

AN ALTERNATIVE FLIGHT PATH: AN INFORMATION PROFESSIONAL IN AVIATION

ALISA HOWLETT

Technical Librarian, Virgin Australia, Brisbane, Queensland
alisa.howlett@virginaustralia.com

ABSTRACT

An airline's engineering functions involve an incredible amount of technical data, manuals and documentation. The responsibility of the Engineering Technical Library is to effectively maintain and provide access to approved technical data and documentation to required airline personnel, in compliance with regulatory requirements administered by the industry's governing body, the Civil Aviation Safety Authority (CASA). The purpose of this paper is to highlight the aviation industry as an opportunity (and challenge) for the information professional to broaden experience and apply expertise beyond traditional library walls. An introduction to the library collection and relevant legislation, as well as a discussion of information needs, operational requirements and vendor relationships, outline the key features of the information environment. Functions of the Technical Library - processes and duties, describe an 'out of the ordinary' library role for an information professional. By sharing an insight into an ever-changing and exciting industry to be involved in, the paper aims to promote appreciation and enthusiasm for the practice of library and information skills and knowledge in unique information settings.

1. INTRODUCTION

The corporate sector is often not at forefront of mind for identifying opportunities to apply the specialised skills and knowledge possessed by information professionals to unique contexts, types of information, client needs and provision of information services. Information professionals need not be bound by traditional library walls and information environments. Aviation is an ever-changing and exciting industry to be involved in, and one which highlights an opportunity to break barriers of the norm.

To the everyday consumer of air travel, the aviation industry appears to only involve airlines. Many different organisations operate in the industry, all overseen by the Civil Aviation Safety Authority (CASA), its role is to enforce regulatory compliance. Other major stakeholders involve repair and maintenance providers, contracted by airlines to carry out scheduled maintenance on fleets and repairs to components; airport authorities and air traffic control to monitor the airspace, and of course the aircraft and component manufacturers.

Virgin Australia has a fleet of 77 aircraft, consisting of three aircraft types and four engine models - 52 Boeing 737; two Airbus A330, and 23 Embraer. In the 2010 financial year, the airline's aircraft operating costs almost approached \$190 million. Fuel and oil costs amounted to nearly \$800 million and other contract and maintenance costs exceeded \$130 million. There is no doubt the Engineering and Maintenance division play a vital role in keeping the fleet flying. Within the department is the technical library - its role is to manage,

maintain and provide appropriate access to a collection of approved engineering technical data and documentation relating to the fleet's continued airworthiness. The purpose of this paper is to share an insight into this information environment as an example of an 'out of the ordinary' library role, and to demonstrate the possibilities of how the skills and knowledge of information professionals can be adapted and applied to different settings and situations.

2. THE INFORMATION ENVIRONMENT

2.1. Industry Regulations and Maintenance Control

The Civil Aviation Safety Authority (CASA) is the governing body which enforces legislation detailed in the Civil Aviation Act and Civil Aviation Regulations. Virgin Australia holds an Air Operator's Certificate (AOC), required for all operators of commercial (Class A) aircraft in Australia. According to the Civil Aviation Act (1988, s. 28BH), a holder of an AOC is required to "maintain a reference library within the organisation, the contents of which must be readily available to all members of the holder's operating crews." Legislation stipulates the library must keep the contents in a readily accessible form and must be kept up to date (1988, s. 28BH). The technical library contributes to continued compliance with the Civil Aviation Act as a condition of the AOC.

The Civil Aviation Regulations details the activities required to implement compliance with the Civil Aviation Act. Civil Aviation Regulations (1988, s. 42ZY) requires a 'Maintenance Control Manual' document to formally detail the "arrangements for the control of maintenance of the aircraft and those under which the aircraft's approved maintenance program is to be met", among other inclusions. Virgin Australia's technical library is situated within the Engineering Business Support department of the Engineering and Maintenance division. The purpose and functions of the technical library are outlined in the Maintenance Control Manual, as they contribute to arrangements made to maintain aircraft. Scope of the technical library's responsibilities includes all technical data and documentation received from airworthiness authorities, such as CASA, and aircraft (and component) manufacturers.

2.2. Responsibilities of the Technical Library

In compliance with the aviation industry's regulations, the technical library has two key responsibilities: -

- 1) maintain currency and relevance of the collection, and
- 2) manage control over the distribution and access to the collection.

Collecting current technical data is one of the primary functions of the technical library. Industry regulations require only current technical data and documentation can be used and applied to aircraft maintenance. An aircraft's reliability and performance are continually assessed and improved. The latest technical data, advice and instructions issued by the manufacturer is required for this purpose. It is critically important the engineering and maintenance department are operating with the latest technical data and documentation, in order to inform actions required to improve aircraft reliability and make adjustments to the aircraft system of maintenance.

All technical data and documentation held by the library may not necessarily be required for direct application to performing maintenance tasks. Some of the collection is only used for reference and research purposes. This distinction between these technical data and documentation is made by dividing the collection and maintaining nominated items on what is called a “controlled” basis. The remaining collection is kept on another database as “uncontrolled”. What this means is the “controlled” collection is subject to regular auditing processes, built into everyday library processes, as well as those internal and external to the airline, for example, quality assurance and CASA. The technical library satisfies regulatory requirements by keeping the “controlled” collection of technical data and documentation up to date. Access to the “uncontrolled” collection is permitted upon request, assessed on a case by case basis.

Technical data and documentation is proprietary in nature, it is intellectual property and can only be distributed for the sole purpose of maintaining aircraft components. Control is exercised over how the technical data is used, how it is distributed and accessed and in what media format. Only those personnel (registered copyholders) who require the technical data to carry out maintenance tasks and other position duties may have access. Aircraft and component designers and manufacturers reserve all rights of the technical data. Individual components designed and manufactured by ‘original equipment manufacturers’ (OEM) are strict on providing access to technical data to only those aircraft owners and operators where the component is installed on aircraft in the fleet.

2.3. Information Needs and Operational Requirements

Technical data and documentation maintained and made available by the library not only satisfies legislative obligations, but it also meets information needs and operational requirements of the engineering and maintenance division. From a task-based perspective, the main uses for the technical data and documentation is to: -

- Complete evaluations of new or revised technical data;
- Reference when signing off a maintenance task or log;
- Maintain a back up collection, and
- Integrate into aircraft system of maintenance.

Key users of the technical library include mostly engineers - fleet and reliability engineers (structural, mechanical and avionics), maintenance engineers and providers, purchasers and fleet and project managers. The technical library liaises with each type of user, some more often than others, depending on their role.

From an operational perspective, the technical library collection must be accessible in many locations, including the hangar, ports and maintenance providers, and be available 24 hours a day, seven days a week. Back up technical data is required in the event the IT system is unserviceable. Laptops with back up technical data are maintained by the library and kept at airports around the country and in the hangar.

2.4. Technical Library Collection

The technical library currently holds more than 1700 manuals and has had over 9500 service documents received and assessed to date. The collection consists of a diverse range of technical data - manuals and documents. A suite of maintenance manuals associated to each aircraft type detail maintenance procedures, checks, inspections and trouble-shooting.

Common maintenance manuals include: -

- Aircraft Maintenance Manual (AMM)
- Illustrated Parts Catalogue (IPC)
- Fault Isolation Manual (FIM)
- Engine Manual (EM)
- Wiring Manual (WM)
- Structural Repair Manual (SRM)
- Non-Destructive Testing Manual (NDT)

Other maintenance manuals issued by OEM are held in the collection for individual components. Component maintenance manuals (CMM) detail procedures for the repair, maintenance and overhaul of the component, which may be integrated into an aircraft system of maintenance. Examples of components include coffee machines, seats, in-flight entertainment, navigation and communication equipment.

Engineering drawings are collected by the technical library. Most drawings are held electronically. Drawings may be developed internally by engineers or issued to Virgin Australia from vendors.

Service documents are issued by aircraft manufacturers and OEM. These documents usually address a particular issue with a part of component of the aircraft, but may also advise operators of new parts and modifications, among other reasons. Service documents may be labeled differently from vendor to vendor and include the following types: -

- Service Bulletin
- Service Letter
- Information Notice
- Service Information Letter

Airworthiness authorities issue documents called 'Airworthiness Directives' which must be captured by the technical library, as these are legal requirements of airlines to comply with. The technical library receives Australian Airworthiness Directives from CASA, as well as State of Design (of aircraft) Airworthiness Directives from international authorities. These documents do not form part of the accessible library collection but the directions prompt tasks to be integrated into an aircraft schedule or system of maintenance.

Organising the various manual and document types into a reasonably coherent and recognisable structure proves a constant challenge for the technical library. Air Transport Association (ATA) Chapters is the 'Dewey Decimal' equivalent for organising technical data. The aircraft airframe is divided into chapters, ranging from ATA 00 to ATA 90. Among the diversity of the technical data and documentation maintained by the Technical Library, the ATA chapter is usually common across all document types and can be easily identified for cataloguing and incorporation into the library collection. Maintenance and component manuals are further broken into sections and sub-sections.

Figure 1 shows a 'snapshot' of the breakdown of an ATA chapter.

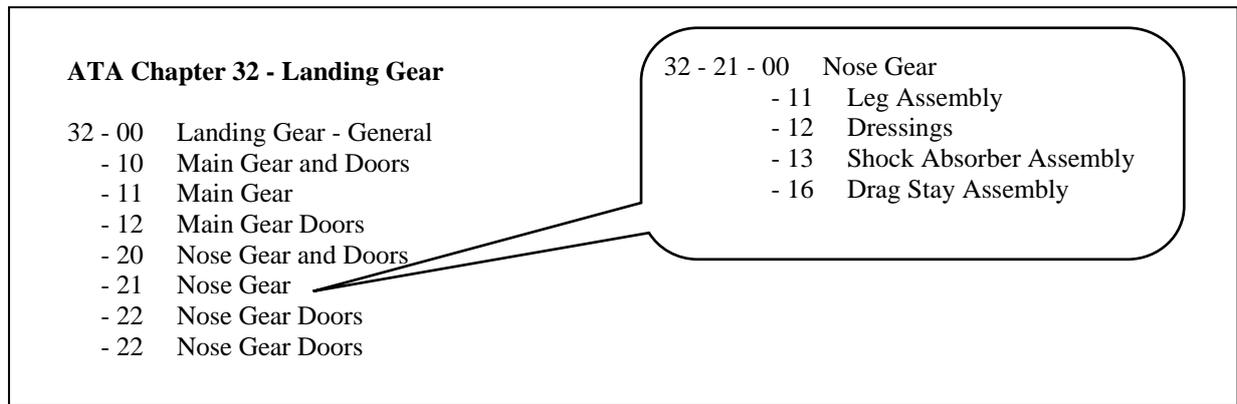


Figure 1

3. TECHNICAL LIBRARY FUNCTIONS

3.1. Receive

All approved technical data and documentation received by Virgin Australia must be formally received by the technical library. The responsibility of the technical library to control access to the library collection starts at this point. Almost all technical data and documentation is supplied by vendors in electronic formats, such as CD-ROM or downloadable directly from the vendor website in PDF. Most incoming technical data is received by the library via email notification. Subscriptions with vendors' technical data and documentation are set up and maintained by the technical library. While no formal collection development policy is currently in place, decisions made regarding the contents of the library collection are ongoing, aligned with aircraft requirements, and are in conjunction with advice from engineers.

The technical library (aims to) develops relationships with vendors for the supply of technical data and documentation. Usually an email request to the technical publications department of the vendor is all that is required. At times, vendors may request the serial numbers of aircraft where parts or components are installed before granting access to technical data. It is important to remember technical data and documentation belongs to the vendor and they will guard it to the extent they see fit.

Technical data and documentation revision cycles are often unpredictable. Manufacturers such as Boeing have a regular, major revision cycle three times a year however other manufacturers may release revisions in seemingly random intervals. In between complete revisions of technical data and documentation, manufacturers may release, what are called 'Temporary Revisions'. Recording the receipt of revised technical data and documentation, requires the library to do so in a way which every temporary revision is recorded against the correct complete revision, to demonstrate the history of the document since when it was first made available to users.

3.2. Register

Upon receipt of technical data and documentation, it must be registered where record of revision status, aircraft effectivity, access and formats/storage locations and the registered copyholders can be maintained. How this is achieved will differ from airline to airline, but the basics are common, to satisfy legislative requirements. Certain types of technical data and documentation are required to be submitted to engineering for evaluation of applicability to the Virgin Australia fleet. A specialised software program is used for this process.

Processes of registering technical data and documentation equate to a basic form of cataloguing. Metadata is recorded for each technical document received by the technical library. It is envisioned metadata will be used to a greater extent to enhance the findability of library content on the company intranet, and to lay groundwork for improved searching functionality.

3.3. Distribute

Distributing and providing access to technical data and documentation is the library function which resources are most occupied. "Reference" enquiries - helping users access and find what they need - are answered over the phone, in person and via email. Technical data requests made from maintenance providers are received by the library, usually via email. The technical library's information services are spread across platforms including manufacturer websites, the company intranet and extranet, and distribution of technical data to copyholders.

The technical library collection is primarily made accessible to internal personnel with the company intranet. External copyholders are given access to selected technical documentation via the extranet, all other technical data and documentation is issued, in CD-ROM or PDF format, upon release from the vendor and receipt by the technical library, accompanied with a notice of distribution. It is a requirement of external copyholders to return notification of incorporation of technical data into their collections. The technical library controls access to vendor websites, with access levels granted depending on job role. It is also responsible for basic IT troubleshooting and liaison with vendor IT customer service to resolve issues of access.

Providing access to a current and applicable collection of technical data and documentation requires ongoing maintenance in the form of 'weeding'. Technical data and documentation may be recalled from an external copyholder if it is no longer required to complete related maintenance tasks. Cancelled, superseded and inapplicable technical data is regularly removed from the intranet collection. This quality assurance process aims to minimise discrepancy by distributing and providing access to only current and applicable technical data and documentation.

The reach of the provision of technical library assistance is limited to when it is attended, during normal office hours, even though the collection is delivered electronically. Given technical data and documentation is required to be accessed in various locations and times, information services need also be extended to the 'digital branch', the primary point of contact that is the company intranet. It has been identified improved visibility of the technical library's services and additional resources are required in this space.

4. CONCLUSION

Aviation is certainly a unique information environment, is highly technical, and one which presents an opportunity (and challenge) for the information professional to apply specialised skills and expertise beyond the seemingly normal library realm. Industry regulations direct operations and requirements and are enforced by the governing body, Civil Aviation Safety Authority (CASA). An insight into this exciting industry has provided a brief overview of the information setting – regulatory requirements, information needs and the library collection – has outlined the responsibilities and functions of the technical library and describes an ‘out of the ordinary’ role for an information professional. The library functions outlined are not limited to Virgin Australia, but are general, with processes applicable to most other airlines in Australia. This paper has aimed to promote enthusiasm for breaking out of the mould and is hoped an increased awareness and appreciation for the possibilities in the corporate sector will inspire other information professionals to need not shy away from different information contexts and situations.

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