Australian Government
Civil Aviation Safety Authority

Civil Aviation Advisory Publication

July 2011

Guidance on the establishment of a Flight Data Analysis Program (FDAP) – Safety Management Systems (SMS)

This publication is only advisory but it gives a CASA preferred method for complying with the *Civil Aviation Regulations 1988 (CAR 1988).*

It is not the only method, but experience has shown that if you follow this method you will comply with the Civil Aviation Regulations.

Read this advice in conjunction with the appropriate regulations.

Contents

The relevant regulations and other references

- *Civil Aviation Act 1988*
- Section 82.3 and 82.5 of the Civil Aviation Orders
- ICAO Annex 6, Part I
- ICAO Annex 6 Part III
- CAAP SMS-1(0) Safety Management Systems for Regular Public Transport Operations
- CAAP SMS-2(0) Integration of Human Factors (HF) into Safety Management Systems
- CAAP SMS-3(0) Human Factors (HF) and Non-Technical Skills (NTS) Training for Regular Public Transport (RPT) Operations
- CAAP 42L-4(0) Flight Data Recorder Maintenance
- UK CAA CAP 739 Flight Data Monitoring
- ICAO Accident Prevention Program
- FAA Advisory Circular 120-82
- Belgian CAA Circular CIR/OPS-23

This CAAP will be of interest to

This Civil Aviation Advisory Publication (CAAP) applies primarily to Air Operators Certificate (AOC) holders operating aircraft with a maximum take-off weight exceeding 27 000 kg, under Civil Aviation Order (CAO) 82.3 or 82.5 respectively – Regular Public Transport Operations (RPT). It will also be of interest to any aircraft operator wishing to voluntarily establish a FDAP and to the Civil Aviation Safety Authority (CASA) in assessing a new FDAP.

Charter operators currently operating an aeroplane with a maximum take-off weight exceeding 27 000 kg, and operators of Charter or RPT rotorcraft with a maximum take-off weight exceeding 7 000 kg, under CAO 82.1 should become familiar with this document as the requirement for an FDAP will apply in either instance under the proposed CASR Part 119 - Air operator certification, management and systems.

Why this publication was written

This CAAP was written to provide background information and guidance material for any operator of an aircraft that intends to develop and establish a Flight Data Analysis Program (FDAP) and for CASA in the assessment of those programs.

Status of this CAAP

This is the first CAAP on this issue. It is intended that it be read in conjunction with CAAP SMS-1(0).

For further information

For application and policy advice please contact CASA's Standards Development Branch by calling 131 757.

1. Acronyms

AAL	Above Aerodrome Level
AC	Advisory Circular
AGL	Above Ground Level - measured by aircraft's radio altimeter
AOC	Air Operator Certificate
ATC	Air Traffic Control
CAAP	Civil Aviation Advisory Publication
CAO	Civil Aviation Order
CAP	Civil Aviation Publication (United Kingdom)
CASA	Civil Aviation Safety Authority
FAA	Federal Aviation Administration (United States)
FDA	Flight Data Analysis
FDAP	Flight Data Analysis Program
FDM	Flight Data Monitoring UK CAA's term for flight data analysis program and its systematic use as a quality and safety monitor (may be used in lieu of the term FDAP).
FDR	Flight Data Recorder - normally the crash recorder
FOQA	Flight Operational Quality Assurance - FAA's term for flight data analysis program and its systematic use as a quality and safety monitor (may be used in lieu of the term FDAP).
FSO	Flight Safety Officer - investigates incident reports and promotes Safety
GRAF	Ground Replay and Analysis Facility – Teledyne Controls - Flight Data Company - FDR data replay and analysis software
ICAO	International Civil Aviation Organization
QAR	Quick Access Recorder - secondary recorder with a removable recording medium - traditionally tape, now moving towards Optical Disk or solid state
SMS	Safety Management System
SOP	Standard Operating Procedure
LOSA	Line Operations Safety Audit

2. Definitions

Accident: An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with intention of flight until such time as all such persons have disembarked, in which:

- a person is fatally or seriously injured as a result of:
  - being in the aircraft;
  - direct contact with any part of the aircraft, including parts which have become detached from the aircraft; or
  - direct exposure to jet blast;

  except when the injuries are from natural causes, self-inflicted caused by other persons, or when injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or
- the aircraft sustains damage or structural failure which:
  - adversely affects the structural strength, performance or flight characteristics of the aircraft; and
  - would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents or puncture holes in the aircraft skin; or the aircraft is missing or is completely inaccessible.

Notes:

1. *For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified as a fatal injury by ICAO.*
2. *An aircraft is considered to be missing when the official search has been terminated and wreckage has not been located.*

As Low as Reasonably Practical (ALARP): means a risk is low enough that attempting to make it lower, or the cost of assessing the improvement gained in an attempted risk reduction, would actually be more costly than any cost likely to come from the risk itself.

Exceedence Detection: This looks for deviations from flight manual limits and standard operating procedures (SOPs). A set of core events should be selected to cover the main areas of interest to the operator. A sample list is provided at Appendix A of this CAAP. The event detection limits should be continuously reviewed to reflect the operator's current operating procedures.

Flight Data Analysis Program: A pro-active non-punitive program for gathering and analysing data recorded during routine flights to improve flight crew performance, operating procedures, flight training, air traffic control procedures, air navigation services, or aircraft maintenance and design.

Hazard: A source of potential harm.

Incident: An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

Risk: The chance of something happening that will have an impact on objectives.

Notes:

1. *A risk is often specified in terms of an event or circumstance and the consequence that may flow from it.*
2. *Risk is measured in terms of a combination of the consequences of an event and its likelihood.*
3. *Risk may have a positive or negative value .*

Risk Assessment: The overall process of risk identification, risk analysis and risk evaluation.

Risk Identification: The process of determining what, where, when, why and how something could happen.

Safety: The state in which the probability of harm to persons or of property damage is reduced to, and maintained at, a level which is ALARP through a continuing process of hazard identification and risk management.

Safety Management System (SMS): A systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures.

System Safety: The application of engineering and management principles, criteria and techniques to optimise safety by the identification of safety related risks and eliminating or controlling them by design and/or procedures, based on acceptable system safety precedence.

3. Introduction

3.1 Historically the principal purpose of Flight Data Recorders (FDR) was to assist accident investigators to determine the cause of air crashes. This was possible by recovering the FDR and analysing the recorded flight data. It also proved very useful in providing a better understanding of serious incidents. In the early 1970s a number of progressive operators appreciated the capabilities of FDRs and the valuable insights they could provide for the conduct of safe flight. Regularly gathering and analysing flight data from the flight recorders revealed very useful information and provided operators the opportunity to understand more deeply what constituted a safe envelope for their flight operations. It also provided performance information of airframes and engines.

3.2 Today it is realised by aviation agencies and airlines alike that the practice of routinely analysing recorded data from routine operations is a cornerstone in support of their accident prevention programs. Rather than reacting to serious incidents, operators have a very useful tool to proactively identify safety hazards and mitigate the risks.

3.3 A key element in developing any FDAP is gaining the support of the pilot group. This can be achieved by management and the pilot group entering a formal agreement or FDA procedure document. Amongst other things, the core conditions of the agreement will ensure that the program is non-punitive and de-identifies crew whilst ensuring the data gathered is secure.

3.4 ICAO, in recognition of the safety benefits of such programs, formally adopted their use and published a standard in Annex 6 Part I. It requires operators of air transport aeroplanes (more than 27 000 kg) to establish and maintain a FDAP (from 1 January 2005). ICAO Annex 6 Part III recommends that the operators of helicopters (more than 7 000 kg) establish and maintain an FDAP. To harmonise with ICAO, CASA adopted the standards into the CAOs and proposes an FDAP provision that will apply to such operators under CASR Part 119.

4. FDAP Benefits

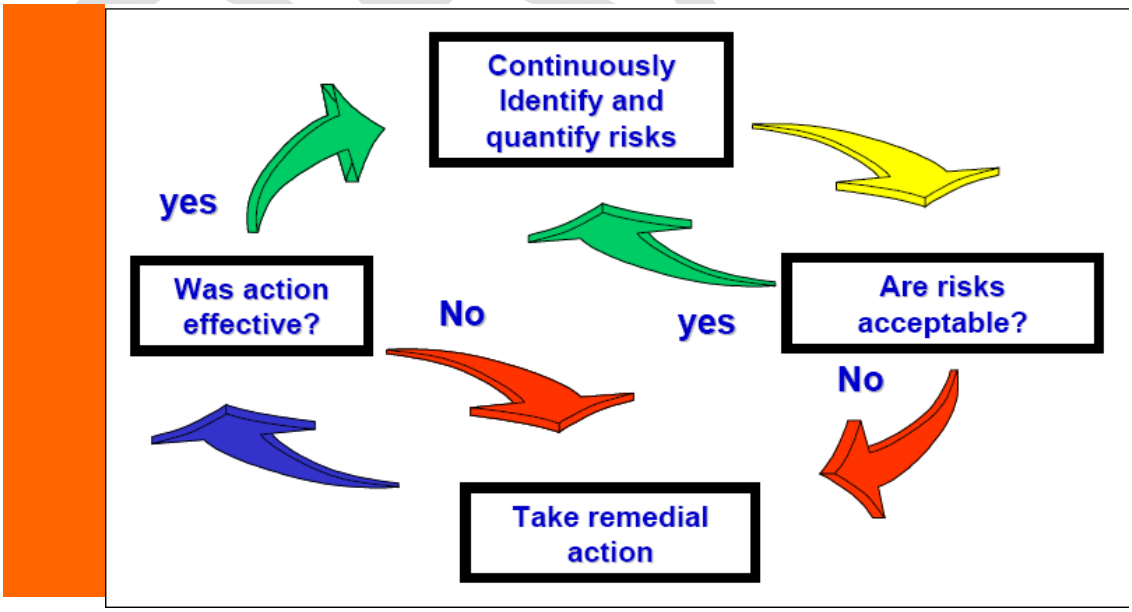
4.1 An FDAP is an essential element to a contemporary SMS. FDAP is used for the monitoring and analysis of flight operations and engineering performance data. Successful programs encourage adherence to SOPs and deter non-standard operations, consequently improving flight safety. They can also detect adverse trends in any part of the flight regime which can be mitigated by revision of SOPs, Air Traffic Control (ATC) procedures or understanding anomalies in aircraft performance.

4.2 FDAP is very useful in identifying exceedences of flight parameters that either indicate an underlying systemic issue or improper operating technique. This is established by comparing the specific flight to the fleet profile. For example, it would be possible to determine whether an unstable approach was an isolated event, or symptomatic of a wider mishandling problem due to a weakness in ATC procedures or improper flight management.

5. Objectives of an Operator's FDAP

5.1 FDAP will allow an operator to:

- identify areas of operational risk and quantify current safety margins;
- identify and quantify operational risks by highlighting when non-standard, unusual or unsafe circumstances occur;
- use the FDAP information on the frequency of occurrence, combined with an estimation of the level of severity, to assess the safety risks and to determine which risks may become unacceptable if the discovered trend continues;
- put in place appropriate procedures for remedial action once an unacceptable risk, either flight safety risk actually present or predicted by trending, has been identified; and
- confirm the effectiveness of any remedial action by continued monitoring.



6. Using an FDAP

6.1 FDA data is commonly used today in a number of areas including:

- exceedence detection;
- routine measurements;
- incident investigations;
- continuing airworthiness; and
- integrated SMS.

Exceedence detection or triggered events

6.2 This looks for deviations from flight manual limits, and standard operating procedures. A set of core events should be selected to cover the main areas of interest to the operator. The event detection limits should be continuously reviewed to reflect the operator's current operating procedures.

6.3 Some triggered events may include:

- excessive pitch on takeoff;
- climb out speed low or high during takeoff; and
- excessive rate of descent below 1000 feet.

Routine measurements

6.4 Ideally, data should be retained from all flights. At the very least a sufficient selection of measures will be taken from the fleet to ensure that normal practice is defined. Data will be recovered sufficiently frequently to enable significant safety issues to be considered and then mitigated. This may be accomplished by retaining select parameters at a given point in space. For example:

- climb speed at 400 AAL;
- flap retraction altitude/speed;
- gear extension altitude/speed;
- airspeed at 1000 feet AAL on approach; and
- rate of descent at 1000 feet AAL on approach.

6.5 A comparative analysis can then be made between any given flight and the established profile for normal procedures. Undesirable trends may be identified before there are statistically significant numbers of events. Emerging trends and tendencies are monitored before the trigger levels associated with exceedences are reached.

Incident investigation

6.6 FDR data should be used in any investigation following an event that is considered to be an Immediately Reportable Matter (IRM). It has been found to be very useful in supplementing the flight crew report and will quantify impressions and information. System status and performance can also be determined which may disclose cause and effect.

6.7 AOC holders (to whom CAO 82.5 applies) must retain flight recorder data following an IRM. In such instances, it is the responsibility of the Australian Transport Safety Bureau (ATSB)

to investigate such matters and determine the seriousness of the occurrence and the circumstances. The usual program protocol of data confidentiality will probably not apply.

Continuing airworthiness

6.8 Engine monitoring programs use measures of engine operation to monitor efficiency and predict future performance. These programs are normally supplied by the engine manufacturer and feed their own databases. Operators should consider the potential benefits of including wider use of this data within their continued airworthiness programs.

Integrated safety analysis

6.9 The FDA database should be linked to other safety databases. These might include technical fault reporting systems and incident reporting systems. A more complete understanding of events becomes possible by cross-referencing the various sources of information. The confidentiality of the FDR data must be assured when databases are shared in this way.

6.10 The integration of all available sources of safety data provides the company SMS with viable information on the overall safety health of the operation.

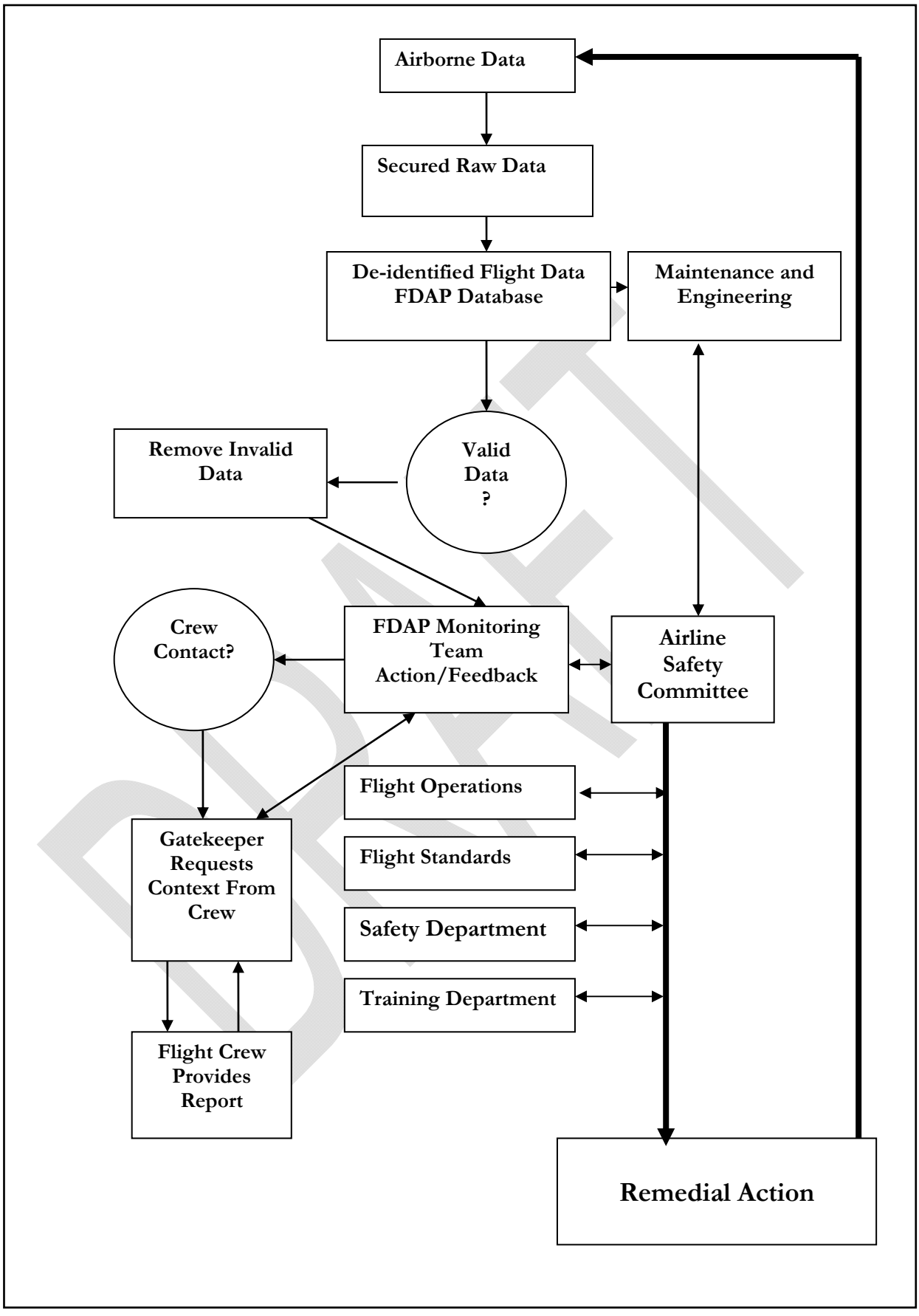
6.11 For example, a flap over-speed results in:

- a crew report;
- an FDA event; and
- an engineering report.

The crew report provides the context, the FDA event provides the quantitative description and the engineering report provides the result.

Removal of Recording medium

6.12 Where older flight recording equipment is installed, and there is no opportunity to use a Quick Access Recorder (QAR) or equivalent to download data, operators should coordinate the removal of the recording medium in harmony with maintenance schedules and/or routines. The removal time period should also coincide with recording medium memory capability and meet the operator's need for a timely analysis of the data as defined in the operator's FDAP goals. Specific procedures for data removal should be defined for maintenance personnel to permit proper data download. It is expected sufficient spare recording medium will be available at the operator's maintenance facilities so that the recording unit can be placed back into service after download.


Airborne Data
Secured Raw Data
De-identified Flight Data
FDAP Database
Maintenance and Engineering
Valid Data ?
Remove Invalid Data
Crew Contact?
FDAP Monitoring Team Action/Feedback
Airline Safety Committee
Flight Operations
Flight Standards
Safety Department
Training Department
Gatekeeper Requests Context From Crew
Flight Crew Provides Report
Remedial Action

7. FDA Equipment Requirements

7.1 FDAPs involve systems that capture flight data, transform the data into an appropriate format for analysis and generate reports to assist in assessing the data. Basic equipment required to support FDAP includes:

- A flight data recorder (FDR, QAR or equivalent);
- A data retrieval device which may be an optical disc/PC card or a wireless QAR that automatically transmits the encrypted data through a ground link to the ground station;
- A ground station (usually a desk top computer loaded with the appropriate software), to analyse the data and identify deviations from expected performance; and
- Optional software for flight animation facilitating a visual simulation of actual flight events.

8. Implementing FDAP

8.1 It would be expected that a start up airline would take a minimum of two years to implement an effective monitoring program. Implementation would need to be a phased approach:

- negotiation and implementation of pilot agreements;
- implement and audit of data security procedures;
- installation of equipment;
- selection and training of personnel; and
- commencement of data collection for analysis.

8.2 It is also considered essential that the FDAP is integrated seamlessly within the SMS to maximise safety benefits. The data provided by the program will provide quantitative information to support investigations that would be otherwise based on subjective reports.

9. FDAP Aims and Objectives

9.1 Any successful project needs to define the direction and objectives of the work. A pre-planned phased approach is recommended so that the foundations are in place for future expansion into other areas. A building block approach will allow expansion, diversification and evolution of the program through experience.

9.2 For example, start with a modular system looking initially at basic safety related issues only. In the second phase add engine health monitoring. Ensure all systems either being used, or to be used, are compatible for the purposes of the program.

9.3 Set both short term and long term goals. A staged set of objectives starting from the first week's replay, moving through early production reports into regular routine analysis, allows the program to systematically complete aims and goals.

9.4 For example:

- **Short term:**
  - Establish data download frequency and procedures, test replay software and identify aircraft defects;
  - Validate and investigate exceedence data; and
  - Establish a user-acceptable routine report format to highlight individual exceedences and facilitate the acquisition of relevant statistics;
- **Medium term:**
  - Produce an annual report - include key performance indicators;
  - Add other modules to analysis (e.g. Continuing Airworthiness); and
  - Plan for next aircraft fleet to be added to the program;
- **Long Term:**
  - Network FDA information across all company safety information systems;
  - Ensure FDA provision for any proposed advanced training program; and
  - Use utilisation and condition monitoring to reduce spares holdings.

9.5 Initially to prove the program's effectiveness it is useful to start with a modest monitoring schedule by targeting areas of known interest. A focused and disciplined approach is more likely to achieve the early aims and goals of the program that will lead to its success. For example, rushed approaches at certain airports, rough runways, high fuel usage on particular flight segments. Analysis of known problem areas is likely to generate useful monitoring methods for other locations and flight segments.

10. The FDAP Team

10.1 Experience has shown that the "team" required to run an FDAP could vary in size from one person with a small fleet (e.g. 5 aircraft), to a dedicated section for large fleets. The descriptions below identify various functions to be fulfilled, not all of which need a dedicated position. For example, engineering may provide only part time support. All FDA team members require appropriate training or experience for their respective area of data analysis. Each team member must be allocated a realistic amount of time to regularly spend on FDA tasks. With insufficient available manpower, the entire program will under-perform.

Team leader. Team leaders must earn the trust and full support of both management and flight crews. They act independently of other line management to make recommendations that will be seen by all to have a high level of integrity and impartiality. The individual requires good analytical, presentation and management skills.

Flight operations interpreter. This person may be a current pilot (or perhaps a recently retired senior Captain or trainer), or someone who knows the company's route network and aircraft. They will have in-depth knowledge of SOPs, aircraft handling characteristics, airfields and routes will be used to place the FDA data in a credible context.

Technical interpreter. This person interprets FDA data with respect to the technical aspects of the aircraft operation. They are familiar with the power plant, structures and systems, the company's requirements for information and any other engineering monitoring programs in use by the airline.

Gate Keeper. This person provides the link between the fleet or training managers and flight crew involved in circumstances highlighted by FDA. The position requires good people skills and a positive attitude towards safety education. The person is might be a representative of the flight crew association and should be the only person permitted to connect the identifying data with the event. The aircrew representative requires the trust of both crewmembers and managers for their integrity and good judgment.

Engineering technical support. This person is normally an avionics specialist, involved in the supervision of mandatory serviceability requirements for FDR systems. They must be knowledgeable about FDA and the associated systems needed to run the program.

Air safety coordinator. This person cross-references FDA information with other air safety monitoring programs (such as the company's mandatory or confidential incident reporting programs), creating a credible integrated context for all information. This function can reduce duplication of follow-up investigations.

Replay administrator. This person is responsible for the day-to-day running of the system, producing reports and analysis. Methodical, with some knowledge of the general operating environment, this person keeps the program moving.

10.2 In the case of an operator with limited resources the day to day running of the program may be contracted out to a third party, thus removing the data handling and basic analysis tasks. However, sufficient expertise must remain within the operation to control, assess and act upon the processed information received back from the third party operator. Responsibility for action may not be delegated.

11. FDAP Procedure Document

11.1 The FDAP procedure document, or memorandum of understanding (MOU), is to be signed by all parties (airline management including the Flight Safety Manager and the Accountable Manager, flight crew member representatives nominated by the pilot union and the pilot association) will, as a minimum define:

- The aim of the FDAP;
- A data access and security policy that should restrict access to information to specifically authorised persons identified by their position;
- The method to obtain de-identified crew feedback on those occasions that require specific flight follow-up for contextual information; where such crew contact is required the authorised persons need not necessarily be the program manager, or safety manager, but could be a third party (broker) mutually acceptable to flight crew members representative and management;
- The data retention policy and accountability including the measures taken to ensure the security of the data;
- The conditions under which, on the rare occasions, advisory briefing or remedial training should take place; this should always be carried out in a constructive and non-punitive manner;
- The conditions under which the confidentiality may be withdrawn (i.e. for reasons of gross negligence or significant continuing safety concern);
- The participation of flight crew member representative(s) in the assessment of the data, the action and review process and the consideration of recommendations; and
- The policy for the publishing the findings resulting from the FDAP.

APPENDIX A TO CAAP SMS-4(0) – FDAP EVENT SENT

Example of FDAP Event Set

These operational events are typical of those found in most software packages. FDAP event sets can be tailored to the specific requirements of the operator and can be expanded with the maturity of the program.

Event Group	Description
Rejected take-off	• High speed rejected take-off
Take-off pitch	• Pitch rate high on take-off • Pitch attitude high during take-off
Unstick speeds	• Unstick speed high • Unstick speed low
Height loss in climb-out	• Initial climb height loss 20 feet AGL to 400 feet AGL • Initial climb height loss 400 feet to 1500 feet AGL
Slow climb-out	• Excessive time to 1000 feet AAL after take-off
Climb-out speeds	• Climb out speed high below 400 feet AAL • Climb out speed high 400 AAL to 1000 feet AAL • Climb out speed low 35 feet AGL to 400 feet AAL • Climb out speed low 400 feet AAL to 1500 feet AAL
High rate of descent	• High rate of descent below 2000 feet AGL
Go-around	• Go-around below 1000 feet AAL • Go-around above 1000 feet AAl
Low approach	• Low on approach
Glideslope	• Deviation under glideslope • Deviation above glideslope (below 600 feet AGL)
Approach power	• Low power on approach
Approach speeds	• Approach speed high within 90 secs of touchdown • Approach speed high below 500 feet AAL • Approach speed high high below 50 feet AGL • Approach speed low within two minutes of touchdown
Landing flaps	• Late land flap (not in position below 500 feet AAL) • Reduced flap landing • Flap load relief system operation
Landing pitch	• Pitch attitude high on landing • Pitch attitude low on landing
Bank angles	• Excessive bank below 100 feet AGL • Excessive bank 100 feet AGL to 500 feet AAL • Excessive bank above 500 feet AGL • Excessive bank near ground (below 20 feet AGL)

Event Group	Description
Normal acceleration	• High normal acceleration on ground • High normal acceleration in flight flaps up (+/- increment) • High normal acceleration in flight flaps down (+/- increment) • High normal acceleration at landing
Abnormal configuration	• Take-off configuration warning • Early configuration change after take-off (flap) • Speed brake with flap • Speed brake on approach below 800 feet AAL • Speed brake not armed below 800 feet AAL
Ground proximity warning	• GPWS operation – hard warning • GPWS operation – soft warning • GPWS operation – windshear warning • GPWS operation – false warning
TCAS warning	• TCAS operation - RA
Margin to stall/buffet	• Stick shake • False stick shake • Reduce lift margin except near ground • Reduce lift margin at take-off • Low buffet margin (above 20000 feet)
Flight Manual Limitations	• Vmo exceedence • Mmo exceedence • Flap placard speed exceedence • Gear down speed exceedence • Gear selection up/down speed exceedence • Flap/slat altitude exceedence • Maximum operating altitude exceedence

APPENDIX B TO CAAP SMS-4(0) – CHECKLIST FOR FDAP

Operator's Checklist for FDAP (Implementation plan)

The following checklist should be used by operators to confirm that all the mechanisms are in place to implement an FDAP. The acquittal of the items listed is considered the minimum necessary by CASA for regulatory assessment of the program.

	Response	Operator's Reference/Comments
1. Does the SMS define FDAP clearly?		
2. Have the goals and the objectives of the FDAP been defined?		
3. Has a role within the operator's organisational structure been clearly identified that will be accountable and manage the program?		
4. Has an FDAP organisational structure with key personnel been identified to operate and oversight the program?		
5. Have the roles and responsibilities of the key personnel been described?		
6. Have the major stakeholders within the airline been clearly identified?		
7. Has the resources and system equipment to be committed to the program been identified?		
8. Has a copy of an agreement between management and the pilot association (group) for FDAP data usage been signed?		
9. If a third party has been contracted to operate the FDAP, has agreement been made with the provider that clearly details the program is the operator's overall responsibility?		
10. Does the program provide procedures for data review and evaluation?		
11. Does the program provide procedures for the transmission of adverse trends to all the appropriate operator departments?		
12. Are procedures for follow up on corrective actions specified?		

	Response	Operator's Reference/Comments
13. Does the program specify time limits to ensure that remedial/corrective actions are undertaken within a reasonable period of time?		
14. Are guidelines for crewmember contact and follow-up described?		
15. Are the core events that cover the operator's main areas of interest provided?		
16. Does the program provide procedures to continuously review detection limits to reflect the operator's current operating procedures?		
17. Does the program prescribe a process for data verification and validation?		
18. Does the program utilise appropriate technology tool sets such as data displays – traces and listings, other visualisations. Access to interpretive material and links to other safety systems.		
19. Does the program specify a means of informing other outside aviation stakeholders of safety discoveries?		
20. Does the program specify a means of safety education through regular safety reports/information or through appropriate training?		
21. If an accident or incident occurs, are procedures to retain and protect the associated flight recorder data specified?		
22. Is a non-punitive crew reporting system established when a significant incident is detected by FDAP?		
23. Is a flight data recovery strategy specified, and are flight data collection and recovery procedures specified?		
24. Is there a clear flight data access and security policy?		
25. Are the conditions of use and protection of participants clearly defined in the procedures document (agreement/MOU)		

	Response	Operator's Reference/Comments
26. Are the capabilities of the planned airborne systems and equipment described?		
27. Does the program identify provisions for airborne equipment maintenance and support?		
28. What percentage of the fleet is to be analysed for the purposes of FDAP? (If not 100%, is a method of determining a representative sample provided?)		
29. Does the FDAP's medium/long term goals include every fleet be inlcuded in the program?		
30. Data Reliability – are guidelines and methods indentified to ensure integrity of the system and validity of the data? Data Recovery – Are the objectives and targets for data reliability specified? Are analysis methods and processes to achieve the stated targets identified?		
31. Is there a specified procedure to compare FDAP data with inflight Normal Operations Monitorinig (e.g. LOSA observations)		
32. Has a list of mandatory occurrence report requirements (e.g. Hard/Heavy Landings etc.) been specified?		
33. Are the FDAP flight parameters harmonised with the company's published stabilised approach parameters?		
34. Are the FDAP parameters consistent with the company's published SOPs?		
35. Is the FDAP clearly identified as part of the SMS and are there robust links to ensure that any significant risk assessment is fed into the management processes?		