FLIGHT SAFETY AUTHORITY
CAA FINLAND

Flight Safety Authority, Finland

annual review 2000

Contents

Flight Safety Authority, Finland – **Annual review 2000**

1. Review by the Director

Maintaining flight safety requires efficient co-operation

Along the common guidelines defined by the Joint Aviation Authorities (JAA), the safety objective of the Finnish Flight Safety Authority (FSA) is to achieve a constant decline in the annual number of aircraft accidents and resulting fatalities despite the growth in air traffic. Co-operation within the JAA now encompasses 33 European states. JAA member authorities prepare and adopt common safety requirements and procedures, aiming to achieve high and consistent safety standards across the whole Europe. The requirements are drafted in close co-operation with various industry organisations representing aviation companies and their staff.

During the past decade, the safety level for large commercial jet aeroplanes in JAA member states was one fatal accident per 7 million flights. For turbo-propeller fleet, there was one fatal accident per 1.5 million flights. The most essential factors in maintaining and further improving flight safety are the safety culture of air operators and the high skill and proficiency of aviation staff. As air traffic and airspace congestion increases, both operators, air navigation services and airports must constantly develop their own operations to maintain and improve the current safety standard, which is already at a very high international level.

It is equally important to direct regulatory measures towards those areas which offer the greatest potential for safety improvement. One of the priorities is to set up an efficient and harmonised system for incident reporting across the whole Europe, and to develop incident analysis. In addition, the JAA has launched an extensive and far-reaching initiative which aims at finding the most efficient ways to combat both current and future safety hazards. Once this study is completed, the authorities aim to concentrate regulatory measures so that the best safety benefit can be achieved. Nowadays it is rarely justified to tighten the requirements based on one individual accident alone.

Cost-effective and harmonised operating conditions for European aviators

The purpose of harmonised requirements is to create equal operating conditions for all aviators and air operators across Europe, enable free competition and enhance cost-effectiveness in aviation. The JAA has already drawn up harmonised requirements and procedures, known as Joint Aviation Requirements (JAR), for aircraft design and manufacture, operations and maintenance, and the licensing of aviation personnel. By now, almost 30 JARs have been adopted. The requirements are highly detailed, often containing hundreds of pages.

However, since no legislative power has been delegated to the JAA, all requirements must be brought into effect by national regulations. The drawback of this system is that some countries will not implement the regulations when and as agreed, which creates unequal conditions for aviators and companies in different countries. In the future, if the proposition by the European Commission to replace the JAA by an European Aviation Safety Authority (EASA) is accepted, all requirements will become effective as part of Community law. The European Union would then ensure that the regulations are uniformly applied in all states.

Aviation training - a crucial element of flight safety

The training of pilots and other aviation professionals is of paramount importance to flight safety. Pilot training is provided by flight training organisations, which are required to carry out examinations to check that their students have achieved a sufficient level of knowledge. To ensure a high standard of aviation training, all students are also required to pass the Flight Safety Authority's theoretical knowledge examinations in all subjects. Unlike in most other countries, Finnish flight training organisations were previously allowed to examine their students themselves, and centralised examinations by the aviation authority have only been arranged for a little over two years. Adjustment to the new system took its time, but by now the situation seems to have settled.

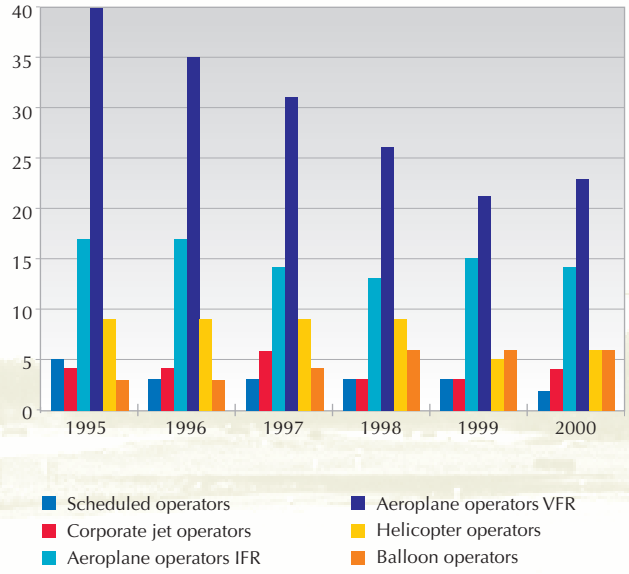
The examination results in Finland compare well with those achieved in other countries. However, a persistent problem is that the performance of students in the FSA examinations varies considerably from one flight training organisation to another. When in private pilot examinations in 1999 and 2000, 74% of the students of the best-performing flight school passed all subjects of the examination at the first attempt, the result for the school with the lowest performance level was 0%. For commercial pilot training, the corresponding figures were 96% and 0%. For this reason, it is important for the authority to make sure that the schools with a low performance level take the necessary measures to improve their results, since the students should receive an equally high level of training in all approved flight training organisations. On the other hand, in airline transport pilot training, where the training and examination requirements are much higher, the results achieved by students of different flight schools are rather similar: 35 - 43% of the students pass all subjects at the first attempt.

Helsinki-Malmi airport has a great importance to general aviation

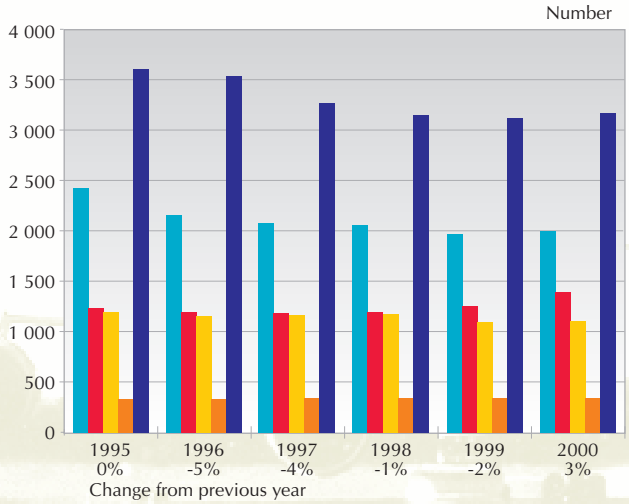
It is an advantage to the whole country to have an active general aviation sector. Its training activities and flight operations bring many benefits to the society and economic life. In the year 2000, however, questions were raised over the future of Helsinki-Malmi airport. When deciding on the future use of the area, government authorities and Helsinki city naturally have to consider many different factors. Nevertheless, it seems obvious that every alternative proposed by the working group, which was set up to investigate possible locations for a replacement airport, would significantly impair the operating conditions of general aviation within Helsinki area. An essential prerequisite for flight safety is that aviation companies can operate with a sound financial basis. Particularly as flight training organisations and small commercial operators have faced economically rather difficult times during the past decade, it is not easy for them to move their operations far from their clients and original environment - not to mention the investments required. Since Malmi airport has been a particularly important centre for aviation training, the future of training operations gives rise to most concern. The significance of Malmi airport to aviation training is reflected by the fact that 42 000 landings of general aviation aircraft were made at Malmi last year. Of the other significant training airports, Pori had 11 000 general aviation landings and Kauhava 12 000 military aircraft landings.

Kim Salonen
Director, Flight Safety Authority

Commercial operators in Finland 1995-2000



Aviation licences in Finland 1995-2000



2. Statistics

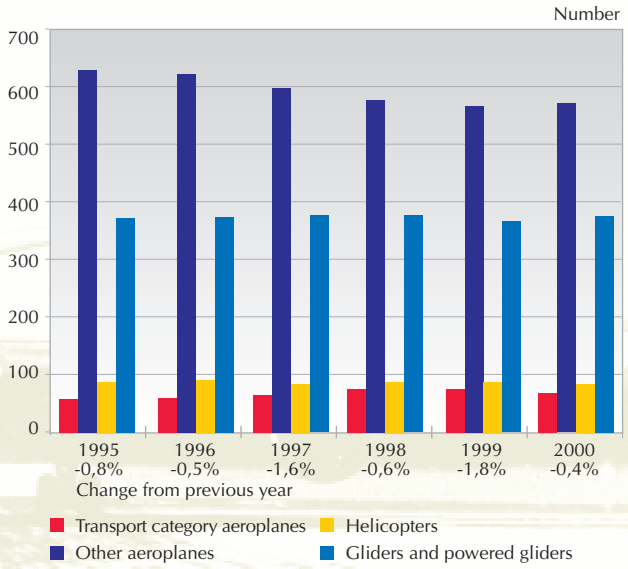
NUMBER OF AIR OPERATOR CERTIFICATES WITHIN A 10-YEAR PERIOD

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Scheduled operators	6	5	4	4	5	5	3	3	3	3	2
Corporate jet operators	5	6	5	4	4	4	4	6	3	3	4
Aeroplane operators IFR	18	20	23	24	21	17	17	14	13	15	14
Aeroplane operators VFR	81	77	63	59	47	40	35	31	26	21	23
Helicopter operators	9	12	11	12	8	9	9	9	9	5	6
Balloon operators	2	2	3	3	3	3	3	4	6	6	6
Airship operators	1	1	0	1	1	0	0	0	0	0	0
Total:	122	123	109	107	89	78	71	67	60	53	55

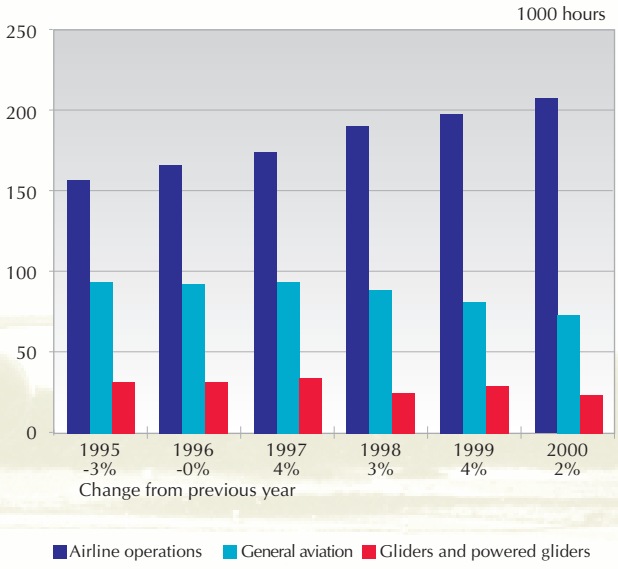
LICENCES

Year	Private pilot	Commercial pilot	Maintenance mechanic	ATC/AFIS	Sport aviator	Total	Change from previous year
1990	2 692	1 133	1 192	260	2 889	8 166	5 %
1991	2 802	1 218	1 186	279	2 881	8 366	2 %
1992	2 773	1 235	1 187	293	3 058	8 546	2 %
1993	2 699	1 174	1 183	299	3 403	8 758	2 %
1994	2 541	1 191	1 153	308	3 545	8 738	0 %
1995	2 412	1 218	1 197	299	3 597	8 723	0 %
1996	2 183	1 184	1 139	299	3 516	8 321	-5 %
1997	2 092	1 167	1 153	320	3 262	7 994	-4 %
1998	2 064	1 197	1 170	336	3 136	7 903	-1 %
1999	1 950	1 266	1 095	336	3 129	7 776	-2 %
2000	2 003	1 377	1 098	343	3 166	7 987	3 %

Aircraft registered in Finland 1995-2000



Flight hours 1995-2000 (aircraft registered in Finland)



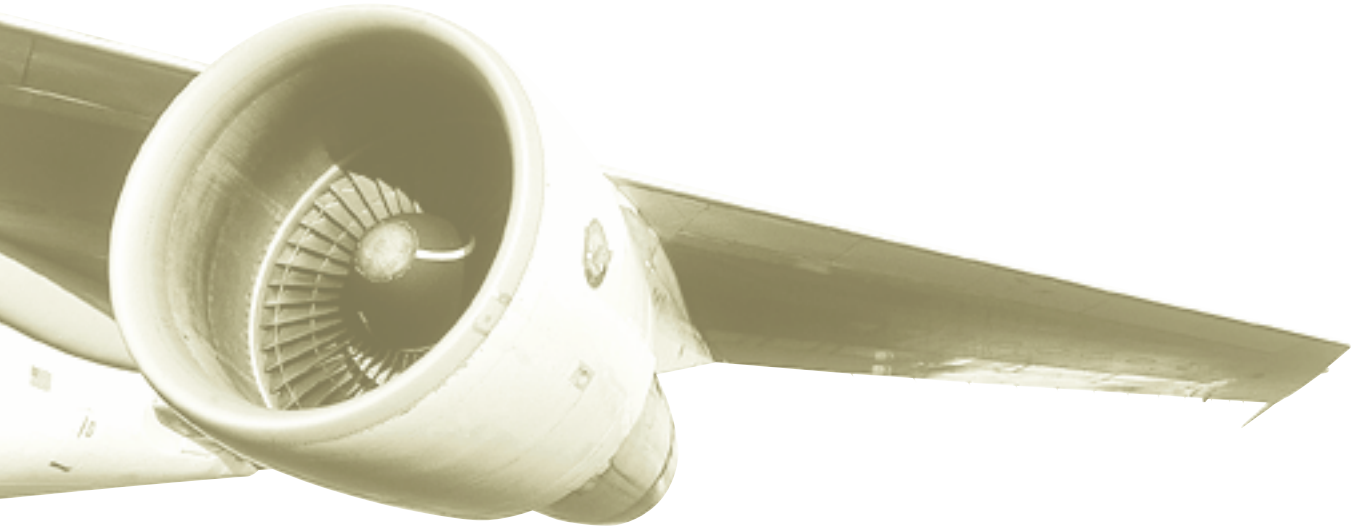
AIRCRAFT REGISTERED IN FINLAND

YEAR	ENGINE-DRIVEN AIRCRAFT				GLIDERS	GRAND TOTAL
	TRANSPORT CATEGORY AEROPLANES	HELICOPTERS	OTHERS	TOTAL		
1995	55	84	627	766	369	1135
1996	56	86	618	760	369	1129
1997	60	82	595	737	374	1111
1998	70	84	577	731	373	1104
1999	70	83	566	719	365	1084
2000	64	82	570	716	372	1088

FLIGHT HOURS

YEAR	GENERAL AVIATION			AIRLINE OPERATIONS	GLIDING	GRAND TOTAL
	COMMERCIAL FLIGHTS	PRIVATE FLIGHTS	TOTAL			
1995	46 250	46 260	92 510	155 700	31 700	279 910
1996	45 495	46 475	91 970	165 350	31 300	288 620
1997	46 380	47 090	93 470	173 000	34 000	300 470
1998	46 615	41 405	88 020	190 180	24 700	302 900
1999	36 455	44 552	81 007	196 455	29 557	307 019
2000	32 000*	40 000*	72 000*	207 000*	23 000*	302 000*

* estimate



3. Flight safety in 2000

During the year 2000, the Flight Safety Authority continued its work to maintain flight safety in Finland at a high international level, which was one of the main objectives set for the FSA by the Ministry of Transport and Communications. As a member of the Joint Aviation Authorities (JAA), the FSA worked continuously to reduce the annual number of aircraft accidents and resulting fatalities, despite the increase in air traffic. For flight safety in Finland year 2000 was rather good, in line with the previous years.

- **In airline operations**[1] there was one accident, in which a Finnish airliner struck a passenger bridge at Helsinki-Vantaa airport when parking. Moreover, one foreign aeroplane was damaged during taxiing, but there were no injuries. Two serious incidents occurred, one in Finland and one to a Finnish aircraft abroad.
- **General aviation**[2] accounted for three accidents. One of them, which occurred on a training flight, caused two fatalities. General aviation also had eight incidents of aircraft damage and four other serious incidents.
- **Sport aviation**[3] totalled 12 accidents. The most serious ones occurred in parachuting, in which one person was killed and two were seriously injured. In addition, one person sustained injury in a hang gliding accident and one in a hot air balloon accident. There were also 15 incidents of damage in sport aviation.

Incidents and occurrences

By investigating incidents and occurrences, valuable information can be obtained on any safety hazards and adverse trends in aviation. Monitoring and investigation is based on reports submitted to the Flight Safety Authority. Last year, the FSA received 438 occurrence reports, while the figure for the previous year was 508. In 2000, the Accident Investigation Board of the Ministry of Justice started investigations of 23 accidents and incidents. The FSA consistently works to lower the threshold for reporting occurrences and to increase confidence between various parties in aviation.

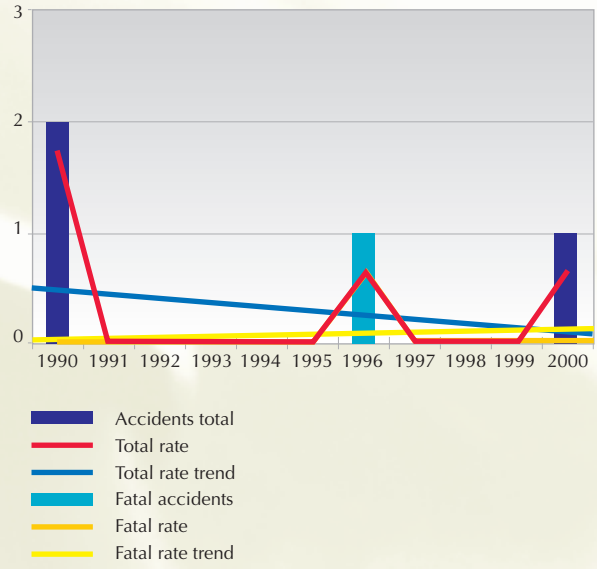
In the future, incident reports will be classified in accordance with the new ADREP (Accident/Incident Data Report-

ing) 2000 system developed by the International Civil Aviation Organisation (ICAO). Harmonisation of classification systems is also necessary at the European level, to be better able to measure, analyse and improve flight safety. The European Commission has already made a proposal about a common mandatory incident reporting system, which would be supplemented by a confidential reporting scheme. This would help to harmonise the incident reporting systems used in different European countries.

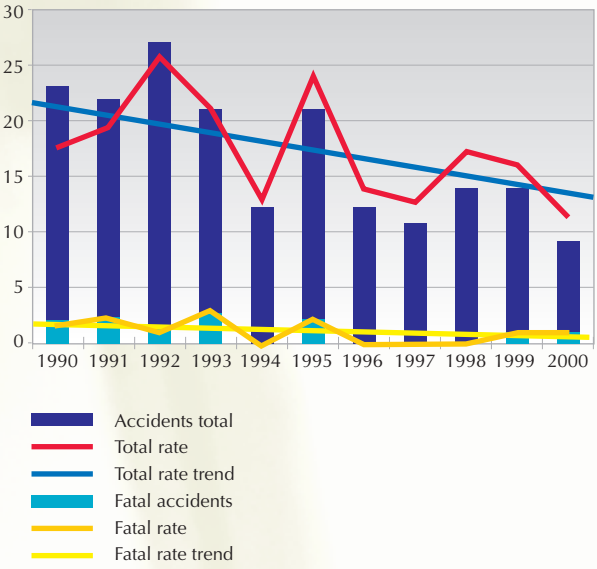
Together with the other Nordic countries, Finland participated in the EU initiative to create a common database for incident and occurrence information (ECCAIRS, European Co-ordination Centre for Aviation Incident Reporting Systems). In this context, the Flight Safety Authority assessed the test version of the ECCAIRS database and suggested some improvements. The FSA will also be a test user for the official production database.

1 Scheduled and charter flights with transport category aeroplanes, scheduled helicopter flights
2 Taxi flights, aerial work, training flights, private aviation
3 Glider and powered glider flights, ultralight aeroplanes, hot air balloons, parachuting, hang gliding and paragliding

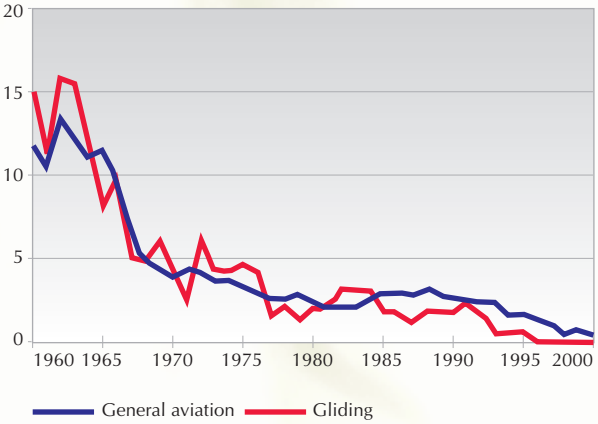
Scheduled air traffic in Finland 1990-2000
Number of accidents per 100 000 h

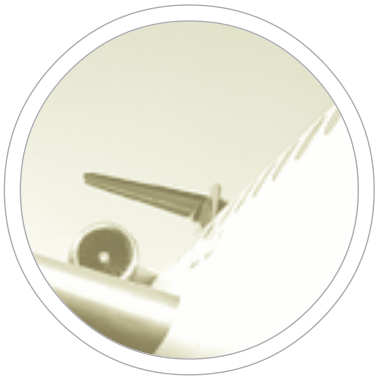


General aviation in Finland 1990-2000
Number of accidents per 100 000 h



General aviation and gliding
fatal accidents 1960-2000
5-year averages per 100 000 flight hours





Implementation of JAR-OPS requirements for commercial air transportation

Finnish commercial operators are now required to comply with the joint European JAR-OPS requirements governing the transport of passengers and cargo. Corresponding Air Operator Certificates (AOC) have been issued in accordance with a phased schedule.

JAR-OPS for commercial air transportation

- JAR-OPS 1: requirements for aeroplane operators
- JAR-OPS 3: requirements for helicopter operators

JAR-OPS 1 has been applicable to those commercial operators using large aeroplanes from April 1998 already. All five companies required to comply with these requirements had been granted a JAR-OPS 1 Air Operator Certificate by the end of last year.

For operators conducting helicopter IFR[1], HEMS[2] or off-shore operations[3], JAR-OPS 3 requirements have been in force since August 1999. In Finland, there are two helicopter companies with HEMS operations, and both had been issued with a JAR-OPS 3 AOC by the end of 2000. One of the companies also carries out IFR operations and scheduled flights.

Operators conducting day VFR[4] operations with helicopters are required to comply with JAR-OPS 3 from February 1, 2001. By the end of last year, none of the six companies to which these requirements are applicable in Finland had yet been granted a JAR-OPS 3 AOC.

JAR-OPS 1 became applicable to those aeroplane operators with IFR flights from April 1, 2000, and is applicable to those conducting day VFR operations from April 1, 2001. During the year 2000, nine IFR operators were granted an extension to the national Air Operator Certificate, so that they could complete their Operations Manuals and rectify any remaining deficiencies with regard to JAR-OPS 1. Four of these companies were issued a JAR-OPS 1 AOC by the end of year 2000. On the other hand, three IFR operators have not progressed with the preparation of their Operations Manuals, and therefore their privileges in passenger and cargo transport were restricted to VFR flights. In addition, there are about 20 VFR operators required to comply with JAR-OPS 1 from April 2001.

Inspections and oversight

The Flight Safety Authority made eleven flight operations inspections to commercial air operators in 2000, seven of which were random checks of small operators. In addition, 25 en-route inspections were made on individual flights, and 13 foreign aircraft were subjected to ramp checks.

The FSA has also been monitoring the simulator and flight training as well as ground training given to airline pilots. FSA examiners carried out about 40 check flights with airline transport pilots in simulators and aeroplanes. Moreover, some two hundred check flights with commercial pilots and flight instructors, including instrument rating skill tests, were conducted on lighter aircraft.

A total of 14 inspections of flight simulators and flight training devices were carried out. The JAA Synthetic Training Device (STD) standardisation team made an inspection visit to Finland, based on which the simulators and flight training devices approved by the Finnish aviation authority no longer need to be separately approved in other JAA member states.

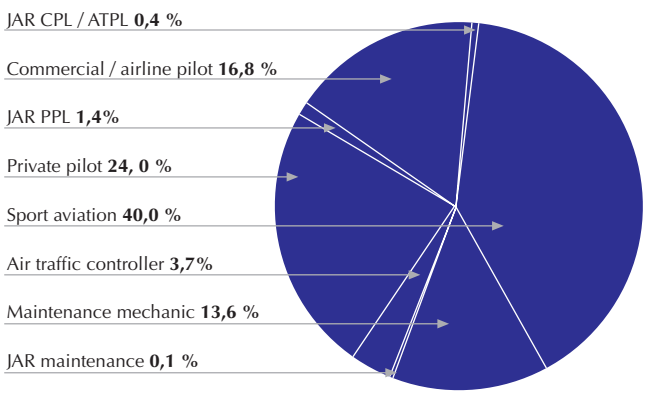
Adoption of the detailed JAR-OPS and JAR-FCL requirements has proved more difficult than expected. Inspections have been hampered partly by the small number of FSA inspectors, and partly by the operators' insufficient resources for compiling the quality and operations manuals required.

Review of aviation regulations

As a result of the Safety Oversight Audit conducted by the International Civil Aviation Organisation (ICAO) at the FSA in 1999, a project was initiated to make the Finnish aviation regulations on private aviation more compliant with ICAO standards and recommendations. In the same context, those national requirements that have become obsolete after the implementation of JAR-OPS will be removed.

1 Instrument Flight Rules
2 Helicopter Emergency Medical Service
3 Operations to/from helidecks at sea
4 Visual Flight Rules

Distribution of aviation licences



■ In 2000, the Flight Safety Authority made 13 677 decisions in licensing issues, of which 5 629 on medical certificates. The FSA received altogether 11 665 applications for licences or medical certificates. 1 563 of the applications were set aside to wait for supplementary information, either on the applicant's own iniative or on the FSA's request. Some applications require more than one decision.

The number of valid aviation licences increased by 210 (3%) from the previous year. There were 163 JAR licences, valid in all JAA member states, at the end of year 2000.

JAR-FCL requirements for training and licensing were implemented

Major part of the Joint Aviation Requirements for flight crew licensing and medical fitness (JAR-FCL) took effect in the beginning of year 2000. National licences still remain valid, but they need to be maintained and renewed in accordance with JAR-FCL. For new licences and ratings, training will be given as required by JAR-FCL.

Most holders of training approvals for private pilot instruction (43) were approved to train in accordance with JAR-FCL during last year. In addition, about 20 training approval holders have been granted privileges to train some sub-

jects associated with private pilot training, such as for aero-tow ratings or night flying qualifications. Of those flight schools offering training for higher-level licences and ratings, three were issued with a Flight Training Organisation (FTO) approval in accordance with JAR-FCL.

JAR-FCL requires flight training organisations to compile an operations and quality manual as well as a training manual. Since many FTOs still had not finished their manuals by the end of year 2000, the FSA had to issue their JAR approvals with restricted privileges.

Similarly, by the end of last year, none of the Finnish type rating training organisations or helicopter flight schools was yet ready to give training in accordance with the new requirements. For that reason, a JAA standardisation team visit planned for the year 2000 had to be postponed until 2001.

FSA training inspectors also arranged information meetings for aviation professionals to inform them of the changes to licensing regulations resulting from JAR-FCL. Flight examiners were briefed on the effects of JAR-FCL on check flight requirements in four separate meetings, held in Vantaa, Rovaniemi and Jyväskylä. In addition, training inspectors participated in various training and discussion meetings arranged by general and sport aviation organisations.

JARs for maintenance staff

From the beginning of year 2000, training organisations for aircraft maintenance staff have been required to comply with the joint European JAR-147 rules. After fulfilling these requirements – besides the general regulations on training operations – the organisation is entitled to train for a JAR-66 licence, which will later be required of all authorised aircraft maintenance personnel. At present there are about ten training organisations for aircraft maintenance technicians in Finland. During the past five years the FSA has made some 80 decisions concerning their training approvals.

By the end of last year, none of the institutions giving basic training for aircraft maintenance mechanics had completely finished their operations, training and quality manuals, and therefore no JAR-147 training approvals could be issued yet.

After their visit to Finland in November -99, a JAA inspection team concluded that the Finnish aircraft maintenance technician's licence was already well in compliance with JARs. However, only a few technicians applied for the conversion of their national licences into a JAR-66 licence. The total number of JAR maintenance licences issued by the end of year 2000 was 16.

Theoretical knowledge examinations reorganised

Most of the theoretical knowledge examinations taken last year were for national licences. By the end of 2000, 43 students had passed the JAR examination for a private pilot's licence. The examination questions for private pilots are drawn up by the Flight Safety Authority.

For professional pilot licences and associated ratings, the FSA uses the JAA Central Question Bank. However, as this was the first year of training in accordance

APPROVED TRAINING ORGANISATIONS 1998-2000

	1998	1999	2000
Glider and powered glider	28	24	17
Engine-driven aircraft	80	81	88
Ultralight	5	2	6
Autogyro	0	0	1
Hot air balloon	3	1	0
Air traffic services	2	4	4
Total	118	112	116

with JAR-FCL, none of the Finnish holders of JAR-FCL professional pilot training approvals had students at this level yet.

The pilots' theoretical knowledge instruction covers several subjects, and the examination may contain as many as 14 sections. The percentage of those passing an individual section at the first attempt varies from 60% to 100%, depending on the subject. The statistics from the past few years show that a little over 30% of the applicants for private pilot licences (aeroplane or helicopter) pass the whole examination, consisting of 8 subjects, at the first attempt. However, 70% of all applicants for commercial pilot's licence (aeroplane) and 60% of applicants for commercial pilot's licence (helicopter) pass the whole examination at once. Of those applying for an airline transport pilot's licence, 40% pass the whole series of 12-14 examinations at the first attempt.

The number of applicants taking the FSA theoretical knowledge examinations in 1999-2000 and the number of passes are shown in Table 1.

TABLE 1: STATISTICS ON FSA THEORETICAL KNOWLEDGE EXAMINATIONS IN 1999-2000

	Number of applicants	Passed at first attempt	Average number of attempts
PPL (A) Private pilot licence (aeroplane)			
Whole examination	246	80	
Human performance and limitations	250	229	1,26
Air law	290	245	1,24
Navigation	250	166	1,48
Operational procedures, aerodromes, ATS	251	181	1,42
Principles of flight, basic IFR, performance	250	138	1,61
Meteorology	249	179	1,40
Aircraft general knowledge	249	200	1,37
Radio communications	248	245	1,21
PPL (H) Private pilot licence (helicopter)			
Whole examination	44	15	
Human performance and limitations	44	42	1,09
Air law	44	37	1,20
Navigation	44	28	1,41
Operational procedures, aerodromes, ATS	44	31	1,38
Principles of flight, basic IFR, performance	44	26	1,48
Meteorology	44	33	1,32
Aircraft general knowledge	44	40	1,19
Radio communications	44	44	1,08
CPL (A) Commercial pilot licence (aeroplane)			
Whole examination	178	126	
Human performance and limitations	179	166	1,10
Air law	190	185	1,04
Navigation	178	153	1,11
Operational procedures	178	174	1,05
Principles of flight	178	164	1,07
Meteorology	178	161	1,09
Aircraft general knowledge	178	162	1,09
Flight performance and planning	178	164	1,10
CPL (H) Commercial pilot licence (helicopter)			
Whole examination	24	15	
Human performance and limitations	26	22	1,22
Air law	28	25	1,11
Navigation	26	19	1,28
Operational procedures	26	25	1,11
Principles of flight	26	21	1,27
Meteorology	26	20	1,20
Aircraft general knowledge	26	23	1,22
Flight performance and planning	26	25	1,07
IR (A) Instrument rating (aeroplane)			
Whole examination	190	147	
Section I	187	172	1,07
Section II	188	162	1,10
Section III	188	169	1,09
IR (H) Instrument rating (helicopter)			
Whole examination	2	2	
Section I	2	2	1,00
Section II	2	2	1,00
Section III	2	2	1,00
ME (A) Multi-engine rating (aeroplane)			
Multi-engine theory and performance	156	144	1,05
ATPL(A) Airline transport pilot (aeroplane)			
Whole examination	162	65	
Air law and ATC procedures	163	98	1,38
Airframe / systems / power plant	162	124	1,22
Instrumentation	162	114	1,23
Mass and balance	163	137	1,12
Performance	162	152	1,08
Flight planning and monitoring	163	137	1,12
Human performance and limitations	163	140	1,13
Meteorology	160	129	1,18
General navigation	163	122	1,25
Radionavigation	162	96	1,40
Operational procedures	163	137	1,11
Principles of flight	162	122	1,21

In year 2000, the FSA	
made aircraft annual inspections	343
approved aircraft design organisations	2
issued construction permits for amateur-built aircraft and modification approvals	24
granted aircraft noise certificates	46
issued airworthiness directives and amendments	117

Type certifications and modifications

The Flight Safety Authority participated in the type certification projects of 172 new aircraft types, engines or propellers, in co-operation with the other JAA member authorities.

In 2000, the FSA issued type certificates to four new aircraft types or variants.

JAA type certifications/validations in Finland in 2000

- Airbus A319-115 and A319-133
- Boeing 767-400ER
- Diamond DA 40

Nine aircraft types were validated in accordance with the national regulations.

Other new aircraft types and variants validated in Finland in 2000

- Bombardier CL-600-2B16 Variant CL-604
- Mitsubishi MU-2B-60
- Piper PA-42-1000 Cheyenne 400LS
- Socata TBM 700
- FFA AS 202/18A4 Bravo
- Sikorsky S-76C
- Bell 412 EP
- Schweitzer 269C-1
- Rolladen Schneider LS-8-18

One ultralight aircraft type was validated: Fantasy Air Arius 200 F and FT.

The FSA also issued 70 modification approvals. The most extensive of them concerned the re-equipment project of the Super Puma helicopters used by the Finnish Frontier Guard, which went on for over two years.

New airworthiness certificates

Last year, the FSA issued 51 certificates of airworthiness to new aircraft introduced in Finland. Moreover, 20 export certificates of airworthiness were issued.

New certificates of airworthiness in 2000	
Large aeroplanes, more than 19 seats	4
Aeroplanes, 19 seats or less	23
Helicopters	6
Gliders	11
Hot air balloons	1
Ultralight aeroplanes	6

New technical requirements

The growth of air traffic, together with the need to maintain a high level of safety and to minimise environmental impacts, require new technical solutions and modifications to the existing aircraft fleet.

In 2000, the FSA implemented new airworthiness requirements published by the JAA on **Precision RNAV** (Area Navigation) and **European RVSM** (Reduced Vertical Separation Minima).

In all, 50 special approvals, such as RVSM, Basic RNAV, Mode S transponder code and ELT (Emergency Locator Transmitter) code, were issued during the year 2000.

Maintenance oversight

In the year 2000, the oversight of maintenance operations and organisations focused on basic issues. New maintenance organisation approvals were granted, maintenance systems in accordance with JAR-OPS were approved, and several inspections and audits were made.

Furthermore, the FSA participated in the standardisation work within JAA as a member of the MAST (Maintenance Standardisation) team on two inspection visits.

New maintenance organisation approvals

The most significant new approvals granted were the maintenance system approval to Copter Action / Copterline Ltd. for its scheduled helicopter operations between Tallinn and Helsinki, and the JAR-145 maintenance organisation approval to Air Botnia for Saab 340 line maintenance. In addition, six new maintenance system approvals in accordance with JAR-OPS 1/3 Subpart M were issued. Five of them were granted to operators transporting passengers and cargo on IFR flights using multi-engined aeroplanes with an MTOW of less than 10 000 kg, which was a new group required to comply with JAR-OPS. The companies concerned were Airdeal, Oulun Tilauslento, Scanwings, Turku Air and Airfix. The sixth new approval was issued to Skärgårdhavets Helikoptertjänst AB, a company conducting Helicopter Emergency Medical Service (HEMS) operations.

Maintenance system approvals

As the above-mentioned six approvals concerned a new group introduced under the JAR-OPS requirements, the process included the inspection and approval of the operators' Maintenance Management Expositions, maintenance programmes and aeroplane technical logs. The approval process, with the revision of various draft documents, negotiations and feed-back, was very time-consuming for both the operators and the FSA.

Maintenance inspections

During 2000, the FSA made 54 inspection visits to maintenance organisations, including:

- 25 inspections of JAR-145 maintenance organisations;
- 21 inspections of maintenance operations in companies holding a JAR-OPS Air Operator Certificate;
- 8 inspections of maintenance organisations approved under the national requirements.

7. Flight safety oversight

Air navigation services and airports

One of the Flight Safety Authority's tasks is to oversee the safety of air navigation services provided by the Finnish Civil Aviation Administration (CAA).

Year 2000 again saw the approval of various air traffic control equipment and programs under the Finnish Air Traffic Management Integration (FATMI) project, aiming to progressively renew the ANS systems of the entire country.

Introduction of the EUROCAT 2000 system in Helsinki required the approval of a whole new approach control system and associated development and modification projects in May 2000. The process of linking the Selenia primary radar used at Helsinki-Vantaa to the EUROCAT 2000 system went on until the end of year 2000.

Moreover, developments and modifications resulting from the FATMI project were approved in Northern Finland, including the linking of two military radar stations to the system. Several individual devices and facilities were also approved, such as the instrument landing systems (ILS) for Kauhava and Enontekiö airports, and a new Aerodrome Flight Information Service (AFIS) tower with its radio stations at Varkaus airport.

Air Traffic Services (ATS) units were inspected at Vaasa, Utti and Kruunupyy airports. In addition, safety management audits of airports and ground aids were carried out in Jyväskylä, Kajaani, Oulu, Rovaniemi, Seinäjoki, Vaasa and Turku.

Calibration of ANS equipment

The Flight Safety Authority carries out flight and ground inspections of airport radio navigation, radio communications and lighting systems. In 2000, most of them were regular periodic inspections, but initial calibrations of new equipment were also made.

For calibration flights, the FSA's Flight Calibration Section uses a Beechcraft King Air C90 turbopropeller aeroplane, and for ground inspections of non-directional beacons (NDB) a Toyota Hiace with calibration equipment.

Last year, the calibration aircraft flew 351 hours. The following flight inspections were made:

System	Calibrations
Instrument Landing System (ILS)	87
VHF omnidirectional radio range / distance measuring equipment (VOR/DME)	31
VHF radio station antenna systems	15
VHF Direction Finder (VDF)	1
Precision Approach Path Indicator (PAPI)	9

The measurement vehicle was used for 87 inspections of non-directional beacons (NDB/L).

In the year 2000, the most important development projects were the enhancement of calibration software and improvement of the ground station for airborne calibration equipment.

The operations manual for flight calibration was almost completed by the end of the year. In addition, check lists used in the measurements as well as office automation for the publication of their results were further improved.

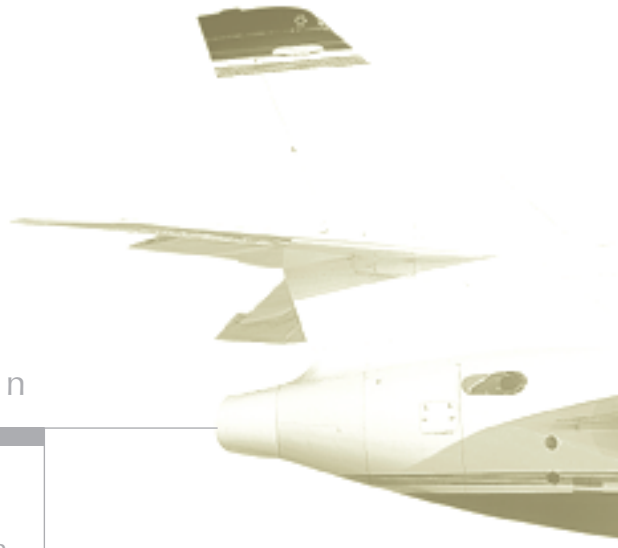
Aviation violations in 2000

Violation against aviation regulations occurs when a licence holder fails to comply with the Aviation Act or regulations issued by virtue of it. The annual number of suspected aviation violations reported to the Flight Safety Authority has remained under 100 for two successive years. Most typical violations are unauthorised flights within restricted or prohibited areas, failures to comply with ATS clearances, and unauthorised commercial operations.

During the year 2000, the FSA handled 85 cases involving a suspected violation. All reported cases are investigated, but only some of them result in sanctions. Usually the aviator receives a letter of correction, in which he/she is advised to rectify the faults or deficiencies found. In 2000, the FSA sent 22 letters of correction.

As a further corrective measure, the FSA requires some aviators to retake a theoretical knowledge examination or check flight. In case any gaps in the aviator's knowledge or skills are found, additional training will be required.

For more serious offences, a warning notice is issued and the licence may be suspended or revoked. The FSA issued only one warning notice in 2000. No cases were referred to the Licensing Board, set up by the Ministry of Transport and Communications to handle revocations of licences and operator's certificates, and therefore no licences were revoked or suspended. However, one application for licence renewal was rejected because of the applicant's criminal conduct. For any criminal offences, a police investigation follows.



8. International co-operation

European Aviation Safety Authority, EASA

Together with the Ministry of Transport and Communications, the Flight Safety Authority has been actively involved in the preparations for the establishment of an European Aviation Safety Authority (EASA) within the European Union. During 2000, the FSA produced written replies and participated in the work of an aviation expert group set up under the Council of the European Union.

Negotiations for the establishment of an European aviation safety authority have been under way in the EU for several years already. However, both the Union and some of its member states have found it extremely difficult to delegate legal powers to a new international organisation. Therefore, from the beginning of 2000, the negotiations have centred on the establishment of EASA as a Community organisation, based on inquiries made by the Commission and a draft regulation issued in autumn 2000. The advantage of this solution would be that existing Community structures could be used.

Nevertheless, many questions still require answers before the decision to set up EASA can be made. The FSA has specifically emphasised the following issues during the preparatory work:

- EASA should be more functional than the current system based on co-operation within JAA and EU Council Regulation 3922/91. It should clearly bring added value to aviators and aviation companies.
- Preparation of issues and decision-making in EASA should be effective, but take sufficient account of national needs.
- It is important that JAA member states outside the EU can participate.

Co-operation continues within JAA

While the preparations for EASA go on within the EU, European aviation safety authorities have continued their co-operation within the Joint Aviation Authorities (JAA). This work, started as early as in the 1970's, has resulted in the adoption of several Joint Aviation Requirements (JAR) in the fields of airworthiness, maintenance, flight operations and licensing. In Finland, mainly operational and licensing requirements were implemented during 2000.

The European Union has given its support to JAA activities, since the harmonisation of regulations and co-operation between authorities are essential prerequisites for the efficiency of the single market. As a result, several JARs have been incorporated into the Community legislation, but to a slower timescale required by this process.

Although the JAA work has certainly been valuable, it has also met with some substantiated criticism. First, the rulemaking process is rather slow, since it necessitates reaching a full consensus between the authorities. Second, the transparency of JAA operations has sometimes been found insufficient. Third, the implementation of decisions and requirements has not always progressed quite as expected, since it depends on each member state's own actions. Therefore EASA is aimed to replace the current form of co-operation within JAA.

The FSA has been an active participant in different JAA bodies, committees and working groups. In 2000, the JAA focused particularly on improving and developing its own operations.

Eurocontrol SRC

The Safety Regulations Commission (SRC) working under the EUROCONTROL (European Organisation for the Safety of Air Navigation) is tasked with co-ordinating safety regulatory functions and producing recommendations for harmonised requirements in the field of air traffic management (ATM). The FSA was also involved in the work and development of the SRC during 2000.

Last year, the main focus was on preparing EUROCONTROL Safety Regulatory Requirements (ESARR) for:

- reporting and classification of safety occurrences in ATM
- safety management systems for air traffic service providers
- risk assessment and mitigation in ATM
- licensing of ATM services personnel.

The next regulations under preparation in the SRC concern the approval of satellite navigation facilities as well as software for computer-based ATM systems.

Developing requirements for flight operations

The FSA was represented in the meetings of the AWGAS working group, tasked with the preparation of JAR-OPS 2 and 4 requirements for aerial work and general aviation, and of the DGELG group dealing with air transport of dangerous goods. One meeting of the AWGAS group was held in Finland in autumn 2000.

Moreover, the FSA participated in the joint effort for reducing airspace congestion in Europe, preparing for the reduction of vertical separation minima from 2000 feet to 1000 feet by the year 2002 (RVSM).

9. Personnel and finances

Personnel

The number of FSA personnel was 73 at the end of year 2000 (71 in the previous year). Most employees are inspectors supervising flight operations, flight training, licensing, air navigation services, airworthiness or aircraft maintenance. These tasks require substantial knowledge and experience in the different sectors of aviation.

Particularly during the recent years, when the implementation of Joint Aviation Requirements and a reform of the whole licensing system have increased the inspectors' workload, the FSA has suffered from a shortage of personnel. It is not always easy to find qualified persons for the expert duties.

Finances

The main source of income for the FSA are various licensing and certification fees. The total income in 2000 was FIM 4.9 million and the operating expenditure FIM 29.5 million. The deficit for the regulatory functions will be covered by other revenues of the Finnish CAA.

MAIN INCOME AND EXPENDITURE OF THE FSA

	2000 FIM (million)	1999 FIM (million)
INCOME	4,9	4,9
Licensing fees Certification fees Airworthiness monitoring Other regulatory functions Sale of publications	1,1 1,1 1,2 1,3 0,2	1,3 1,1 1,2 1,1 0,2
EXPENDITURE	29,5	27,0
Personnel expenses Other expenses General expenses	19,5 5,3 4,7	18,0 4,0 5,0

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