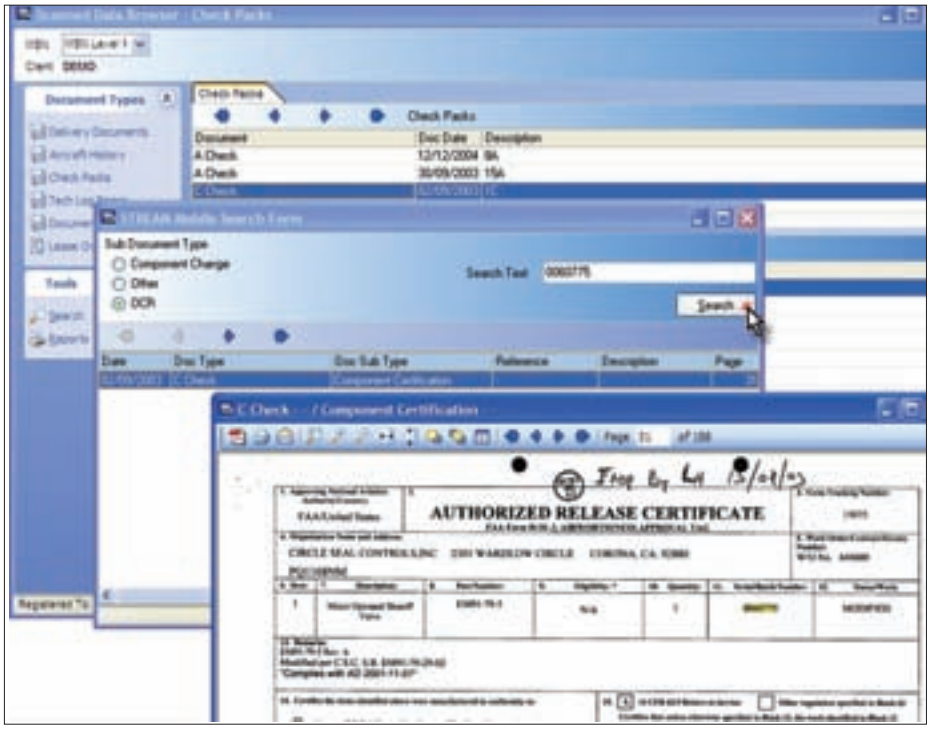
On the record?

The need to demonstrate the ongoing airworthiness of an aircraft, in an environment of continually evolving industry regulations and airworthiness directives, means that the importance of maintaining an aircraft's historical records has never been greater. However, there are also financial incentives to be gained. *Tricia Culhane* reports.



Waviatech's Stream solution is fully text-searchable using inbuilt Optical Character Recognition (OCR) software.

It has been said that a narrowbody aircraft itself is worth $1 while its historical records are worth $50m and, sceptical of these figures or not, most agree that an aircraft's records account for between 70 and 90 per cent of its total value; the paperwork becoming more critical as the aircraft gets older. Yet their importance is widely underestimated, as are the financial implications of poor records management, and often it is only through costly mistakes that owners and operators realise the true significance of these seemingly insignificant pieces of paper.

Every minute aspect of an aircraft's operation and maintenance is rigorously documented, from the mundane fuel and oil uploads of every flight to ad-hoc repairs, component replacements and the manufacturer's scheduled maintenance, which makes up the major part of an aircraft's historical records. Each maintenance item generates between one and 50 documents and, at a conservative estimate, a narrowbody aircraft generates approximately 5,000 documents per year of operation. With approximately 2,500 documents per archive box, an aircraft can by the time of its 25th birthday accumulate 50 boxes of documents; older widebody jets may collect up to 85 boxes. With such a large volume of documents, copies are rarely made.

Responsibility for record management lies with each of the aircraft's operators and, as such, aircraft transfers between owners or operators require meticulous and painstaking checks of all documentation by both parties to ensure compliance with ADs and required maintenance orders. Such checks must be carried out before transfer is completed and all the boxes are physically transported to their aircraft's new home. If documents essential to airworthiness certification are missing or irreparably damaged and compliance cannot be proved, the aircraft is automatically grounded and the operator is potentially liable to accrue sizeable penalties.

The costs of non-compliance

In addition to the substantial costs generated by delays in handover, which can run to tens of thousands of dollars per day, missing documentation means work must be repeated or the aircraft part replaced with appropriately certified materials. In cases where complete archives of records have been lost or badly damaged, costs of $10m may be incurred in restoring the aircraft to an airworthy state.

So, with this in mind, is it safe to assume that documentation is always secured and protected in prime storage conditions, ready for inspection or transfer? Not always, says Karl Scanlon, director of products and services for Waviatech, a Gatwick-based technical consultancy that provides a system called Stream to manage aircraft and engine records. "We've seen open boxes stored next to volatile chemicals and tins of grease with no physical separation, or boxes open in warehouses with rain coming in through the unsecured door. One company actually had to hire a temp to spend a day flattening out documents with an iron and ironing board, so that it could be scanned."

Gary Weissel, a VP at aviation consultancy SH&E, has encountered similarly risky storage conditions: "There can be millions of dollars' worth of paper records strewn around one storage facility — one carelessly discarded cigarette butt would be enough to destroy them. At an absolute minimum, records should be stored in a secure location in fireproof cabinets or stowage units. For added protection in a location that is also shared by offices, non-records storage, etc. an inert gas fire suppression system would be highly recommended to prevent fires starting in another area spreading to the records storage."

Scanlon is quick to point out that, generally, individual operators are not totally at fault and usually recognise that their facilities or those of their MROs are far from ideal, but he believes that industry professionals across the board need to be more aware that protecting the historical records of an asset is not purely a technical issue, but essential to protecting the value of the asset.

Mark Calver, chief operating officer of Relaer Asia, agrees and says that in recent years aircraft investors and owners have become more aware of the importance of good records management, but are not necessarily aware of how best to achieve it: "Aircraft owners need to become more proactive in their records management activities if they are to provide full protection and obtain the best possible utility and residual value of the their assets. Without the records, you could almost say that the aircraft's metal has scrap value only as an owner cannot substantiate its airworthiness and the older an aircraft gets, the more important these records become."

Weissel believes that leasing companies and owners that have significant experience in aircraft trading tend to be aware of the value of records: "They have usually learned the hard way that holes in records hit wallets hard. However, it is the financiers and legacy carriers that are not in the daily business of aircraft trading — and have the same systems in place for up to 35 years — that are not usually fully aware of their records' systems and management importance relative to protection of the asset value. Their systems are designed to meet the minimum regulatory requirements."

It's not just in storage that records are vulnerable to neglect or damage, Scanlon warns: even lessors who invest in secure means of transporting records have run into trouble. "A secure van carrying boxes of records was hijacked for unrelated reasons and the records, deemed meaningless by the hijackers, ended up in a canal," he recalls. "It was catastrophic for the lessor and meant a very expensive recovery. Furthermore, in cases of airline bankruptcy it is not unheard of for disgruntled employees, recognising the records' value, to help themselves to a few boxes and hold them to ransom until monies owed are paid, essentially selling them back to the owner."

Managing the paper trail

So, with stark warnings such as these in place, what can aircraft owners and operators do to ensure that the value locked into these paper records are protected? Microfilm has been widely used in the US as a replacement for paper since its approval in the 1960s, and it does ensure that the original documents' value is protected. However, with tens of thousands of documents potentially stored per cartridge, with only the most basic indexing, locating the particular 8130 or Form One you require can prove a time-consuming and costly exercise.

When you combine this with the large, specialist machinery required to read the reams of microfilm, it becomes obvious why many aircraft owners shy away from the system completely. "Microfilm acts only as a back-up storage system for paper records, and is an inefficient alternative to paper," says Calver. "There is no search facility, minimal if any indexing and if you have 20,000 pages of records then they still need to be scrolled through one by one, just as you would with the original hard copies."

Weissel believes that the main reason that microfilm is still used is simply that the necessary systems to do so have been in place for the last 20-30 years: "It is used now because it has been

used for a long time. The only real benefit of using microfilm is to reduce the physical space required to store records and if it is not done properly and by skilled people, the quality can be affected to the point that the documents are illegible and cannot be used."

Converting the microfilm images to CD obviously ensures ongoing protection of the records, removes the need for cumbersome machinery and allows multiple copies to be made, but it does nothing to make the bulk of documents more easily accessible, and it is not unusual for technical managers to spend weeks, or even months, at handover time trawling through onscreen records to find the required documentation. "Scanning and converting to PDF provides a better level of indexing than microfilm, but this approach is still not intelligent enough: there is no search facility, it is not interactive and generally [it's] not web-accessible," says Calver.

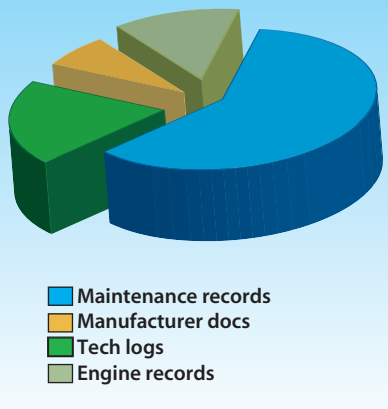
This is where newer systems of intelligent scanning can prove most beneficial, believes Scanlon. In addition to providing an electronic backup of paper records, Waviatech's Stream solution is indexed according to each client's requirements and is fully text-searchable using powerful and sophisticated inbuilt Optical Character Recognition (OCR) software. Waviatech sends teams to the client site to spend days or weeks preparing and scanning documents which are then returned to their exact pre-scanning physical condition. Calver highlights this as one of Waviatech's clear advantages: "They are records experts who have experience of the many different and often unique approaches used by airlines to achieve what should be a common outcome. These experts trawl through the paperwork, giving a level of inspection that tells the owner all they need to know about the storage, condition and accuracy of their records."

Streamlining the process

All the images gathered by the onsite team are indexed in Stream and processed by the OCR module. The results can then be either given to the client on a disk, which requires no software download, or accessed online through a secure portal, allowing the records to be viewed anywhere at anytime. The real value of this, says Scanlon, shows itself most clearly at the end of a lease, when the next potential buyer or lessee can view an aircraft's entire history from their desk. More crucially, required documentation can be accessed instantly using the search facility, eliminating the expense of sending technical staff across the globe to spend weeks, or even months, examining boxes of paper.

"Most people find it hard to visualise 100,000 documents, but if you imagine that a packed ring-binder contains around 400, that's 250 ring-binders stuffed with paper - often in no discernible order," explains Scanlon. "Now imagine that you need to find a single document, and finding that generates the need to find another, and then another. Now imagine repeating that process 600 times and you begin to picture what most technical managers face when they arrive at records storage facilities." He stresses that Stream, with its logical indexing using industry-standard terms, can eliminate this lengthy and costly process and hence has much more to offer than traditional scanning services.

Records make-up for 1996 — 737/A320



source: Waviatech

"In addition, aircraft can be marketed well in advance of the lease end and to multiple parties simultaneously, with no interruption to current aircraft operations. Also, any issues of concern can be identified and addressed early on, minimising any delays to handover," says Scanlon.

Weissel, who is heavily involved in remarketing aircraft and has partnered with Waviatech on the transfer of over 20 aircraft, cites this as one of Stream's main benefits: "Often clients balk at the initial cost of scanning, but it does save money later and is increasingly making it easier to market aircraft. If multiple parties are interested in one plane, for reasons of confidentiality and security it is not possible for them all to inspect the aircraft and records simultaneously, yet hosting them all individually can take weeks or even months. With Stream, copies of the records can be sent out to all interested parties or they can be viewed online so a significant amount of time is saved, any queries can be cleared up and most of the due diligence completed before potential buyers have even seen the plane. This also helps us establish who the serious buyers are."

He adds: "Also, if records are stored in paper format only, asset managers, with their intrinsic responsibility to protect the records, are obliged to place technical teams at the storage site to ensure records are handled and replaced appropriately and to answer questions. One or two technical reps spending one or two weeks per aircraft adds up to thousands of dollars worth of costs to our client, which can be avoided if records can be viewed remotely."

So with the advantages of intelligent record scanning clear, is a move towards a paperless industry in sight? "Definitely not," says Scanlon. "While the laptop is replacing the logbook on the flight deck, paper is still the principle means of signing off any work done and is here to stay. However, it is systems such as Stream that will continue to apply technology to paper to aid efficiency in document management, Streamlining the handover process and ultimately protecting the value of the asset itself."