

“Airworthiness Compliance in Air Forces”

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- Introduction
- Managing Military Aircraft
- Airworthiness Compliance
- Impact on Air Forces
- Conclusion
- Questions



Marc van Lokven

1988 – 2008 Royal Netherlands Air Force (mainly F-16)

2008 – 2010 VisionWaves A&D – Strategic Management IT systems

2010 – today Daedalus Aviation Group



Daedalus Aviation Group

Daedalus Mission Statement

“Deliver ultimate support for (military) aviation, covering the full scope from logistics to operations, in order to ensure optimal (weapon) system availability and operational readiness”

Two most important areas of attention:

COMMUNICATION SKILLS

- Most systems and documentation are in English
- International standards
- Information Management
- Organizational Structure



REGULATION & COMPLIANCE (incl. environmental)

- Consistency, contingency and accuracy
- Clearly documented, auditable, processes

Without REGULATION, COMMUNICATION is senseless
Without COMMUNICATION, REGULATION is useless

An example:
The RULES are clear, but COMMUNICATION is not...



DEFINITION

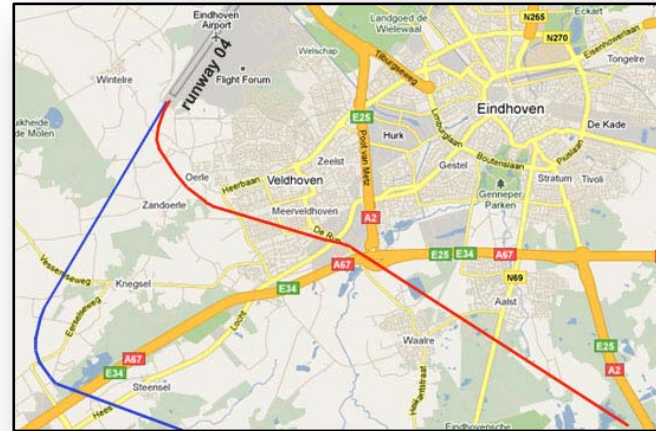
“The ability of an aircraft or other airborne equipment or system to operate without significant hazard to aircrew, ground crew, passengers or to the general public over which such airborne systems are flown”

FIVE BASIC ELEMENTS

1. A certified aircraft, designed and manufactured to international standards
2. A maintenance program by which the a/c can be serviced, checked and repaired
3. A continuous airworthiness program that supports the a/c in operation
4. Availability of an organization suitably approved to carry out pt 1, 2 & 3
5. Availability of licensed personnel able to certify and release to service

MILITARY AIRWORTHINESS AGENCY IN RNLAF

Trigger: Hercules accident 15 July 1996, Eindhoven Air Base



Multiple errors line up resulting in 34 fatal casualties, only 7 survivors

Inexperienced crew, budget cuts, wrong approach, passive ATC, etc.

REGULATION – COMMUNICATION not in place!

MILITARY AIRWORTHINESS AGENCY IN RNLAf

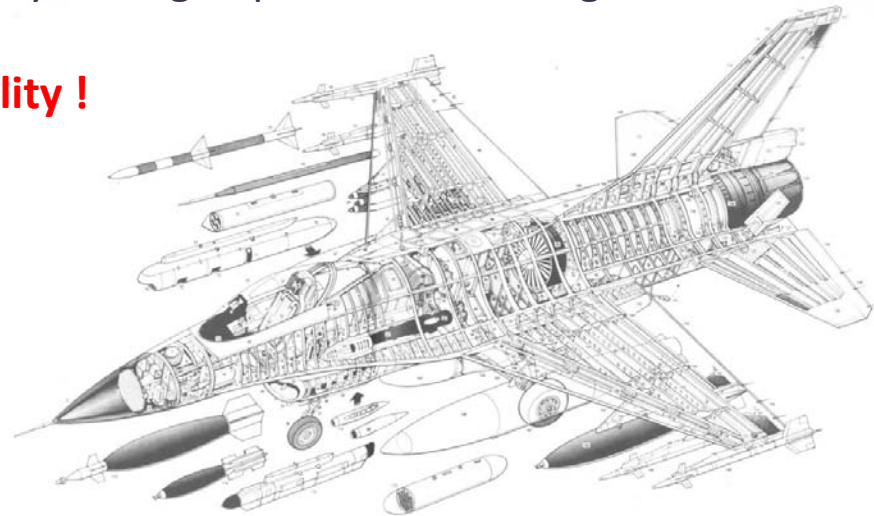
- Result:
- Proof of safety and responsibility becomes paramount
 - Call for Transparency – Public Opinion

More complex weapon systems (like F-16) require paradigm change

- Higher complexity REQUIRES more and better communication
- Higher complexity REQUIRES tightly managed processes and regulation

Complexity X Uncertainty = Fragility !

Requirement:
Integral Quality Control



INTEGRAL QUALITY CONTROL – THE “PARTS”

PART-21

Procedures and regulation for design and production of aircraft and components

PART-66

Training and examination regulation for maintenance personnel

PART-145

Regulation for maintenance organizations

PART-147

Regulation for training and examination organizations

PART-OPS (M)

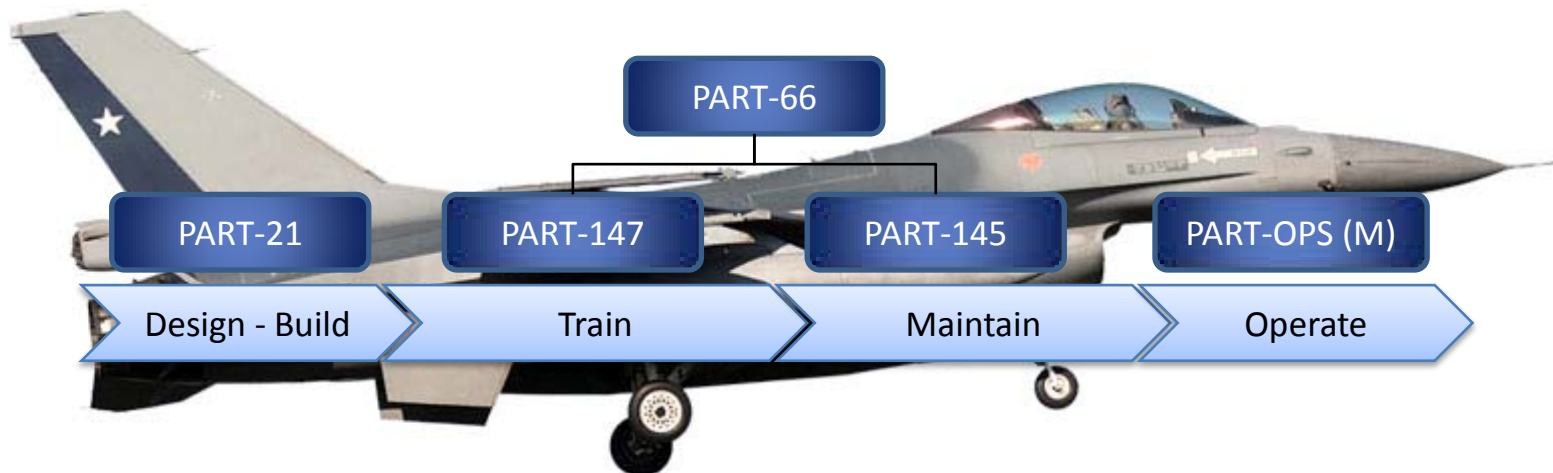
Regulation for continuous airworthiness

Covering the whole “Life Cycle”:

Design – Manufacture – Train – Maintain – Operate

INTEGRAL QUALITY CONTROL – THE “PARTS”

Aircraft may only operate when DESIGNED and MANUFACTURED by a **PART-21** approved organization, having its MAINTENANCE carried out by a **PART-145** approved organization, using **PART-66** qualified STAFF that has been TRAINED by a **PART-147** approved organization and when under CONTROL of a **PART-OPS** approved OPERATOR.



RELATION WITH ISO, AQAP, AS9100, etc.

- Airworthiness Regulation requires a solid Quality Management (ISO 9000, AS 9100, AQAP 2120) System to be in place.
- However, these are generic QA systems.
- ISO, AQAP, AS 9100 require no expositions
- Airworthiness Regulation has specific organizational requirements



ORGANIZATIONAL IMPACT

Initial phase

- Civil Aviation Regulation (MinTransport) and airline (KLM) as baseline

Create Transparency

- Military Airworthiness Authority under MoD
 - Define PART-66
 - Directives for other PARTs
 - “Guardian” role
- Audit Teams
- Audit Program

Setup Auditable Organization Expositions

- PART-21 MTC Holder Organization Exposition (MTCHOE)
- PART-145 Maintenance Organization Exposition (MOE)
- PART-147 Maintenance Training Organization Exposition (MTOE)
- PART-OPS Military Aviation Requirements (MAR-OPS)



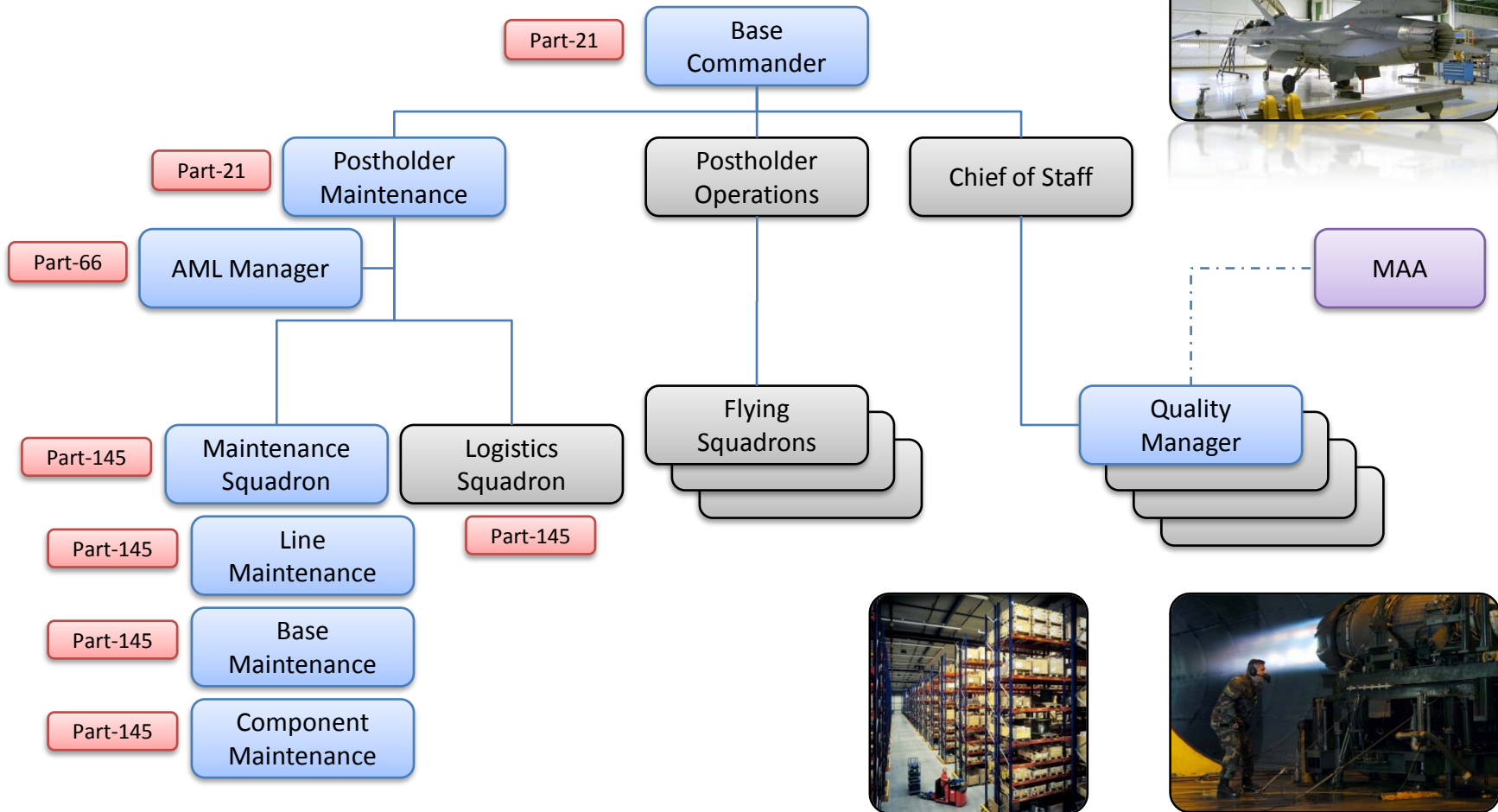
ORGANIZATIONAL IMPACT

AIRBASE summary

- Accountable Manager – Base Commander
- Postholder Maintenance – Maintenance Commander
- Quality Manager
- Compliance Verification Engineers (audit teams)
- MOE compliant Maintenance Organization
- PART-66 compliant Maintainers and Engineers (AML)



(MAINTENANCE) ORGANIZATION

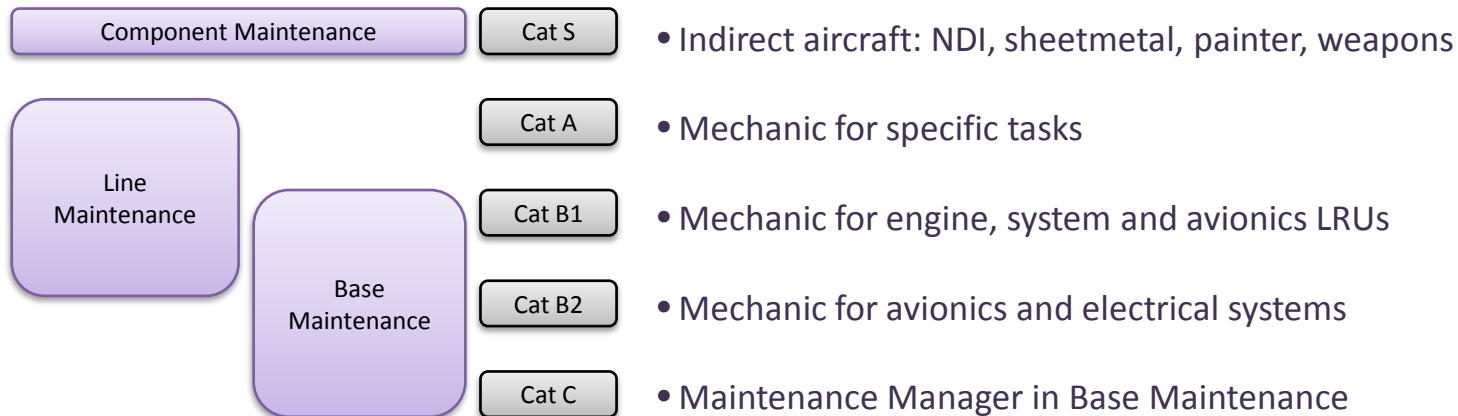


MAINTENANCE ORGANIZATION REQUIREMENTS

- MOE Approved by MAA
- Approved adequate facilities: hangar, docks, racks, containers, environmental, office space
- Controlled Supply Management (GSE, toolcrib, calibration and shelf-life management)
- Controlled Documentation Management
- Maintenance Administration System in place
- Controlled PQDR Reporting procedures (incident management)
- Access Control – Authorized Personnel only
- Maintenance Authorization Manual (MAM) – Approved by MAA
- Maintenance Personnel requirements (AML – Release to Service)

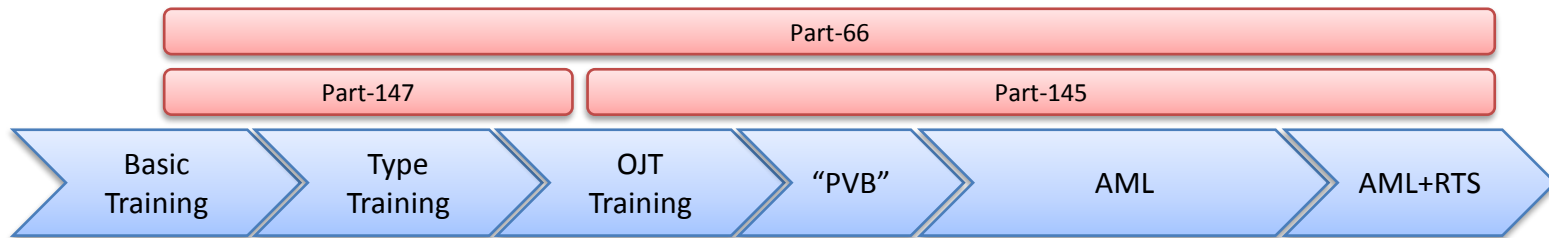
MAINTENANCE ORGANIZATION REQUIREMENTS

- Maintenance Personnel requirements (AML – Release to Service)
- Category Definitions
 - Competent Employee. No Part-66 req. NDI, sheetmetal, painter, etc. – sign for “accomplished”
 - Qualified Staff, have Part-66 AML, but no Part-145 RTS – sign for “accomplished”
 - Certifying Staff, have Part-66 AML + Part-145 RTS – sign for “release to service”



MAINTENANCE ORGANIZATION REQUIREMENTS

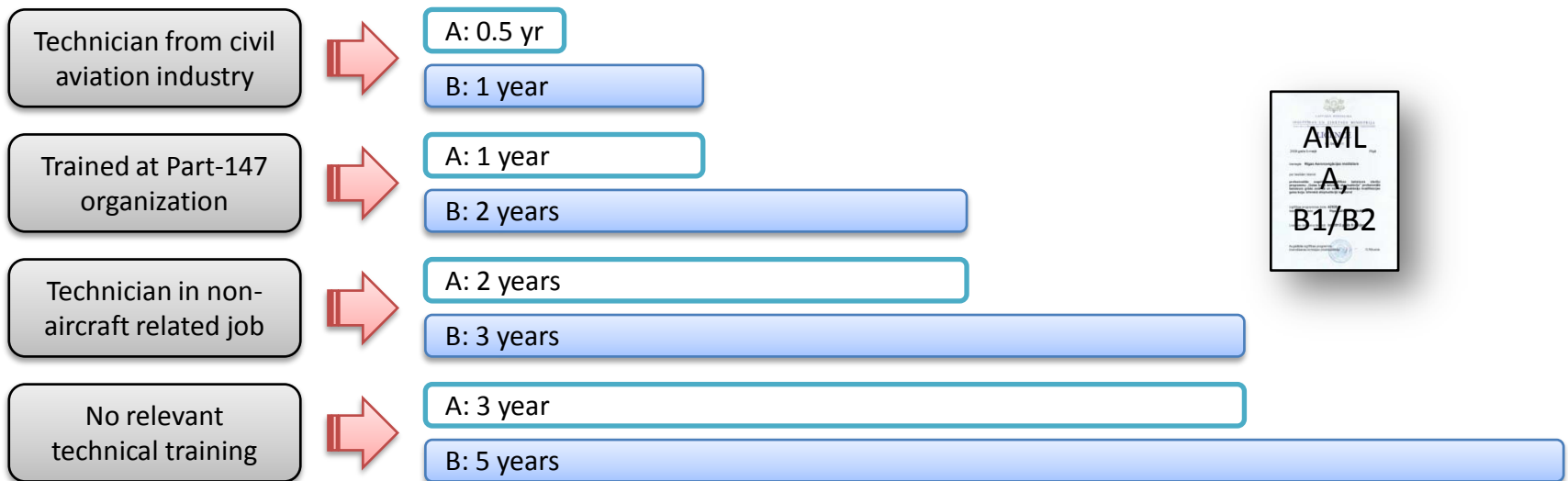
- Maintenance Personnel requirements (AML – Release to Service)
 - From Training to AML with Release to Service authorization



- Experience requirements e.g. B1/B2: 2 years experience B1/B2: 5 years experience
- “Grandfather’s Rights”

MAINTENANCE ORGANIZATION REQUIREMENTS

- AML Experience requirements versus Training and existing knowledge
- **Important:** alignment with Personnel Management / contracts!



AIRWORTHINESS

- Increased complexity
- Changed public opinion
- Paradigm change is
- Implementing “PAR”
- Complexity X Uncertainty
- (COMMUNICATION)
- **SAFETY**: it should not



ll organization
quires transparency
or Maintenance
GEMENT



THANK YOU FOR YOUR ATTENTION

GRACIAS POR SU ATENCIÓN

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