



ASSOCIATION EUROPEENNE
DES CONSTRUCTEURS
DE MATERIEL AEROSPATIAL

**Guide pour les Echanges de Données
entre l'Industrie Aérospatiale
et les Compagnies Aériennes**

**Guide for Data Exchange
between Aviation Industry
and Airlines**

**Handbuch für den Datenaustausch
zwischen Luftfahrtindustrie
und Fluggesellschaften**

RECOMMANDATION N°: PSC/DEC/79/7947

AECMA PSC/DEC/79/7 947 79 ■ 1012311 0006179 7 ■



Documents

Document Sharing Hub

L I S T O F C O N T E N T S

SECTION

INTRODUCTION

1 TECHNICAL OPERATIONS DATA

2 COST DATA

3 OPERATIONAL AND RELIABILITY DATA EXCHANGE PROCEDURES

GLOSSARY OF TERMS

DATE FEB. 79

GUIDE FOR DATA EXCHANGE BETWEEN AVIATION INDUSTRY AND AIRLINES

Introduction

This paper has been prepared in an attempt to define a standard set of parameters to be used in data exchange programmes between aircraft operators and all manufacturers. It is not intended that the paper should become a data specification, but that it should be the starting point for negotiations when operators are setting up their data exchange programmes.

In recent years, attempts have been made to formulate a system for reliability data feedback from airlines to airframe, engine and equipment manufacturers. These attempts have not been universally acceptable, probable because the quantity and depth of data requested would have exceeded practical limitations of data collection and transmission.

These limitations, set by economic and technical considerations, are compounded by communication problems within some airlines' organisations, and between airlines and manufacturers. The step from primitive and incompatible forms of data feedback to an internationally agreed comprehensive system was too great at the time of the earlier attempts. Furthermore, little justification for requiring the data had been submitted, and the requirement was therefore of doubtful validity in the eyes of an airline.

When monitoring the performance of equipment in service numerical data can be used to compare the in-service reliability of aircraft, systems and components with targets established in the design stage. Where the comparison is adverse, engineering data is used as a guide in determining why this situation exists in order that corrective action can be taken. Similarly, the reliability performance of one aircraft type with a number of individual operators may be compared, and relative successes and failures can be investigated, to the mutual benefit of all operators of that type.

In the longer term, design input data for new types of aircraft, engines and equipment is required to improve reliability on a quantitative basis. Numerical data will be used to establish reliability targets with more confidence than has been possible in the past, and engineering data identifies the effectiveness or otherwise of detail design features.

Section 1. Technical Operations Data

1.1 Objective

Although this paper specifies a standard which may be generally applied, it is expected that the detailed list of data parameters to be reported in the context of a particular operator, manufacturer and aircraft type would be the subject of negotiation in each individual case. An equipment manufacturer should establish liaison with the airframe manufacturer in order that a common approach to the problem can be established.

The object of any reliability programme is to provide information leading to the safest and most economical method of using the product. Broadly, then, manufacturers need data for monitoring the performance of equipment in service as a means of hastening product improvement.

1.2 Data

The data which is needed by the manufacturer is divided into the following 7 groups:

Group 1: Aircraft Utilization Data

Group 2: Numerical Aircraft Reliability Data

Group 3: Numerical Engine Reliability Data

Group 4: Numerical Systems and Component Reliability Data

Group 5: Air Safety Data

Group 6: Engineering Data

Group 7: Workshop Data

1.2.1 Aircraft Utilization Data

This data groups all information relative to the activity of a fleet during a reporting period. It is needed for determining age distribution, and for calculating the relevant rates from information contained in other data groups.

1.2.2 Numerical Aircraft Reliability Data

This numerical data allows the assessments of reliability and of the intrinsic availability of the aircraft.

1.2.3 Numerical Engine Reliability Data

This numerical data allows the assessments of reliability and of the intrinsic availability of the engines.

1.2.4 Numerical Systems and Component Reliability Data

This numerical data allows the assessments of reliability and of the intrinsic availability of systems and components.

1.2.5 Air Safety Data

This data is used in safety assessments, from information collected following accidents and incidents, in order to initiate remedial action, and to advise other operators of potential safety hazards.

1.2.6 Engineering Data

This data permits identification of symptom, circumstance and effect of a technical occurrence, using parameters which are generally known at the time of the occurrence. The data enables Reliability parameters to be computed in more detail.

1.2.7 Workshop Data

This data is needed by design organisations, as a technical follow-up to Group 6, Engineering Data, in order to identify cause and effect, and to assist engineering action.

1.3 Data Specification

1.3.1 Group 1. Aircraft Utilization Data

Reference	Parameters	What to Report	Justification
1.3.1.1	Block hours	) Fleet totals	Required for age distribution and for calculating relevant rates from information in other data groups.
1.3.1.2	Revenue hours	) for reporting	
1.3.1.3	Revenue departures	) period	
1.3.1.4	Flight time	)	
1.3.1.5	Supersonic hours	) Individual	
1.3.1.6	Aircraft operating cycles (landings)	) aircraft	
1.3.1.7	Touch-and-go landings	) totals since new (by	
1.3.1.8	Supersonic Cycles	) aircraft	
1.3.1.9	A.P.U. hours	) serial	
1.3.1.10	A.P.U. starts	) number)	

1.3.2 Group 2. Numerical Aircraft Reliability Data

Reference	Parameters	What to Report	Justification
1.3.2.1	Number of aircraft in service	) Total per type	Required for computation of despatch reliability
1.3.2.2	Number of technical delays exceeding a defined period of time	) for reporting period.	

AECMA PSC/DEC/79/7 947 79 ■ 1012311 0006184 0 ■

- | | | | |
|---------|--|---|-------------------------------|
| 1.3.2.3 | Number of technical cancellations |) | |
| | |) | |
| 1.3.2.4 | Number of flight interruptions for technical reasons |) | Reference 1.3.2.1 and 1.3.2.2 |
| | |) | |

1.3.3 Group 3. Numerical Engine Reliability Data

Reference	Parameters	What to Report	Justification
1.3.3.1	Engine hours	) Total per type) for reporting) period	Required to compute engine in flight shutdown rate and removal rate.
1.3.3.2	Number of engine removals	) Break down in) basic planned) basic unplanned) non-basic planned) non-basic unplanned	
1.3.3.3	Number of in-flight shutdowns	) Total per type) for reporting) period.	

1.3.4 Group 4. Numerical Systems and Components Reliability Data

Reference	Parameters	What to Report	Justification
1.3.4.1	Airline	)	Identification
1.3.4.2	Aircraft Type and Model	)	
1.3.4.3	ATA 100 Reference	Chapter/section/unit (6 digits) or if none Manufacturer Part Number AIRCRAFT SYSTEM	
1.3.4.4	Maintenance Corrective Action	Number in period	Advise manufacturer of total reliability problem regardless of whether detected by flight crew or maintenance personnel. The need for improved equipment stability may be recognised in conjunction with trouble data. Required for assessing new designs.

1.3.4 Group 4. Numerical Systems and Components Reliability Data

(continued)

Reference	Parameters	What to Report	Justification
1.3.4.5	Pilot Complaints	Number in period	Required for assessing existing aircraft operational behaviour including safety aspects and setting design targets on new aircraft.
1.3.4.6	Delays & Cancellations	Number in period	Required for despatch reliability
1.3.4.7	Unscheduled removals	Number in period	Provides the ability to assess whether unscheduled removal rates are acceptable so that problem areas may be identified rapidly to the operators' advantage. Required for setting design targets on new aircraft and for assessing new designs.
1.3.4.8	Scheduled removals	Number in period	Used for monitoring lifed components and refurbish times to unscheduled removal rate.

1.3.5 Group 5. Air Safety Data

Reference	Occurrence/Source	How and when reported	Justification
1.3.5.1	Accident	A full description and	To initiate
1.3.5.2	Incident	the results of the	remedial
1.3.5.3	Air Interruption (Technical)	investigation of each occurrence are needed.	action and to
1.3.5.4	Ground Interruption (Technical)	The occurrence should be reported as soon as possible after it has occurred, and further information as soon as it becomes available.	advise other operators of potential safety hazard.

1.3.6 Group 6. Engineering Data

Reference	Parameters	What to Report	Justification
1.3.6.1	Operator		)
1.3.6.2	Aircraft type/model and serial number		)
1.3.6.3	ATA 100 reference	Chapter/section/ unit	)
1.3.6.4	Engine/Module Type/Model	Model no., serial no. are only re- quired when trouble is asso- ciated with engine or APU	)
1.3.6.5	Event identifier	Report reference	) Identification
1.3.6.6	Component identifiers	Description Part number Modification standard Serial number Location (ATA 100 zone)	)
1.3.6.7	Type of event	Reason for action	)
1.3.6.8	Date occurred or found		)
1.3.6.9	Where occurred or found		)
1.3.6.10	Effect on operation	Delay, cancella- tion, flight plan change, late out of maintenance, non- availability for technical reasons.	) Indicates the) effect of) failure at) aircraft level) and highlights) the need for) remedial action) used for safety) assessment and) for the design) of future pro-) jects.
1.3.6.11	Delay time		)
1.3.6.12	Out of service time		)
1.3.6.13	Symptom of trouble		)
1.3.5.14	Effect on trouble on system of air- craft perform- ance		)
1.3.6.15	Crew action		)

1.3.6 Group 6. Engineering Data (continued).

Reference	Parameters	What to Report	Justification
1.3.6.16	Failure mode	Suspected failure	Indicates possible need for modification at component or system level. Used in assessment of design of new projects.
1.3.6.17	Rectification on aircraft	Replaced, adjusted, deferred action, in situ repair.	Measure of maintenance action required at aircraft level. Used for comparison with target levels.
1.3.6.18	Identification of replacement item	Description Part number Serial number	Essential for engine items and desirable for some other equipment.
1.3.6.19	Primary failure	Yes/no	
1.3.6.20	Component age	Block and supersonic hours, flight cycles, since new and since last workshop visit, calendar age since manufacture.	Analysis as part of condition monitoring programme.

1.3.7 Group 7. Work shop Data

Reference	Parameters	What to Report	Justification
1.3.7.1	Operator		)
1.3.7.2	Aircraft Type/ Model and Serial no.		)
1.3.7.3	ATA 100 reference	Chapter/section/ unit	) Identification) same data as) Group 4 data) for the same) trouble.
1.3.7.4	Engine/Module Type/Model	Model no., serial no., are only required when trouble is associated with and engine or APU	) Links Groups 4) and 5 together)
1.3.7.5	Event identifier	Report reference	)))

