

**TRANSPORT. AVIATION TRANSPORT**  
**TRANSPORTS. AVIĀCIJAS TRANSPORTS****QUALITY ASSURANCE SYSTEMS FOR CIVIL AVIATION****KVALITĀTES NODROŠINĀŠANAS SISTĒMA CIVILAJĀ AVIĀCIJĀ**

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**Introduction**

Rapid development of aviation transport over the past few years and the increasing amount of consignments drawing extra resources towards state controlling institutions is the cause of necessity to make significant changes to legislation of several states. Initially state institution surveillance was directed to the valuation of aircrafts and physical condition of aircraft equipment therefore due to the legislation deficiencies inspectors could be very flexible regarding interpretation and freedom of action.

Aircrafts and their equipment becoming more and more complicated, as well as growing number and size of businesses involved in aviation transport (e.g. airlines, airports, air traffic control companies etc.) was the reason state institutions were practically unable to continue full surveillance of all companies involved in aviation transport.

Solution was found in mutual breakdown of functions and responsibilities among institutions and aviation companies, resulting in fact that institutions are still responsible for development of regulations making foundation for operations safety and overall supervision realization.

**European Union regulations for aircraft flight operations and technical maintenance procedures**

European Union Regulations for Aircraft Flight Operations and Technical Maintenance Procedures (EU-OPS 1 and PART-145) include requirements concerning quality system. Principles of legislation are as follows – national law applicable for EU countries will be replaced with the EU-OPS 1 (till July, 16 2008 JAR-OPS 1 in force) and PART-154. EU-OPS 1 and PART-145 is applicable to all EU countries. Those European joint aviation requirements are closely connected and their implementation in Latvia was performed alike it was done in other European Union countries – PART-145 implemented in the first place did not cause any difficulties with regards to national legislation. Though implementing EU-OPS 1 changes to aviation law had to be made, initiation of changes can be done by local CAA or aviation department, afterwards Ministry of Transport submits them to the Cabinet of Ministers which forwards them to the Saeima where they are reviewed and adopted accordingly. Hence EU-OPS 1 and PART-145 is applicable to Latvia as well and so are the requirements about quality system development for the operators. Internal quality assurance system

has to build on company developed structured quality assurance procedures being accepted by the state institutions. This is the way how operators and technical maintenance organisations gain the conformity to the aviation safety requirements being highlighted as the main goal of the quality assurance and primary function of the quality system. Therefore state institutions performing surveillance more and more focus their attention on evaluation of operators and technical maintenance organization conformity to the requirements of their internal quality systems. Since April 1, 1998 the development of internal quality system is mandatory for commercial aviation transport in EU countries.

### Basic Principles of quality system

One of the fundamental requirements of EU-OPS 1 and PART 145 is development of respective organisational structure including independent quality manager (Fig. 1).

Most essential elements of quality system determined by legislation:

- Operational requirements;
- Additional standards operational procedures of the operator;
- Quality policy of the operator;
- Organisation structure of the operator;
- Responsibility for the development, implementation and management of quality system;
- Documentation, including manuals, reports and instructions;
- Quality procedures;
- Quality assurance programme;
- Necessary financial, material and human resources;
- Training and term requirements.

Accountable Manager is responsible for the development and performance of the quality system, Quality manager holds responsibility for the effective work quality assurance programme.

Quality manager:

- has to make sure that manager responsible for non-conformity is taking corrective actions to avert it;
- has to make sure that corrective action includes all the activities concerned;
- has to monitor the non-conformance at the start and final phase;
- has to give independent evaluation of the corrective action start and final result to the top management;
- has to evaluate the effectiveness of the corrective action performing recurrent inspection.

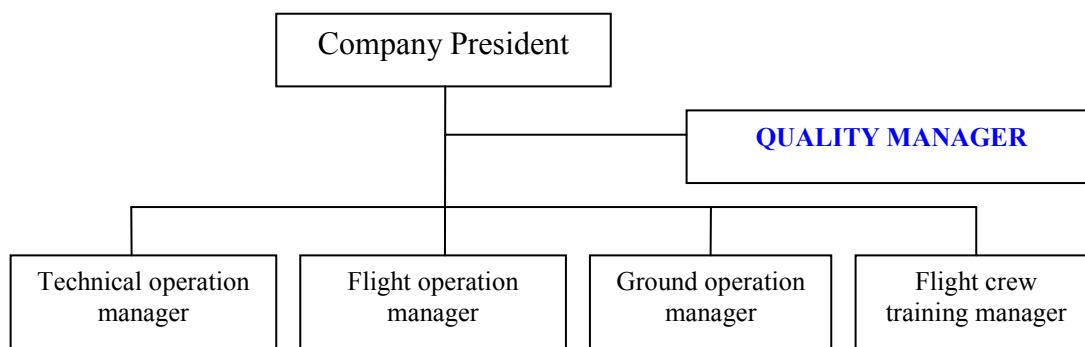


Fig. 1. Structural scheme of Quality manager responsibility

### Quality manager responsibility

Overall internal control of operator is gained by defining most vital areas to be reviewed and evaluated annually:

- Organization;
- Company plans;
- Flight safety;
- Aircraft operation certification;

- Control;
- Aircraft describe;
- Flights in any weather;
- Communication and navigation equipment and exploitation;
- Weight, centering and air ship loading;
- Instruments and safety equipment;
- Manuals, Technical log book and documentation;
- Flights and discharge of duties limitations, rest time requirements and planning;
- Aircraft maintenance and flight operation interworking;
- Minimal equipment list (MEL) operation;
- Maintenance programme and non-stop airworthy maintenance;
- Airworthy directive control;
- Technical maintenance performance;
- Defect rectification hold over;
- Flight crew;
- Flight attendant;
- Dangerous goods;
- Aviation safety;
- Training and instructions.

Procedures for review and verification processes are corresponding to the requirements set in ISO standards. Typical operational areas to be the subject of quality inspections are as follows.

- Flight exploitation;
- Aircraft anti-icing and de-icing measures on ground;
- To Flight correspondents;
- Loading control;
- Technical maintenance;
- Technical standards;
- Training standards.

Audits should include following procedures and processes:

- Notification explaining the scope of the audit
- Audit planning and preparation
- Evidence to request collecting and documenting

Quality documentation contains respective chapters of flight operations and technical maintenance instructions that can be included in a separate quality manual. In addition to already mentioned quality documentation should include the following:

- Quality policy;
- Terminology;
- Determined exploitation standards;
- Organization description;
- Distribution of responsibility;
- Exploitation procedure to ensure conformity to the set requirements;
- Incident prevention and flight safety programme;
- Quality assurance programme that includes:
  - Monitoring of process plan;
  - Revision procedures;
  - Reporting procedures;
  - Recurrent control and corrective actions procedures;
  - Results documentation system;
  - Training and instructions programme;
  - Documentation and data control.

## **Conclusion**

Quality assurance system (Fig. 2) in civil aviation industry is a complicated process. Civil aviation companies developing and implementing quality assurance system can face problems of

technical, methodological, managerial and psychological nature. To avoid such difficulties legislation has established key elements of quality assurance program and responsibilities of Quality Director who is in charge of quality assurance program effective execution. Overall internal control of operator is gained by defining most vital areas to be reviewed and evaluated annually. Procedures for review and verification processes are corresponding to the requirements set in ISO standards.

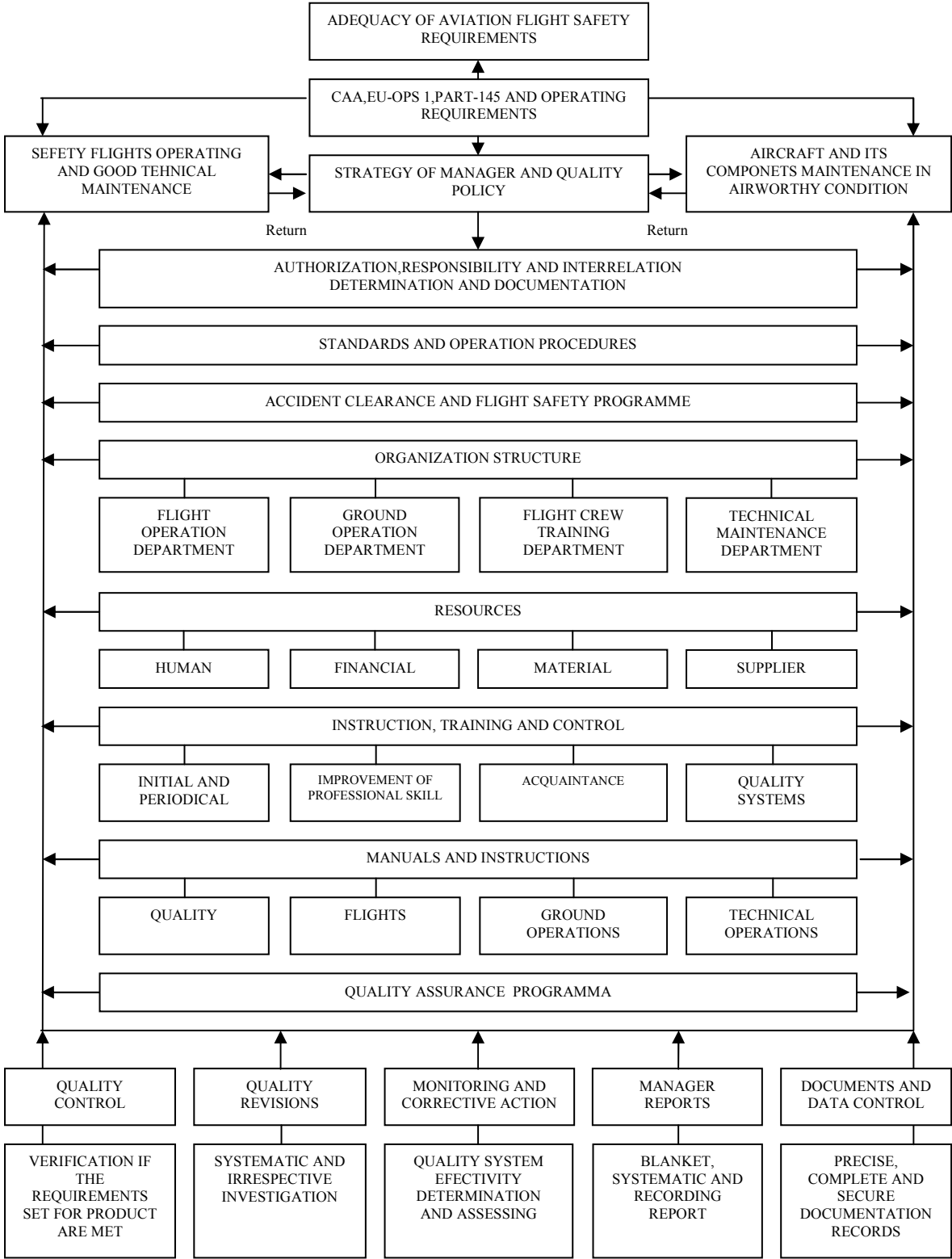


Fig. 2. Quality system

## References

1. PART-145 Technical operation organization requirements.
2. EU-OPS 1 Quality management system.
3. S. Abdalimova, V. Sestakovs. Flight Safety: Certification and licensing in air transport Part I, Riga, 1998.
4. V. Sestakovs, S. Abdalimova. Air transport flight safety certification. Riga, 1997.

### **Saldeniece E. Kvalitātes nodrošināšanas sistēma civilajā aviācijā**

*Eiropas Savienības noteikumos, kas reglamentē gaisa kuģu lidojumu ekspluatācijas un tehniskās apkopes kārtību (EU – OPS 1 un PAR T- 145) ir prasības, kas attiecas uz kvalitātes sistēmu. Likumdošanas aktu principi ir sekojoši – Eiropas Savienības valstīm eksistējošais nacionālais likumdošanas akts tika aizvietots ar EU – OPS 1 (līdz 2008. gada 16. jūlijam JAR – OPS 1) un PART-145. Civilās aviācijas uzņēmumos, lai nodrošinātu kvalitātes vadības sistēmu, var rasties dažādas problēmas: tehniska, metodiska, organizatoriska un psiholoģiska rakstura. Lai izvairītos no šādām grūtībām, likumdošanā ir noteiktas svarīgākās kvalitātes sistēmas sastāvdaļas un kvalitātes vadītāja atbildība, kas nodrošina kvalitātes programmas efektīvu funkcionēšanu. Lai pilnībā nodrošinātu visaptverošu iekšējo ekspluatanta kontroli, tiek definētas svarīgās sfēras, kuras vismaz reizi gadā jāpārskata un jāizvērtē. Revīziju un pārbažu veikšanas procedūras ir analogiskas ISO standartos noteiktajām prasībām.*

### **Saldeniece E. Quality Assurance system in civil aviation**

*European Union Regulations for Aircraft Flight Operations and Technical Maintenance Procedures (EU – OPS 1 and PART – 145) include requirements concerning quality system. Principles of legislation are as follows – national law applicable for EU countries will be replaced with the EU -OPS 1 (till July, 16 2008 JAR-OPS 1 in force) and PART-154. Civil aviation companies developing and implementing quality assurance system can face problems of technical, methodological, managerial and psychological nature. To avoid such difficulties legislation has established key elements of quality assurance program and responsibilities of Quality Director who is in charge of quality assurance program effective execution. Overall internal control of operator is gained by defining most vital areas to be reviewed and evaluated annually. Procedures for review and verification processes are corresponding to the requirements set in ISO standards.*

### **Салденице Э. Обеспечение качества на предприятиях гражданской авиации**

*В документах Европейский Содружества (ЕС), которые регламентируют эксплуатационный и технический порядок обслуживания полета воздушных судов (EU-OPS 1 и PART-145), есть требования, относящиеся к системе качества. Законодательный принцип акта нижеследующий – согласно единому порядку, существующему в странах ЕС, государство должно заменить существующий национальный законодательный акт с EU-OPS 1 (до 2008. г. 16 июля акт JAR-OPS 1 остается в силе) и PART-145. На предприятиях гражданской авиации в вопросах обеспечения качества имеют место различные проблемы: технического, методического, организационно психологического и др. характера. Во избежание этих сложностей в регламентирующих документах определены главные составляющие системы управления качеством и ответственность управляющего качеством, что обеспечивает эффективную работу программы качества. Для всеобъемлющего обеспечения внутреннего контроля деятельности эксплуатанта определяются важнейшие сферы, которые надо пересматривать и оценивать минимум один раз в год. Процедура проведения проверок и ревизии аналогична требованиям установленным стандарты ISO.*