syllabus of a basic training course should cover generic content only and must be free of operator specific information. Basic classroom training gives students the necessary theoretical background to actively participate in the succeeding practical training phase. The importance of a structured practical training under real conditions can not be overemphasized.

During the second phase of the training, the newly hired FOO/FD needs to actively apply his knowledge in reality and must also be made familiar with all operator particularities. This includes the type of aircraft, route network as well as software and communications equipment.

Furthermore, the company' s standard operating procedures, reporting lines, emergency provisions and interfaces to other departments form an important part of this training, commonly called company indoctrination.

Both phases of training must be concluded with a performance evaluation and/or test in order to make sure that the applicant has gained adequate knowledge for his future task. In today's rapidly changing environment, it is inevitable that at least a minimum recurrent training is provided for FOO/FDs.

5.2 Regulatory matters

At present, the training level of FOO/FDs in Europe is not in the scope of many national aviation authorities. This is not surprising, as JAR-OPS 1 does not specify the type, content and duration of training for dispatchers. Hence, authority inspectors have no basis for findings when they visit operators in pursuance of their oversight function. Also, many inspectors do not have the technical expertise to analyze the complex processes of modern operational control centers. This is aggravated by the fact that the importance of IT systems and electronic databases has grown tremendously over the years.

Only a process oriented approach and detailed technical knowledge would allow inspectors to find systematic problems in the application of operational procedures, database integrity, route analysis, and the flow of safety related information. Until now, many inspectors restrict themselves to the checking of files, facilities and manuals.

In the aviation industry of the late 20th century, problems in the area of dispatch were limited, as legacy carriers, often controlled by the state, guaranteed for a minimum skill level of their FOO/FDs. Many of them were formally licensed. In the last decade, the industry has changed tremendously and continues to do so. Small start-up operators, niche carriers, cargo operators and air taxi services have increased their market share at the expense of legacy carriers.

The survey has clearly shown that these operators employ less trained staff and spend less time on on-the-job training. Training is a cost factor and it is understandable that operators do not spend money on training that is not even required by the regulator.

In this highly competitive environment, it is unlikely that the industry will be able to solve the problem by its own. Irrespective of the discussion, whether dispatchers should be licensed, there is clear indication that some regulation is necessary on the European level which specifies minimum training requirements for dispatchers.

JAR-OPS 1 Subpart O specifies training requirements for cabin attendants, but does not require cabin attendants to be licensed. It is difficult to find arguments for the fact that no training is specified for FOO/FDs.

At the time of writing competence for air operations was not yet handed over to EASA[27]. EASA will be in charge as of 2008 and it is unlikely that any significant changes of JAR-OPS 1 will occur until that date. EASA has already indicated that it has no intention to establish a requirement for dispatchers to be licensed.

In 2004, EASA has indicated that the profession itself must not be regulated, but the function must be subject to community legislation[28]. In the comment response docu-

[27] European Aviation Safety Agency, Cologne
[28] EASA Opinion No. 3, 2004

ment (CRD) to the “Essential requirements for Air Operations”, EASA continues to say that it is not the intention of EASA to mandate the use of flight dispatchers.

Nevertheless, the above said does not preclude EASA from setting up minimum training specifications for individuals who perform operational control activities.

ICAO has published the so called “Global Aviation Safety Roadmap”[29] in December 2006. The content was delivered in a joint effort by IATA, manufacturers, navigation service providers, airports and the international pilot association.

Two of main aspects of the safety roadmap are the shortage of qualified personnel in safety critical areas and the adoption of industry best practice. Also in the focus of the roadmap is “inconsistent application of standards in individual sates”. The described situation of operational control personnel in Europe delivers many arguments for the implementation of the roadmap in the mentioned aspects.

5.3 Available courses

It is beyond the scope of this study to describe the way in which dispatch training is organized in more than 30 European countries. In countries which issue licenses it is often the flag carrier, who organizes the training. In the case of Germany, Lufthansa Flight Training GmbH (LFT)[30] is the largest training provider. The course duration exceeds one year and costs €18.900. The syllabus is quite similar to the ground school syllabi of airline transport pilots. Upon successful completion an ICAO Dispatcher’s license is issued. Austria has a similar system.

The duration and cost of such training does not meet the requirements of many operators. For this reason, FAA dispatch training courses have become popular. Some of the most popular training providers are Jeppessen Inc.[31] and the Sheffield School of Aeronautics[32] in Florida. Sheffield trains inexperienced individuals in 6 weeks, following a syllabus of 200 hours. The course can be attended on-site, but a distance learning scheme is also available.

[29] Global Aviation Safety Roadmap (http://www.icao.int/fsix/safety.cfm)
[30] http://www.lft-online.de
[31] http://www.jeppesen.com
[32] http://www.sheffield.com/

Jeppessen offers a modular system and prepares students in two steps of approximately 6 to 8 weeks duration. Training costs are in the regime of €5.000. It is the primary goal of both mentioned courses to prepare the student for the written test, as it is mandated by the FAA. Hence, U.S. regulations and other U.S specific matters form an integral part of the syllabus. European regulations and particularities, such as flow management and all weather regulations are only scratched at the surface or omitted completely.

The recent success of the FAA dispatcher training course is based on the fact that employers and employees are attracted by the official license which is granted upon successful completion of the course. The training content itself is by no means tailored to the needs of the European airline industry.

Driven by the requirements of IOSA, the Austrian training provider AeronautX[33] has recently developed a training programme that follows ICAO Doc 7192-D3. The programme consists of 280h. The course is arranged in the form of blended learning consisting of classroom training and distance learning. The training concludes with an evaluation as prescribed by Austrian regulations, which is only available in the German language. Costs are around €3.000.

The British provider Avtech[34] has established a modular scheme of distance learning. The training is subdivided into a foundation part and eight dispatch training modules. Total costs are around €2.100. The students are provided with learning material and have to submit exercises on a regular basis. Upon completion, participants are granted a certificate issued by City & Guilds, the U.K.'s leading vocational awarding body.

Recently Lufthansa Flight Training has developed a training course of 8 weeks duration which is inspired by ICAO Doc 7192-D3, tailored to the European environment. Courses are held upon request and can be attended by individuals even with minimum previous experience. The course is held in the English language and costs around €7.400.

[33] http://www.aeronautx.at
[34] www.avtech2000.co.uk

5.4 Suggested training programme

Of all mentioned training programmes, the 8-weeks LFT course is the one that most precisely matches the requirements as they have been determined in the survey. At the same time all relevant ICAO recommendations are met.

The course meets industry needs in several aspects:

- Content is focused on the European environment
- Training is available in English
- In-house training is possible
- 8 weeks duration is in line with industry expectations and close to the recommendation of ICAO Doc 7192-D3
- Costs of €7.400 are only slightly above FAA course fees
- Course is augmented by Computer Based Training
- Provider has technical know-how and experienced trainers
- Good industry contacts
- Respected brand name with good reputation

Instead of developing a course from scratch, the syllabus[35] presented by LFT could form the basis for a high quality dispatcher's training course of European format.

The syllabus contains about 50 hours less then recommended by ICAO. This is acceptable for students with some previous experience, but may be too demanding for others. The survey suggests that the time spent on aircraft systems could be slightly reduced, because most FOO/FDs are no longer deeply involved in technical issues. On the other hand, the subject "flight planning" should be extended.

Giving regard to the growing importance of CRM/DRM, the time spent for human factors training should be extended to at least two full days, which is the ICAO recommendation.

[35] The course syllabus is attached in Annex C

5.5 Economic benefits of trained FOO/FDs

Apart from their contribution to safety, trained flight dispatchers can reduce the direct operating costs of the operator. A dispatcher is available for no more than €250 per shift. It is likely that trained dispatchers are able to save this amount of money during their working hours.

The following list contains a few examples for possible savings:

- Reduction of fuel costs by optimum selection of route, flight level and speed
- Savings of ATC charges by route optimization
- Minimization of network instability effects
- Optimization of aircraft capacity

Many operators working with repetitive flight plans could reduce their costs by adapting the route and flight level to the environmental and traffic conditions on the basis of individual flights. However, this systematic change would require the input of trained dispatchers.

The magnitude of potential savings is proportional to the size of the aircraft. It is easy to save $250 on a single 747 flight. However, it is difficult to save this amount of money on an ATR42 flight over central Europe. A second factor is the size and complexity of the network. A skilled FOO/FD can save a huge amount of money by stabilizing the operation of a network carrier on a foggy day at its hub. A point to point operator has less to loose in this situation.

The survey has shown that network carriers and large operators employ higher qualified dispatchers. The larger the operator the easier it is to convince carriers of the economic benefits of trained FOO/FDs. For the small turbo-prop commuter operator there is often only the argument of flight safety.

5.6 Market chances

The majority of operators find it either difficult or even very difficult to find adequate staff for their operational control centers. A high number of small operators have serious hiring problems. This puts pressure on hiring criteria. Also long-haul operators have serious difficulties, because they require personnel which are capable of coping with more complex tasks, such as ETOPS and North Atlantic tracks. Interviews with Flight Operations and OCC managers have confirmed that the lack of suitably qualified staff is the main reason for these hiring difficulties.

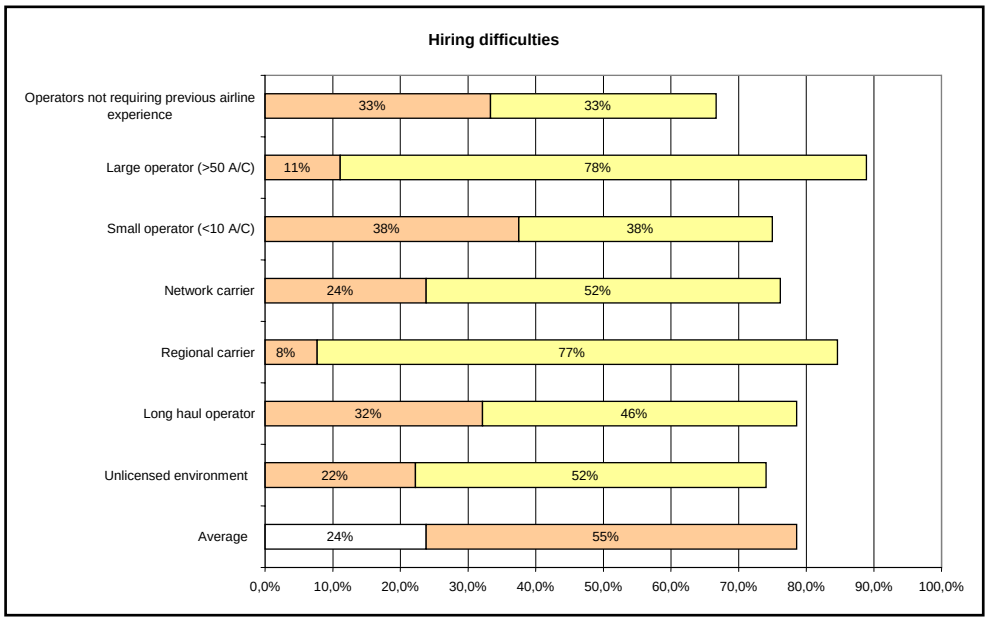


Figure 50: Hiring difficulties

For smaller operators, it is extremely difficult to organize efficient training for newly hired FOO/FDs. A carrier operating 10 aircraft employs approximately 5 dispatchers according to the survey. It is almost impossible to set up classroom training for this small group, especially since the operator only hires one or two individuals per year. These small operators also have difficulties to provide the necessary resources in terms of instructors and the time necessary to set up the training programme.

Hence, these operators prefer applicants who have already gained some experience in a relevant field. However, these individuals are not available in a sufficient number. For this reason, many operators have to train their FOO/FDs themselves.

This is often organized in a very inefficient manner. For example, it can be observed that experienced dispatchers explain NOTAM[36] decoding to students, while being on duty.

This type of training, where learning happens more accidentally than in a structured manner, cannot be appreciated from the didactical standpoint. This approach allows no control about covered subjects and the success of training. It is also inefficient from the operational standpoint, as it interferes with the daily operation.

These arguments clearly speak for an organized basic dispatcher training courses. As presented in the figure below, 86% of the survey participants believe in the success of such a course. 69% would hire graduates and more than 40% would be willing to sponsor the participants.

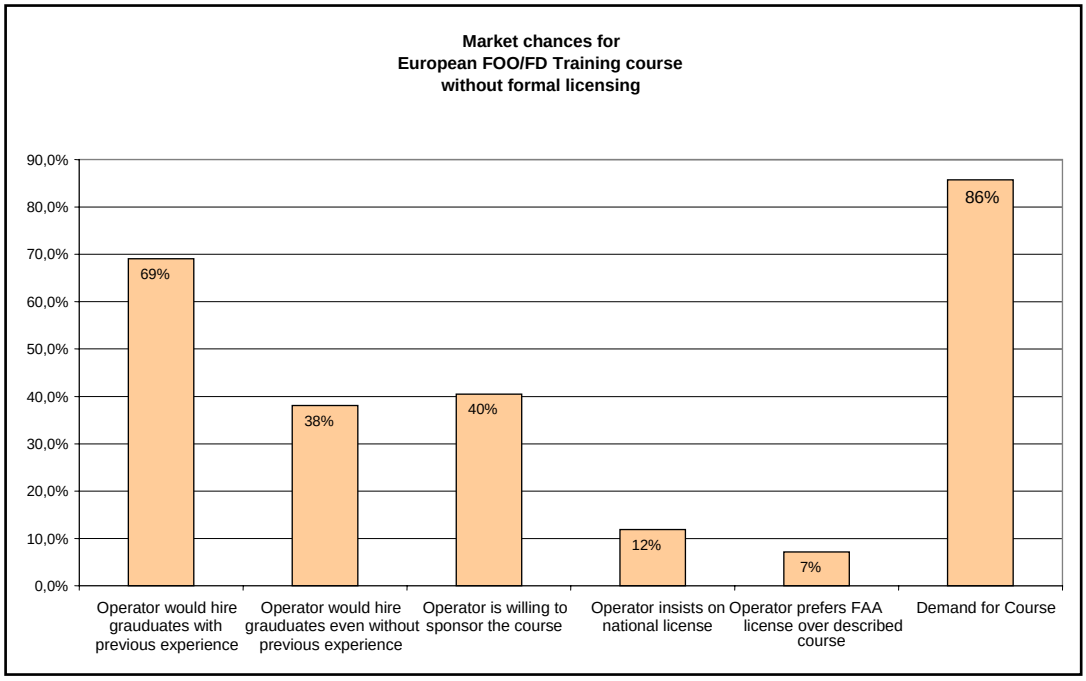


Figure 51: Market chances

As there is no European license available, graduates can only receive a certificate for the successful completion of a course which meets ICAO recommendations. From a marketing perspective it is interesting to see that only 7% of all operators would prefer a FAA course, because graduates receive a license.

[36] NOTAM: Notice to Airmen

All of the above factors indicate good chances for the success of such training courses. The market can be subdivided into two categories. Operators themselves are one group of potential customers, when they send employees to the course in order to qualify them to flight operations officers. In most cases these candidates are employees with some aviation background who have been selected to work in the OCC.

The fact that 40% of the operators declared their willingness to sponsor candidates, does not guarantee a sound financial basis for the training. The survey has been filled in by OCC managers. But it is often difficult to convince senior management that a team of trained FOO/FDs will be beneficial for the overall efficiency.

In an interview, the “Accountable Manager” of a central European operator stated that he will by no means sponsor any dispatch training, because it is almost certain that the graduates would leave the company shortly after the training. There is a lot of truth to this argument, because trained individuals have no problem at all to find a job in the present boom of the industry.

Marketing in this “Business to Business” segment is not very difficult because the number of potential customers is limited and training providers can communicate directly with potential customers, making use of established communication lines.

The second part of the market is the interested individual who wants to become a flight operations officer. These individuals often can not oversee the consequences of their decisions and feel attracted by FAA training courses, because of the license that is issued. The fact that FAA courses are shorter and often less expensive, makes them even more attractive.

It is very challenging to successfully market a European training course in this segment. In order to attract a sufficient number of customers, magazines such as Flight International are an appropriate platform to promote the training. However, this type of marketing is very expensive and not very focused. It is difficult to convince the reader of the advantages of such training in a small advert. However, in order to successfully launch the project, it is inevitable to aggressively market the training course.

Once graduates and operators are satisfied with the results of the training, marketing activities can be reduced significantly, because the course will be booked because of its reputation. The news will spread quickly in the “family type” aviation community.

It is important that the training is regarded as high quality and adds more value than other training courses. A stringent performance evaluation of the candidates and a quality system which allows for continuous improvement are the basis in order to reach this goal.

It must be kept in mind that the market for an FOO basic training course is relatively small. The survey covers approximately one third of the European market. This means that about 3.000 employees are employed in European OCCs. Considering a growth rate of 6% and the replacement of retirees, the market should be in the regime of 200 to 400 potential candidates in Europe per year. Many of them will not attend any course at all.

This figure makes clear that the market is too small to create sufficient revenue for more than two or three providers and does not allow any fragmentation. In order to make the course financially viable, all efforts must be undertaken to benefit from economies of scale. Therefore, it is vital that the course is promoted on the European level and held in the English language. It can be assumed that only known brand names have realistic chances to attract a critical mass of attendees. In any case the provider must focus on the whole of Europe and shift his attention beyond national boundaries.

On the other side it is important to reduce the costs, wherever this does not compromise quality. Computer based training is a very efficient tool which often produces the same or better quality than classroom training at lower costs. However, such training is expensive in the development phase. Again, only a high number of candidates would justify the investment.

6. Conclusion

The job profile of Flight Operations Officers in Europe meets the characteristics as defined by ICAO. The nature and complexity of the assigned duties requires adequate training. Deficiencies of the present system are evident and the situation deteriorates at the speed of the growth of the industry.

The entry into service of the Boeing 787 will generate numerous new long-haul city pairs. Ongoing globalization will continue to create additional demand for long-haul flights, especially in the cargo sector. It can be observed that an increasing number of niche carriers are starting to offer transcontinental flights. Business aviation with its particular requirements is booming. All mentioned segments of the industry will continue to depend on competent FOO/FDs. The industry will have to increase its training efforts in order to cope with this demand.

The number of national licenses issued is falling rapidly, as the training is often too extensive and contents are outdated. FAA dispatch training courses can not fill this gap. The number of qualified individuals is declining, as most start-up companies are hiring unlicensed staff. At the same time licensed dispatchers who have spent their careers in legacy carriers are retiring.

European courses are in the developing stage and are often not adequately promoted on the European level. It is difficult too foresee the success of a European training course. The present regulatory vacuum in the field of operational control makes it very difficult for any training provider to successfully turn an industry need into an actual demand on the training market. Potential training providers are confronted with considerable financial risks, because it is difficult to attract a sufficient number of students.

The discussion is open, whether a basic training course should become a regulatory requirement for everybody who works in an operational control environment. The question will be one of the points on EASA’s agenda as soon as it becomes competent for air operations in 2008.

7. Appendix

7.1 List of references

1. AeronautX GmbH website www.aeronautx.at
2. Albatross Aviatics, Study on Flight Operation and Dispatch, 28 FEB 2001
3. Avtech2000 Aviation Training, website www.avtech2000.co.uk
4. Avtech2000 Expanded Syllabus – Airline Operations and Dispatch, 2006
5. Dryden accident report (Air Ontario Fokker 28, March 1989), IATA handout
6. EASA (European Aviation Safety Agency), Opinion No. 3, 2004
7. EASA Draft Essential Requirements (ER) for Air Operations, Annex 2, April 2006
8. EASA Comment Response Document to ER Annex 2, 24th September 2004
9. EUFALDA (European Federation of Airline Dispatchers Association)
   Letter to the president of the European Commission, 15th December 2003
10. EUFALDA Meeting Minutes, 04th May 2004
11. Federal Aviation Regulation 65 Subpart C (U.S.)
12. Flugzeugwerke Aviation Software, presentation covering the
    Hapag Lloyd accident in Vienna 2000
13. GALDA (German Airline Dispatchers Association), Member Info July 2006
14. Global Aviation Safety Roadmap (http://www.icao.int/fsix/safety.cfm)
15. IATA Operational Safety Audit, Checklists and guidance material
16. IATA Operational Safety Audit reports
17. IATA presentation for the IOSA Oversight Committee, Montreal, September 2006
18. IATA website, IOSA section, www.iata.org/iosa
19. ICAO Annex 1, Montreal, July 2001
20. ICAO Annex 6, Amendment 29, Montreal, September 2005
21. ICAO Annex 6, Amendment 30, Montreal, September 2006
22. ICAO Doc 7192-D3, Training Manual, Montreal 1998
23. IFALDA (International Federation of Airline Dispatchers Associations
    Letter to the joint aviation Authorities, 25th February 2004
24. JAA presentation on EASA developments for the
    Nordic Flight Training Symposium, 17th September 2004
25. JAR-OPS1 Joint Aviation Requirements for Commercial Air Transportation,
    Section 1 and Section 2
26. JAR-OPS 1.195 Advisory Joint-Circular

27. Jeppessen Inc., website www.jeppessen.com
28. Jeppessen Academy Dispatch Training Course Contents, 2006
29. Joint Aviation Authorities website www.jaa.nl
30. LuftPersV (German National Licensing Requirements), 2006
31. Lufthansa Flight Training GmbH, website www.lft-online.de
32. Lufthansa Flight Training GmbH, Syllabus
Flight Operations Officer Basic Training, January 2006
33. Sheffield School of Aeronautics, website www.sheffield.com
34. Transport Canada, website www.tc.gc.ca
35. Transport Canada, Civil Aviation Publications tp13498,
Generic Dispatcher's Training Manual, Edition 1999
36. Transport Canada, Civil Aviation Publications tp13561
Generic Dispatcher Manual, Edition 2000
37. Transport Canada, Commercial Air Service Standard 725, www.tc.gc.ca
38. United States Airline Dispatchers Federation, website www.dispatchers.org
39. UK Air Accident Investigation Branch,
Final report on the Excel Airways incident in Manchester 2003
40. USA Today, Online version, 05 SEP 2006

7.2 List of contacts

1. Aviation Quality Services GmbH (IOSA Audit Organization), Mrs. Katja Bach
2. Avtech2000 Aviation Training
3. AeronautX Aviation Training, Mr. Lachinger, Managing Director
4. European Federation of Airline Dispatcher Associations, Mr. Matthias Dürbeck
5. European Aviation Safety Agency, Mr. Eric Sivel
6. ExecuJet Europe, Switzerland, Mr. Helmut Lehr, Postholder Ground Operations
7. IATA, IOSA Programme Office, Cpt. Desmond Steinhobel
8. IFALDA Internal Federation of Airline Dispatchers Associations,
Mr. Allan Rossmore, President
9. Lufthansa German Airlines, Mr. Gerd Mattes, Manager Flight Dispatch
10. Lufthansa Flight Training GmbH, Mr. Sellhorn-Timm, Mr. Manfred Skoczylas
11. AirData, Flight planning software provider
12. Managers of operational control centers of 141 Air Operators
13. Various airline crews and dispatchers

7.3 List of tables

7.4 List of diagrams and figures

City University London

Andreas Cordes
andreas.cordes@online.de

Job profile and training requirements for European Flight Dispatchers

Annex A

Questionnaire

City University London

Job profile and training requirements for European Flight Dispatchers

Questionnaire

Dear Colleague
Attached you will find a questionnaire titled “Job profile and training requirements for European Flight Dispatchers”. It is the key element of a **dissertation** that is submitted in order to earn a Master’s Degree in **Air Transport Management** from the London City University (www.city.ac.uk). The questionnaire has been sent to approximately 100 European operators of all size and nature.

- **Motivation:**

Unlike in the U.S. there is no requirement in Europe for air operators to employ licensed Flight Dispatchers. EASA will take over the responsibility for Air Operations in 2007 and has already indicated that it will not introduce such a requirement. Nevertheless, some countries still issue national Dispatcher licences.

The absence of regulation in Europe has led to a great variety how European operators manage their Dispatch and Operations Control functions. This is the case for hiring and training practices and also for the level of responsibilities delegated to Flight Dispatchers and Operations Controllers.

Under these circumstances it is difficult for all stakeholders, such as operators, training providers and aviation authorities to make sound decisions concerning the future development of the Dispatching profession and its role as a contributor to aviation safety.

- **Purpose:**

The overall purpose of this study is to **evaluate the need for formal Dispatch training courses** of European format in order to provide the aviation community with qualified Flight Dispatchers. A thorough **analysis of the environment and the job requirements for Flight Dispatchers in Europe** is essential for the development of such training.

In this study the term “**Flight Dispatcher**” is used as a synonym for **Operations Controllers**, **Flight Operations Officers, Flight Operations Assistants** or any other term that might be used in conjunction with Dispatch and Operations Control related functions.

- **The author:**

The author is an IOSA Lead Auditor and has audited various Operations Control centres throughout the world. He is a licensed Flight Dispatcher and has served as Commander on turbojet aircraft for a large European airline.

- **Confidentiality:**

The **study will not disclose any names or other information** that would make it possible to identify individual operators. It is not the intention of the study to identify problematic practices of individual airlines. **In no case** will any company information be used against the Operator, be forwarded to competitors or authorities or made public.

- **Your Effort:**

The majority of questions can be answered by simply ticking a box. It is best to **fill in the questionnaire on a PC**. It should take approximately 25 Minutes to answer all questions. I kindly ask for your cooperation in helping to gather representative data from as many operators as possible. The author ensures that each participant will receive a full copy of the final results, if desired.

Every single reply counts.
Please kindly return until September 25th , 2006.
Send your questionnaire preferably via
e-mail to andreas.cordes@online.de
or in exceptional cases via fax to **+49 6081 96 33 35**.
Please e-mail or phone me in case you have any questions.
Thank you very much for your help.

Kind regards ***Andreas Cordes***

0. Contact Information

The information below only serves the purpose of facilitating enquiries. The data will not be made public or disclosed to others.

Operator's name	
Your name	**Date**
Your position in the company	
E-mail	**Phone**

1. Operator Details

1 Air Operator Certificate granted by the Civil Aviation Authority of: (Country)

2 Total fleet size (please indicate approximate number):

3 Aircraft types in use:	type	type	type	type
	type	type	type	type
	type	type	type	type

4 Which of the following labels is the most adequate one for your company? (Please tick one)

☐ Network Carrier ☐ Leisure Carrier ☐ Regional Carrier ☐ Low Cost Carrier ☐ Cargo Carrier ☐ Executive / Ad-hoc Operator

5 Which of the following world regions are in the scope of your operational activities? (Please tick all applicable boxes)

☐ EUR ☐ MEA ☐ C.I.S. ☐ NAM ☐ SAM ☐ AFI ☐ ASIA/PAC

6 Which of the following activities are applicable for your Operation? (Please tick all applicable boxes)

☐ ETOPS ☐ Low Visibility Operations ☐ Cargo Operations (Belly and/or main deck) ☐ Dangerous Goods

7 Which of the following types of airspace are applicable for your Operation? (Please tick all applicable boxes)

☐ RVSM airspace ☐ MNPS airspace ☐ Airspace requiring RNP procedures

2 Staff training and qualification

1 Does your country issue national licences for Flight Dispatchers? ☐ Yes ☐ No

2 Does your company require Flight Dispatchers to be licensed? ☐ Yes ☐ No

3 If the answer to question 2 was "Yes", does your company recognize FAA licences? ☐ Yes ☐ No

4 If the answer to question 2 was "Yes", does your company recognize licences issued in other European countries? ☐ Yes ☐ No

5 Please state the approximate number of staff in your company being employed as Flight Dispatchers or Operations Controllers.

6 Approximately what percentage of the Flight Dispatchers in your company carry

No Dispatcher licence	%
A Dispatcher licence issued in your country	%
An FAA Dispatcher licence	%
A Dispatcher licence issued in another European country	%
Please ensure that the total is 1 0 0 %	

7 How are Flight Dispatchers and Operations Controllers called in your company?
(Please state the title, e.g. Ops Controller, Air Dispatcher, Flight Operations Officer etc.)

8 Is previous aviation experience a hiring prerequisite for Flight Dispatchers in your company? ☐ Yes ☐ No

9 Please tick 2 (two) of the following job areas that you consider as valuable prior to working as a Flight Dispatcher.

☐ Ramp Agent ☐ Mass & Balance ☐ Check-In ☐ Meteorologist ☐ Engineer ☐ Pilot License Holder ☐ Cargo Specialist

Other: (please specify)

10 Please mark the required training subjects, before being assigned responsibility for operational control. Please tick all applicable boxes.

☐ Basic Dispatcher Training ☐ Flight Operations Management ☐ Crisis Management ☐ Network Planning and Steering ☐ Maintenance Regulations and Requirements ☐ Aircraft Ground Handling ☐ Marketing and Sales

Other: (please specify)

11 In your company, what is the average duration of "on-the-job" training before newly hired Flight Dispatchers can work independently? Weeks

12 Do you find it difficult to find competent and qualified personnel in order to fill vacant positions for Flight Dispatchers?

☐ Very difficult ☐ Difficult ☐ Relatively easy ☐ Easy

13 Imagine the availability of a high quality Formal Dispatch Training Course, with the following characteristics:
→ Based on ICAO recommendations
→ Tailored to the requirements of the European aviation community,
→ Includes an examination with a certificate of successful completion
→ Does not include an official Dispatcher Licence.
How would your company see such a training programme? Please tick all applicable boxes.

☐ a) Our company would be willing to hire graduates if they had previous airline experience.

☐ b) Our company would be willing to hire graduates even if they had no previous airline experience.

☐ c) Our company would be willing to sponsor such a course for employees in order to qualify them to Dispatchers.

☐ d) Our company relies on a national Dispatcher licence and would not hire graduates of such a course.

☐ e) Our company would prefer graduates that have an FAA Dispatcher licence.

14 Do your think that there is a demand for the above mentioned European training course? ☐ Yes ☐ No

15 In your opinion, what duration should the above mentioned training course have, so that graduates without previous aviation background are proficient enough to start "on-the-job-training" in your company? Weeks

3. Operations Control and Dispatch Environment

1 Dispatch/ Operations Control in your company falls under the responsibility of the following:

☐ Postholder Flight Ops ☐ Postholder Ground Ops ☐ Other: (Please specify)

2 Are any Dispatch and Operations Control related functions outsourced or sub-contracted (e.g. to another operator)?

☐ No ☐ Yes(Please specify)

3 The majority of flight plans in your company are prepared ☐ Individually for each flight ☐ As repetitive flight plans

4 Which of the following computerized flight planning systems is in use in your company?

☐ Jeppessen ☐ LIDO ☐ RODOS ☐ SITA

☐ Other (e.g. company-own system): (Please specify)

5 Can Ops Control staff communicate with crews at any time irrespective of the aircraft position in order to provide in-flight assistance?

☐ Yes ☐ With few exceptions ☐ No

6 Please indicate the degree to which Flight Dispatchers in your company are using the following tools and information sources? (Answers will help to identify training needs.)

01 Aircraft MEL	☐ Often	☐ Occasionally	☐ Never
02 Aircraft Performance Manuals	☐ Often	☐ Occasionally	☐ Never
03 NOTAM information	☐ Often	☐ Occasionally	☐ Never
04 Aerodrome weather information	☐ Often	☐ Occasionally	☐ Never
05 Significant weather and upper wind charts	☐ Often	☐ Occasionally	☐ Never
06 Satellite weather pictures	☐ Often	☐ Occasionally	☐ Never
07 En-route navigational charts	☐ Often	☐ Occasionally	☐ Never
08 Aerodrome navigational charts	☐ Often	☐ Occasionally	☐ Never
09 Aviation regulations and law	☐ Often	☐ Occasionally	☐ Never
10 Computerized flight planning systems	☐ Often	☐ Occasionally	☐ Never
11 Electronic mass and balance systems	☐ Often	☐ Occasionally	☐ Never
12 Electronic booking systems	☐ Often	☐ Occasionally	☐ Never
13 VHF communications	☐ Often	☐ Occasionally	☐ Never
14 HF communications	☐ Often	☐ Occasionally	☐ Never
15 SITA (AFTN)	☐ Often	☐ Occasionally	☐ Never
16 ACARS communications	☐ Often	☐ Occasionally	☐ Never
17 Sat phone communications	☐ Often	☐ Occasionally	☐ Never
18 Crew cell phone	☐ Often	☐ Occasionally	☐ Never
19 Others (please specify)	☐ Often	☐ Occasionally	
20 Others (please specify)	☐ Often	☐ Occasionally	

7 Please indicate the degree to which Flight Dispatchers in your company communicate with the following? (Answers will help to identify interfaces of Flight Dispatchers.)

01 Cockpit Crew	☐ Often	☐ Occasionally	☐ Never
02 Line Maintenance staff	☐ Often	☐ Occasionally	☐ Never
03 Maintenance Engineering	☐ Often	☐ Occasionally	☐ Never
04 Flight Operations Engineers	☐ Often	☐ Occasionally	☐ Never
05 Cabin Crew	☐ Often	☐ Occasionally	☐ Never
07 Air Traffic Control	☐ Often	☐ Occasionally	☐ Never
08 Meteorologists	☐ Often	☐ Occasionally	☐ Never
09 Air traffic flow management authorities	☐ Often	☐ Occasionally	☐ Never
10 Ramp Agents	☐ Often	☐ Occasionally	☐ Never
11 Mass and Balance specialists	☐ Often	☐ Occasionally	☐ Never
12 Check-In staff	☐ Often	☐ Occasionally	☐ Never
13 Cargo specialists	☐ Often	☐ Occasionally	☐ Never
14 Airport authorities	☐ Often	☐ Occasionally	☐ Never
15 Government authorities	☐ Often	☐ Occasionally	☐ Never
16 Customers (External)	☐ Often	☐ Occasionally	☐ Never
17 Sales	☐ Often	☐ Occasionally	☐ Never
18 Others (please specify)	☐ Often	☐ Occasionally	
19 Others (please specify)	☐ Often	☐ Occasionally	

4. Duties related to Dispatch and Operational Control

The following list is a series of duties that are commonly delegated to Flight Dispatchers /Operations Controllers.
Please indicate, to whom these duties are delegated in your company.

	Performed by Dispatchers / Ops Controllers		Carried out by	
	As part of normal duties	Only in exceptional cases	Flight Crew	Other departments, management or service providers
4.1 Pre-flight assistance				
01 Evaluate the adequacy of airports a) with regard to navigation and ATS services, emergency provisions.	☐	☐	☐	☐
02 Evaluate the adequacy of airports b) with regard to aircraft performance limitations.	☐	☐	☐	☐
03 Evaluate the adequacy of the route to be flown a) with regard to obstacles, oxygen requirements, performance restrictions, and engine-out and depressurization considerations.	☐	☐	☐	☐
04 Evaluate the adequacy of the route to be flown b) with regard to restrictions of the ATS system.	☐	☐	☐	☐
05 Evaluate the suitability of departure, destination and alternate airports with regard to the weather and NOTAM situation.	☐	☐	☐	☐
06 Evaluate the adequacy and suitability of en-route alternate airports (e.g. ETOPS).	☐	☐	☐	☐
07 Suggest Alternate airports to the Cockpit crew (e.g. by specifying alternates on the operational flight plan or respective IT systems).	☐	☐	☐	☐
08 Evaluate en-route weather (with consideration of upper winds and significant weather phenomena).	☐	☐	☐	☐
09 Evaluate en-route NOTAMS and traffic flow information.	☐	☐	☐	☐
10 Evaluate the technical status of the aircraft to be used for a flight with regard to flight planning restrictions.	☐	☐	☐	☐
11 Evaluate aircraft performance data with regard to flight planning implications.	☐	☐	☐	☐
12 Perform calculations with regard to aircraft mass and balance limitations.	☐	☐	☐	☐
13 Prepare Load Sheets.	☐	☐	☐	☐
14 Suggest the speed to be flown (e.g. by entering the respective information into an electronic flight planning system).	☐	☐	☐	☐
15 Suggest the flight level to be flown (e.g. by entering the respective information into an electronic flight planning system).	☐	☐	☐	☐
16 Determine the minimum fuel quantity for the route to be flown (manually or by making use of an electronic flight planning system).	☐	☐	☐	☐
17 Make suggestions for the amount of extra fuel to be carried for operational reasons (expected delays, fuel tankering).	☐	☐	☐	☐
18 Prepare Operational Flight Plans (manually or by making use of a software system).	☐	☐	☐	☐
19 File ATS Flight Plans	☐	☐	☐	☐
20 Perform duties with regard to slot restrictions (e.g. CFMU).	☐	☐	☐	☐
21 Prepare pre-flight briefing packages for flight crews.	☐	☐	☐	☐
22 Conduct verbal pre-flight briefings for the flight crew.	☐	☐	☐	☐

	Performed by Dispatchers / Ops Controllers		Carried out by	
	As part of normal duties	Only in exceptional cases	Flight Crew	Other departments, management or service providers
4.2 Operations Control				
01 Follow the daily operations, report delays and irregularities.	☐	☐	☐	☐
02 Initiate re-routings, prepare or change aircraft rotations and initiate equipment changes for operational reasons.	☐	☐	☐	☐
03 Decide about flight-delay or –cancellation.	☐	☐	☐	☐
04 Initiate ferry flights or sub-contracting (ACMI-charter) for operational reasons.	☐	☐	☐	☐
05 Schedule or initiate aircraft maintenance activities.	☐	☐	☐	☐
06 Pro-actively optimize short-term network capacities on the basis of the given booking situation.	☐	☐	☐	☐
07 Control aircraft-handling resources and decide about handling priorities.	☐	☐	☐	☐
4.3 Other activities				
01 Prepare crew rotations and/or duty patterns.	☐	☐	☐	☐
02 Track or evaluate flight crew qualifications.	☐	☐	☐	☐
03 Track or calculate crew duty times (cabin and/or flight crew).	☐	☐	☐	☐
04 Initiate crew changes (cabin and/or flight crew).	☐	☐	☐	☐
05 Perform bookings for crew transport and accommodation.	☐	☐	☐	☐
06 Act as ramp agent	☐	☐	☐	☐
07 Verify or maintain electronic databases.	☐	☐	☐	☐
08 Arrange traffic and/or landing rights.	☐	☐	☐	☐
09 Calculate over-flight or landing charges.	☐	☐	☐	☐

4.4 In-flight assistance to flight crews
Please indicate which of the following activities are performed by Flight Dispatchers / Operations Controllers in your company.

01 Be available for in-flight assistance at any time an aircraft is airborne.	☐ Yes	☐ No
02 Pro-actively monitor weather and other relevant operational information at any time an aircraft is airborne.	☐ Yes	☐ No
03 Pro-actively provide crews with relevant operational information while the aircraft is airborne.	☐ Yes	☐ No
04 Pro-actively follow the exact in-flight position of each individual aircraft at any given time (flight-following).	☐ Yes	☐ No
05 Assist crews in case of in-flight diversions upon request. (Provision of weather and other operational information, minimum fuel calculations.)	☐ Yes	☐ No
06 Assist crews in case of re-routings (not diversions) upon request. (Provision of weather and other operational information, minimum fuel calculations.)	☐ Yes	☐ No
07 Assist crews in-flight in when technical problems occur in a way that a recalculation of the flight plan becomes necessary (e.g. increased fuel consumption).	☐ Yes	☐ No
08 Initiate emergency response procedures (e.g. SAR, accident notification).	☐ Yes	☐ No
09 Cooperate with crews in case of security threats (e.g. bomb warning).	☐ Yes	☐ No

Comments:

Thank you very much for taking the time to fill-in this questionnaire. Your cooperation is highly appreciated.

City University London

Andreas Cordes
andreas.cordes@online.de

Job profile and training requirements for European Flight Dispatchers

Annex B

ICAO Doc 7192 AN/857 Part D3

Training Manual

Chapter 1

training manual

Doc 7192-AN/857

Part D-3

FLIGHT OPERATIONS OFFICERS/FLIGHT DISPATCHERS

SECOND EDITION — 1998

Approved by the Secretary General
and published under his authority

INTERNATIONAL CIVIL AVIATION ORGANIZATION

FOREWORD

In 1955, the Air Navigation Commission of ICAO noted that, from time to time, requests had been received from air operators for clarification in the exercise of operational control. There was at that time a lack of universally established principles to govern the exercise of such control by operators although, in certain parts of the world, such principles and practices had long been in existence. For this reason, a circular was published which explained the concept of shared advice and responsibilities between the pilot-in-command and ground personnel, the extent of co-operation depending on many factors such as the size of the operation, the facilities available and the system of operation set up by the operator. This concept varied from simple dispatching, where the ground personnel's primary function was to assist the pilot-in-command in pre-flight planning, to en-route and post-flight assistance to the pilot-in-command, where many of the duties for the operation were shared by the ground personnel. Emphasis was placed on the responsibility for obtaining and providing information of interest to aircraft in flight. This first circular, therefore, formed the basis for consideration of this subject by the Third Air Navigation Conference of ICAO held in Montreal in 1956. The discussions were mostly related to the provision of meteorological information, and little clarification of the general concept and purpose of operational control resulted. Over the intervening years, however, many States came to the conclusion that, for the efficient and safe flow of air traffic, it was necessary to have supervision of flight operations. Flight Operations Officers, also known as Flight Dispatchers or Aircraft Dispatchers, were, therefore, introduced to provide such supervision and act as a close link between aircraft in flight and the ground services, and also between the crew members and the operator's ground staff.

In time, as the nature of the requirement for flight operations officers/flight dispatchers (FOO/FDs) stabilized and the scope of their duties and responsibilities became more defined, it was deemed necessary to establish knowledge and experience requirements and licensing provisions and these are contained in Annex 1 to the Convention on International Civil Aviation. Although these officers are not issued with licences or certificates in some States, the need for their appropriate training and qualification has been accepted throughout the world and has been provided for in international Standards and Recommended Practices. This *Flight Operations Officers/Flight Dispatchers Training Manual*, Part D-3 of Doc 7192, contains acceptable methods for approved courses of training, based on the requirements of Annexes 1 and 6 and on the generally accepted scope and nature of the requirements and duties of such officers.

The first edition, published by ICAO in 1975, was designed to provide guidance on course content, but the development of detailed syllabi and lesson plans was left to the discretion of instructors or other training centre specialist personnel. However, standardization in training courses was recognized as essential for the safe conduct of international air navigation. ICAO, through its technical co-operation programme, developed a model of a detailed training syllabus which was published as Course 201 — *Flight Operations Officers* in 1982, with the specific objective of preparing the trainee for the licensing examinations required in Annex 1[1] under 4.5.

This second edition has been developed on the basis of the first edition of Doc 7192, Part D-3, and Course 201. It contains training syllabi for flight operations officers/flight dispatchers covering knowledge requirements and applied practical training. Subject matter that must be addressed during phase one and phase two training is indicated in 1.2.5 — *Training reference guide* which also includes the approximate duration of the course (both for basic training and re-qualification training) and the degree of expertise required in each subject. Details of training included in this manual are not all-inclusive and are provided as a guideline to the minimum requirement for the training of flight operations officers/flight dispatchers. The training syllabus of FOO/FDs assigned to duties on the basis of the requirements of Annexes 1 and 6 must include syllabi suggested in this manual but should not be limited by it.

1. Throughout this document, references to Annex 1 take into account all amendments up to and including Amendment 161.

This manual has been prepared by the Personnel Licensing and Training Section of ICAO and replaces ICAO Doc 7192 — *Training Manual*, Part D-3 — *Flight Operations Officers* (First Edition, 1975) and ICAO Course 201 — *Flight Operations Officers* (August 1982). ICAO would like to acknowledge the contribution received from the International Federation of Airline Dispatchers Federation (IFALDA) and individual experts who have provided support, advice and input.

Throughout this manual, the use of the male gender should be understood to include male and female persons.

Comments on this manual, particularly with respect to its application, usefulness and scope of coverage, would be appreciated from States and ICAO Technical Co-operation Field Missions. These will be taken into consideration in the preparation of subsequent editions. Comments concerning this manual should be addressed to:

The Secretary General
International Civil Aviation Organization
999 University Street
Montreal, Quebec, Canada
H3C 5H7

TABLE OF CONTENTS

CHAPTER 1. TRAINING PRINCIPLES

1.1 Regulatory requirements

1.1.1 Paragraph 4.2.1.3 of Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes*, requires that operators demonstrate an adequate organization, method of control and supervision of flight operations, training programme and maintenance arrangements consistent with the nature and extent of the operations specified. A flight operations officer/flight dispatcher (FOO/FD) is normally employed to provide supervision of flight and to act as a close link between aircraft in flight and the ground services, and also between the air crew and the operator's ground staff. The duties of flight operations officers/flight dispatchers are specified in section 4.6 of Annex 6, Part I.

1.1.2 The requirements in respect of age, knowledge, experience and skill for the licensing of flight operations officers/flight dispatchers, when employed in conjunction with a method of flight supervision in accordance with 4.2.1 of Annex 6, Part I, are detailed in Annex 1 — *Personnel Licensing*. Annex 1 and Annex 6 specifications are used by States as a basis for their national regulations both for the licensing of flight operations officers/flight dispatchers and for approving operators' flight supervisory systems and the training of said personnel.

1.1.3 The successful application of regulations concerning the safety and regularity of aircraft operation and the achievement of regulatory objectives are greatly dependent on the appreciation by all individuals concerned of the risks involved and on a detailed understanding of the regulations. This can only be achieved by properly planned and maintained initial and recurrent training programmes for all persons involved in aircraft operation. Flight operations officers/flight dispatchers play a significant role in the safe operation of an aircraft, and international regulations require that they be appropriately trained.

1.2 Training requirements

1.2.1 Principal duties

1.2.1.1 The principal duties of the flight operations officer/flight dispatcher (FOO/FD) as specified in Annex 6, Part I, are:

a) assist the pilot-in-command in flight preparation and provide the relevant information required;

b) assist the pilot-in-command in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit;

c) furnish the pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight; and

d) in the event of an emergency, initiate such procedures as may be outlined in the operations manual.

1.2.1.2 It must be noted that some States go beyond Annex 6 requirements and prescribe the sharing of responsibility between the pilot-in-command and the FOO/FD for certain elements affecting the safety of flight operations; for example, in one State this is regulated along the following lines:

> "Joint responsibility of aircraft dispatcher and pilot-in-command: The aircraft dispatcher and the pilot-in-command shall be jointly responsible for the pre-flight planning, delay, and dispatch release of the flight in compliance with ... appropriate regulations."

1.2.1.3 In both situations, the FOO/FD relieves the pilot-in-command of a considerable burden by providing him with the opportunity to consult on critical and non-critical issues with professionals who are familiar with all factors bearing on an operation and have the knowledge of the whole network of operations of which any particular flight is only a part.

1.2.1.4 During flight, a continued assessment of flight conditions, the monitoring of fuel adequacy, and the recommendation of alternative plans such as diversion necessitate an extension of the pre-flight duties throughout the course of the actual flight operation. The advent of improved ground/air communications allows the FOO/FD to relay to an aircraft information received after it has become airborne, thus increasing the value of the "in-flight" assistance.

1.2.1.5 The FOO/FD not only contributes to the safety and regularity of flight operations but also makes a positive contribution to the economy and efficiency of aircraft operation by improving the payload, reducing excessive fuel reserve, positioning or repositioning the aircraft more efficiently, and saving flying hours by reducing the number of abortive flights. The FOO/FD must constantly know the position and monitor the progress of all flights in his area, and this involves a constant process of analysis, evaluation, consultation and decision. The FOO/FD must at all times have the courage of his convictions and let nothing influence him contrary to his better judgement.

1.2.1.6 In applying these basic philosophies and, in particular, bearing in mind the need to keep the aircraft operating safely and efficiently, the FOO/FD must always:

a) plan conservatively;

b) failing normal operation, plan so as to give the best alternative service; and

c) keep flights operating on schedule in so far as possible.

1.2.1.7 Planning must be based upon realistic assumptions since the inevitable results of overoptimism are delays, inconvenience to passengers and uneconomical utilization of the aircraft, all of which can impact the safety of the operation.

1.2.1.8 In preparing the necessary basic material and criteria that will help the pilot-in-command decide on some of the essential features of each flight, the FOO/FD must:

a) consult with the meteorological office and refer to meteorological information, as necessary;

b) issue information concerning operations plans to the appropriate departments of the operator's organization;

c) issue such instructions concerning aircraft and crew utilization as are necessary to the appropriate departments of the operator's organization;

d) consider with the pilot-in-command the existence of, and method of ensuring compliance with, noise abatement procedures;

e) ascertain load requirements;

f) determine load availability;

g) outline to the pilot-in-command what may be expected in the way of en-route and terminal weather, explain how other flights have been planned or what they have encountered en route, indicating their altitude, procedure, ground speed, etc., and offer suggestions that may be of help to the pilot-in-command in his flight planning;

h) advise the pilot-in-command on the routes, altitudes, tracks and technical stops that will be necessary and what alternate aerodromes are considered suitable for the various terminals, and why;

i) determine fuel requirements, aircraft gross weight and balance (the pilot-in-command makes an independent calculation);

j) bring to the pilot-in-command's attention any irregular operation of airport, airway, navigation or communication facilities, with particular regard to noise curfews affecting the availability of airports; and

k) outline what may be expected in the way of delays to or irregularities in the flight while en route or what is expected of other flights operating over the route at the same time.

1.2.1.9 During the in-flight stage, the FOO/FD must be ready to assist the pilot-in-command, for example:

a) by issuing such instructions concerning revised plans for aircraft and crew utilization as are necessary to the appropriate departments of the operator's organization, if a diversion, flight return, en-route delay, or cancellation occurs;

b) by recommending revised routes, altitudes and alternates;

c) by advising the pilot-in-command of commercial and technical considerations of which he could not be aware and which could influence operational decisions, such as enforced diversion to an alternate destination;

d) by monitoring adequacy of remaining fuel; and

e) by supplying or arranging for the supply of supplementary information (including significant weather information, irregularities in operation of navigation and communication facilities, etc.) to the pilot.

1.2.1.10 When such irregularities in flight operations occur, the FOO/FD must look far ahead and consider the many factors involved in order to determine the most practical plan or solution. Some of the main factors are as follows:

a) How long will the flight be delayed, or when is it expected to operate?

b) How long can the flight be delayed?

Note.— The exigencies of crew flight time limitation legislation render this consideration one of the critical factors in flight departure delays or flight time extension. The possible need to warn a fresh crew or to revise the flight schedule must be foreseen and planned for.

c) In the event that the flight is delayed beyond the maximum limit established or is cancelled, what is the best alternative for passengers and cargo?

d) How will the delay affect other sections of the airline and can they keep operating on schedule?

e) Is there an aircraft available to originate the flight at the next terminal ahead and what is the most practical time to so originate?

f) What is the second best point to originate the flight?

g) What is the latest time the flight can originate and still allow necessary placement of aircraft?

h) Is there revenue available at the time origination is most desired?

i) If necessary to cancel, what is the best time in order to fit in with alternative transportation?

j) How can the plans of an FOO/FD be integrated by the FOO/FD who will next handle the flight?

1.2.1.11 In the event of a security incident on an aircraft, the FOO/FD assumes significant responsibilities for the operational aspects of any actions initiated from the ground. He must also be prepared to render the pilot-in-command and crew every possible assistance during the emergency.

1.2.1.12 Delays in and irregularities of operation often upset crew members and passengers and may significantly affect aircraft cycles. Therefore, it is necessary for the FOO/FD to check closely with the operator's departments responsible for crew and aircraft routing in order to maintain a well-balanced positioning of crew and aircraft for the smooth operation of all flights.

1.2.1.13 These are some of the factors that normally govern the day-to-day practical work of the FOO/FD. The degree of responsibility given to him varies from State to State and from operator to operator; it varies from the complex level where the FOO/FD is almost considered the counterpart of the pilot-in-command, to a position of limited importance. In the former case he is normally required to be licensed, enabling him to sign and approve operational flight plans, while in the latter case his duties may be limited to clerical assistance only. There is a marked tendency, however, for States and operators to make increased use of FOO/FDs, giving them extensive duties and responsibilities.

1.2.1.14 To undertake the duties and responsibilities described above, an FOO/FD must be appropriately trained in all the subjects required for adequate control and supervision of aircraft operation. As a specialist, an FOO/FD needs to demonstrate a high sense of responsibility, dependability and the ability to think clearly and to make appropriate decisions as required. The training of FOO/FDs should, invariably, include several stages of selection in order to eliminate trainees lacking the necessary qualities.

1.2.2 Minimum qualifications

Annex 1, section 4.5, specifies the minimum requirements for the issuance of the FOO/FD licence. Although Annex 1 does not provide direct guidance on the qualifications required (e.g. educational level) for admittance to training school for FOO/FDs, experience has shown that successful completion of training generally requires:

— a minimum age of 20 years;

— a functional knowledge of the English language;

— a medical fitness for duty; and

— a minimum educational level of successful completion of high school (10 years of schooling or more).

1.2.3 Types of training

1.2.3.1 Annex 1 mentions various forms of past aviation experience that are adequate for the FOO/FD, and many States select their FOO/FD trainees from personnel who have had such aviation experience. However, other States have found it necessary to train persons who do not have such previous experience and who must, therefore, be trained from the very beginning and allowed to obtain the necessary experience either during their training or immediately after it. It is obvious that the training requirements of these two groups of trainees will vary.

1.2.3.2 To cover the various backgrounds of trainees, it is recommended that training be divided into two phases as follows:

Phase one consists of basic knowledge; its completion ensures that a trainee has the necessary background to proceed with phase two of the training. The training syllabus covered in Chapters 3 to 15 needs to be covered during this phase.

Phase two consists of applied practical training and route experience. A training syllabus for this phase is detailed in Chapter 16 and guidance on training duration is provided in Table 1-1.

1.2.3.3 Trainees who do not have previous aviation experience will have to undergo the complete training programme as recommended in phase one. Trainees who have had suitable aviation experience, however, may not need to undertake this complete programme; for example, a professional pilot, a flight navigator, an air traffic controller, or a flight radio operator can be assumed to have, at least, partially completed phase one if they have been actively employed in these occupations within the past few years. In such cases, training institutes, with the approval of the State authorities, are encouraged to apply the necessary flexibility in arranging appropriate training courses, emphasizing subjects of particular concern to FOO/FDs. The same flexibility can also be applied during requalification or recurrent classroom training. Table 1-1 provides an approximate duration for the training of the FOO/FD (phase one). It also contains a shortened training duration to serve as a guideline for the training of experienced personnel and for the requalification of FOO/FDs.

1.2.3.4 In using the curriculum recommended in the following chapters, local considerations may dictate the advisability of changing the sequence of the subjects. However, the relative importance accorded to each subject should, as much as possible, remain unchanged. The multiplicity of types of aircraft, navigation aids and operational practices throughout the world makes it undesirable to define too rigidly many of the headings of the syllabus, and it is necessary to leave some flexibility to those in charge of the training course. Instructors must, however, ensure that all items in the training manual syllabus are adequately covered and any requirements relevant to individual authorities should be treated as additional subjects and not as substitutions for the syllabus recommended in this manual. Instructors must also ensure that all items required in their State's licensing examination are adequately covered. Any choices in the examination itself should be confined to the additional subjects dealing with those practices and procedures which the trainee is most likely to use in the first period of his duties as an FOO/FD. This choice of additional subjects will very often be made easy by specific requests by operators, and by the type of aircraft used operationally.

1.2.4 Standard of accomplishment

1.2.4.1 Each training objective in this manual is described with reference to the establishment of conditions, performance and a standard of accomplishment. The conditions describe the scenario where trainee performance will be developed and tested while indicating whether actual equipment, mock-ups, or simulators, etc., are to be used. The standard of accomplishment establishes the level of trainee performance that must be attained and may differ from school to school depending on the training equipment available.

1.2.4.2 In measuring the standard of accomplishment, the use of only two grades, *pass* and *fail*, is recommended. It must, however, be noted that many training establishments prefer to use a numerical grading system as trainees strive harder and learn more when rewards increase. If the same grade, *pass*, is given for a 99 per cent score as for a 75 per cent score, trainees may not strive for perfection.

1.2.5 Training reference guide

1.2.5.1 Table 1-1 presents the recommended duration (in hours) of the various subjects that need to be covered during phase one training (basic knowledge) for trainees with and without previous aviation experience, and Phase two (applied practical training). In appreciation of the fact that differences in requirements may necessitate changes in the suggested syllabus to allow completion of the course within the period allotted for training, the total hours required for the completion of a subject are given. Instructors should, however, ensure that all sections of the syllabus are adequately covered to the necessary degree in order to meet the desired level of accomplishment before the trainees are assigned to phase two training.

1.2.5.2 In addition, the various parts of the course have been marked with a coding from 1 to 4 indicating an increasing degree of expertise to clarify understanding of the desired level of accomplishment.

1 – denotes a basic knowledge of a subject. Trainees should have a basic understanding of the subject but are not expected to apply that knowledge.

2 – denotes knowledge of the subject and the ability, where applicable, to apply it in practice with the help of reference materials and instructions.

3 – denotes a thorough knowledge of the subject and the ability to apply it with speed and accuracy.

4 – denotes extensive knowledge of the subject and the ability to apply procedures derived from it with judgement appropriate to the circumstances.

Table 1-1. Recommended duration and degree of expertise for phase one and phase two training

PHASE ONE — BASIC KNOWLEDGE

Subject matter	*Recommended duration (hours)*		*Degree of expertise*
	*Trainees **without** previous aviation experience*	*Trainees **with** previous aviation experience*	
Chapter 3 — Civil air law and regulations	**30**	**18**	
Certification of operators			2
The Convention on International Civil Aviation (The Chicago Convention)			2
International air transport issues addressed by the Chicago Convention			2
The International Civil Aviation Organization (ICAO)			2
Responsibility for aircraft airworthiness			3
Regulatory provisions of the flight manual			3
The aircraft minimum equipment list (MEL)			3
The operations manual			3
Chapter 4 — Aviation indoctrination	**12**	**6**	
Regulatory			3
Aviation terminology and terms of reference			3
Theory of flight and flight operations			2
Aircraft propulsion systems			2
Aircraft systems			2
Chapter 5 — Aircraft mass (weight) and performance	**27**	**15**	
Basic principles for flight safety			3
Basic mass (weight) and speed limitations			3
Take-off runway requirements			3
Climb performance requirements			3
Landing runway requirements			3
Buffet boundary speed limitations			3
Chapter 6 — Navigation	**24**	**12**	
Position and distance; time			3
True, magnetic and compass direction; gyro heading reference and grid direction			2
Introduction to chart projections: The gnomonic projection; the Mercator projection; great circles on Mercator charts; other cylindrical projections; Lambert conformal conic projection; the polar stereographic projection			2
ICAO chart requirements			3
Charts used by a typical operator			3
Measurement of airspeeds; track and ground speed			3

Subject matter	Recommended duration (hours)		Degree of expertise
	Trainees **without** previous aviation experience	Trainees **with** previous aviation experience	
Use of slide-rules, computers and scientific calculators			3
Measurement of aircraft altitude			3
Point of no return; critical point; general determination of aircraft position			3
Introduction to radio navigation; ground-based radar and direction-finding stations; relative bearings; VOR/DME-type radio navigation; instrument landing systems			2
Navigation procedures			3
ICAO CNS/ATM systems (an overview)			1
Chapter 7 — Air traffic management	**39**	**21**	
Introduction to air traffic management			2
Controlled airspace			3
Flight rules			3
ATC clearance; ATC requirements for flight plans; aircraft reports			3
Flight information service (FIS)			3
Alerting service and search and rescue			3
Communications services (mobile, fixed)			3
Aeronautical information service (AIS)			3
Aerodrome and airport services			3
Chapter 8 — Meteorology	**42**	**21**	
Atmosphere; atmospheric temperature and humidity			2
Atmospheric pressure; pressure-wind relationships			2
Winds near the Earth's surface; wind in the free atmosphere; turbulence			3
Vertical motion in the atmosphere; formation of clouds and precipitation			2
Thunderstorms; aircraft icing			3
Visibility and RVR; volcanic ash			3
Surface observations; upper-air observations; station model			3
Air masses and fronts; frontal depressions			2
Weather at fronts and other parts of the frontal depression; other types of pressure systems			2
General climatology; weather in the tropics			1
Aeronautical meteorological reports; analysis of surface and upper-air charts			3
Prognostic charts; aeronautical forecasts			3
Meteorological service for international air navigation			4
Field trip to local meteorological office			2

Subject matter	*Recommended duration (hours)*		*Degree of expertise*
	*Trainees **without** previous aviation experience*	*Trainees **with** previous aviation experience*	
Chapter 9 — Mass (weight) and balance control	**27**	**15**	
Introduction to mass and balance			3
Load planning			3
Calculation of payload and loadsheet preparation			3
Aircraft balance and longitudinal stability			3
Moments and balance			3
The structural aspects of aircraft loading			3
Dangerous goods and other special cargo			3
Issuing loading instructions			3
Chapter 10 — Transport of dangerous goods by air	**9**	**9**	
Introduction			
Dangerous goods, emergency and abnormal situations			3
Source documents			3
Responsibilities			3
Emergency procedures			3
Chapter 11 — Flight planning	**18**	**9**	
Introduction to flight planning			2
Turbo-jet aircraft cruise control methods			3
Flight planning charts and tables for turbo-jet aircraft			3
Calculation of flight time and minimum fuel for turbo-jet aircraft			3
Route selection			3
Flight planning situations			3
Reclearance			3
The final phases			3
Documents to be carried on flights			3
Flight planning exercises			3
Threats and hijacking			3
ETOPS			2
Chapter 12 — Flight monitoring	**16**	**16**	
Position of aircraft			3
Effects of ATC reroutes			3
Flight equipment failures			3
En-route weather changes			3
Emergency situations			3
Flight monitoring resources			3
Position reports			3
Ground resource availability			3

Subject matter	*Recommended duration (hours)*		*Degree of expertise*
	*Trainees **without** previous aviation experience*	*Trainees **with** previous aviation experience*	
Chapter 13 — Communications — Radio	**18**	**6**	
International aeronautical telecommunications service			2
Elementary radio theory			2
Aeronautical fixed service			2
Aeronautical mobile service			2
Radio navigation service			2
Automated aeronautical service			2
Chapter 14 — Human Factors	**15**	**15**	
The meaning of Human Factors			3
Dispatch resource management (DRM)			4
Awareness			3
Practice and feedback			3
Reinforcement			3
Chapter 15 — Security (emergencies and abnormal situations)	**8**	**6**	
Familiarity			3
Security measures taken by airlines			3
Procedures for handling threats, bomb scares, etc.			3
Emergency due to dangerous goods			3
Hijacking			3
Emergency procedures			3
Personal security for the FOO/FD			3

PHASE TWO — APPLIED PRACTICAL TRAINING

Subject matter	*Recommended duration*
Chapter 16 — Applied practical training	
Applied practical flight operations	25 hours
Simulator LOFT observation and synthetic flight training	4 hours
Flight dispatch practices (on-the-job training)	13 weeks
Route familiarization	1 week

City University London

Andreas Cordes
andreas.cordes@online.de

**Job profile and
training requirements for
European Flight Dispatchers**

Annex C

Lufthansa Flight Training GmbH

Syllabus

Flight Operations Officer
Basic Training

> Syllabus

Flight Operations Officer Basic

module	sub-module	subject	duration (hours)
> welcome			**2,0**
> duties and responsibilities of the FOO / FD			**6,0**
	Qualification and responsibility		2,0
	direct operating costs in flight operations		4,0
		Fuel/time costs	
		ATC-charges	
> civil air law and regulation			**22,0**
	general (gen)		2,0
	organization (org)		6,0
	international		
		chicago convention	
		ICAO	
		freedoms of the air	
		annexes	
		documents	
		IATA	
		ITU	
		FAI	
	European		
		european ICAO office	
		ECAC	
		EU	
		EASA	
		EUROCONTROL	
		JAA / JAR	
	JAR-OPS 1		10,0
	aerodromes (ad)		4,0
> aircraft structure and systems (A320)			**36,0**
	airplanes and systems (as)		12,0
		main assemblies and loads	
		construction of major structure units	
		flight control systems	
		hydraulic system	

module	sub-module	subject	duration (hours)
		landing gear	
		pneumatic system	
		air conditioning and pressurization	
		fuel system	
		ice and rain protection	
		fire protection	
		emergency equipment	
		oxygen system	
		APU	
		ram air turbine	
		water and waste	
		minimum equipment list / configuration deviation list in practise	
	aircraft engines (te)		12,0
	electrical systems (esy)		4,0
		power sources	
		constant speed drive	
		ram air turbine generator	
		power system schematic	
	flight instruments (fl. instr)		8,0
		air data instruments	
		mode a/c transponder	
		speeds (ias, eas, tas)	
		air data computer	
		gyro and ins principles	
		temperature (SAT, TAT)	
		compass system	
		radio altimeter	
		engine instruments	
		ground proximity warning system	
		flight director, auto pilot, auto throttle	
> aircraft performance (ap) A320			**34,0**
	aeroplane performance characteristics		2,0
		thrust and power required characteristic	
		thrust and power available characteristic	

module	sub-module	subject	duration (hours)
		composed performance characteristic	
	stages of flight		3,0
	level flight / cruise		2,0
		forces acting on the aeroplane during a steady level flight	
		endurance, max. endurance, range, max. range and max. specific range (SR)	
		flight procedures used in aeroplane operation	
		Vs, max. operating speed Vmo and max. operating mach-number Mmo	
		maximum altitude	
		optimum altitude	
		effect of mass on optimum altitude	
		determination of optimum altitude	
	climb		2,0
		climb angle, Vx	
		rate of climb, Vy	
		climb gradient	
		factors affecting the climb performance	
	powered descent and glide		1,0
	aviation requirements and aeroplane categories – overview		3,0
		specific conditions and associated ranges for performance data	
	take-off requirements		6,0
		structural limited take-off mass description	
		field length limited take-off mass description and calculation	
		all engine take-off	
		engine failure take-off	
		aborted take-off	
		balanced field length	
		unbalanced field length	
		JAR field length for take-off and field length limited tom	
		factors affecting the jar field length for take-off or the field length limited tom	
		climb limited take-off mass	
		factors affecting the climb-limited take-off mass	
		obstacle limited take-off mass (OLTOM)	

module	sub-module	subject	duration (hours)
		factors affecting the obstacle limited take-off mass	
		tire speed limited take-off mass	
		brake energy limited take-off mass	
		noise limited take-off mass	
		rwy-strength limited take-off mass	
	cruise requirements		2,0
		drift-down	
	landing requirements		5,0
		approach and landing climb limited landing mass	
		factors affecting the approach & landing climb limited landing mass	
		landing field length requirements	
		factors affecting the landing field length limited landing mass	
		landing calculation	
	principles of flight (pr)		8,0
		basic laws, lift & drag	
		factors affecting lift and required flight speed	
		speeds and basic principle of measurement	
		machnumber and effects of high speed flight	
		flight mechanics (forces, center of gravity, stability)	
> navigation (nav)			**28,0**
	basic navigation (bas)		16,0
		Earth and its coordinates	
		Chart projections	
		Speeds and wind effects	
		Time systems	
	radio navigation (raids) and instrument flight procedures		12,0
		NDB and ADF	
		VOR/DME	
		ILS	
		GNSS	

> Syllabus

Flight Operations Officer Basic

module	sub-module	subject	duration (hours)
> air traffic management (atm)			**24,0**
	air traffic services (ATC, FIS, Alerting service) (ats)		3,0
	airspace classifications ICAO (ats)		3,0
	AIS		2,0
	ATS FPL (ICAO)		2,0
	ATFCM		2,0
	instrument flight rules & procedures(IFR)		8,0
	cruising levels and routings (IFR)		2,0
	RVSM		1,0
	MNPS / RNP		1,0
> meteorology (met)			**34,0**
	general meteorology (gem)		
		pressure, temperature, density, standard atmosphere	3,0
		atmospheric. humidity	2,0
		clouds, precipitation	3,0
		wind	2,0
	altimetry (alt)		
		q-codes, heights and rules	1,0
	exercise altimetry (met)		1,0
	aviation hazards (avi)		
		icing	2,0
		turbulence, wind shear	2,0
		wind shear	1,0
		thunderstorms	1,0
		visibility, fog	2,0
	synoptic meteorology (syn)		
		air masses, fronts	2,0
		pressure systems of the mid latitudes	2,0
		pressure systems of the subtropics, itcz	1,0
		jet streams	1,0
	weather information (info)		
		textual weather reports (METAR, TAF)	1,0
		textual weather reports (SNOWTAM, SIGMET, AIRMET)	1,0

> Syllabus

Flight Operations Officer Basic

module	sub-module	subject	duration (hours)
		graphic weather charts (significant weather- wind/temp charts)	2,0
	exercise textual weather reports (met)		2,0
	exercises weather charts (met)		2,0
> mass and balance (A320)			**16,0**
	introduction		1,0
	mass definitions		1,0
	centre of gravity		1,0
	aeroplane centre of gravity computation		2,0
	DOM, payload, ZFM, TOM, LAM, mass limits		2,0
	Index		1,0
	data table		1,0
	allowed traffic load		3,0
	load sheet, trim sheet		4,0
> flight planning (fpl)			**14,0**
	introduction to flight planning		
	creating a operational flight plan		
	calculating the performance limitations		
	planning a destination alternate		
	required fuel		
	simplified flight planning		
	aircraft equipment failure		
	recalculation inflight		
	flight monitoring		
		position of aircraft and recalculation in flight	
		effect of ATC reroutes	
		aircraft equipment failure	
> communications (com)			**10,0**
	communication basics IFR		6
	IFR-RT		4
> dangerous goods (CBT)			***3,0**
	introduction and source of documents		
	classification and labeling of DGR		
	responsibilities		

> Syllabus

Flight Operations Officer Basic

module	sub-module	subject	duration (hours)
	emergency procedures		
> security (CBT)			***1,0**
	background		
		threat to aviation and evolution	
		the civil aviation as a target	
	regulations		
		rulemaking bodies	
		ICAO annex 6 and 17	
		JAR-OPS 1 part S	
	measures		
		airport areas and id badges	
		airport security	
		bomb search check list	
		check in procedures	
> human factors			**6,0**
	competence and cooperation		
		dimensions of social skills	
	attitudes		
		“the pyramid model”	
		definition of “attitude”	
		why do people have different attitudes?	
		thunderstorm	
	team		
		definition of “team” and “teamwork”	
		formal / informal	
		characteristics of a team	
		formation of a team	
		means of team development	
		authority	
	communications		
		communication model	
		feedback	

module	sub-module	subject	duration (hours)
		preparation of a conversation as steered process	
	criticism an conflict		
		perception, debriefing, strategies	
		p.u.s.t.e. model	
		reasons for conflict	
		exercise	
		conflict definition	
		conflict and feelings	
		conflict management (fight + escape)	
		spiral	
		“iceberg model”	
		spiral	
		warning signals	
		tools	
		p.p.k.	
		group discussion	
	emotions		
		the negative touch	
		physiological background	
	your own emotions		
		cycle	
		situation working yourself up into thoughts and feelings	
		breaking the cycle – “traffic lights”	
		systematic approach according to emoratio	
	emotions of others		
		prerequisites	
		perception (verbal, physical)	
		calmness	
	perception of yourself and perception of others		
		self-image, image of others	
		exercise	
		intersections	

module	sub-module	subject	duration (hours)
		self-esteem / sources	
		self-respect / soliloquies	
		the balance between self-praise and self-criticism	
		dominance and renunciation	
		perception of yourself and perception of others	
		repetition p.u.s.t.e.	
		exercise	
		situations – training	
		role plays and debriefing	
		summary	
		transfer of trainees	
		criticism of seminar	
> TKE			**6,0**
	performance evaluation		2,0
	final theoretical knowledge examination		4,0

> *CBT-Training (will be scheduled from 14:30 to 15:15)	
> total hours (including CBT)	**242,0**
> course duration (days)	**40**