



Not A G.I. Solution

▲ When an Army helicopter goes down, investigators need fast access to technical manuals and reports. A new storage solution, which includes jukebox management software, immediately puts information in the hands of investigators.

by Ed Hess

When a U.S. armed forces helicopter goes down, it makes the national news. In such cases, military brass and reporters echo the same question, "What happened?" However, the answer to that question is rarely obvious.

Enter the Analytical Investigation Branch (AIB) of the Corpus Christi Army Depot in Corpus Christi, TX. In addition to overhauling and repairing military helicopters, the depot also investigates U.S. Army aircraft accidents. Most of the investigations involve Army helicopters. However, the depot occasionally assists with helicopter crash investigations for the Navy, Air Force, Marines and some foreign governments.

In every case, one of the seven investigators at the AIB must comb through hundreds of pages of technical manuals and 15 years' worth of archived reports. The technical manuals serve as a guide to each part of a helicopter and how each part works. Archived reports, usually about 20 pages in length, detail past helicopter accident investigations. Investigators use these reports to determine if commonalities exist between separate accidents.

Detailed Investigation Causes Paper Overload

While the manuals and reports contain most of the information an investigator needs, locating specific data in a timely manner is difficult. The first phase of an investigation takes place at the accident site, which means investigators must take technical manuals with them. "These books are a couple of inches thick, and it's not convenient to carry them around in the field. Also, there is no guarantee that the books will contain the exact information an investigator needs," says Corando Gallegos, a chemist at the AIB. In some cases, technical manuals have been stored on CDs and data is accessible on an investigator's laptop computer.

Fieldwork is usually completed within two weeks, and the investigator returns to the AIB with a working hypothesis of what caused the helicopter accident. Two

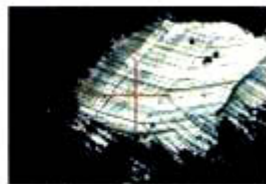
employees help prove failures in metal components, such as bolt shearing or metal fatigue. Gallegos analyzes the organic and inorganic compounds used in helicopter operations. Within about three weeks, a formal accident report is generated by the AIB.

An accident report may be only 20 pages, however, there are many more pages of supporting documentation that accompany it. For example, there are photographs of materials that were analyzed under an electron microscope. Charts and graphs of lab tests are also used to support conclusions. Lastly, there are detailed spec sheets and engineering drawings of helicopter parts.

Internet/Intranet Aids In Information Access

The two biggest enemies of investigators are time and inexperience, and they are not mutually exclusive. If an investigator determines an accident is caused by a recurring problem, then all identical helicopters must be checked immediately. However, investigators can only immediately reference what they have seen before. New investigators have not yet built up this mental database. "We depend heavily on the experience of the investigator," says Gallegos. "When new investigators come on board, it's tough for them to get up to speed. Our new system makes that process much easier."

Gallegos is referring to a new imaging and document management system that the AIB installed this year. To help investigators in the field, all the technical manuals were scanned and the images were stored on CDs in a Hewlett-Packard 600FX jukebox. As part of the overall scanning project, the AIB is also storing reports from the past 15 years in the jukebox. The scanned documents are now accessible through a Web interface, which makes field investigations easier. "If a specific part is suspicious, investigators can search our site for reports and manuals containing information about that part. They can determine if this is a recurring problem or something new," explains Gallegos.



The Analytical Investigation Branch of the Corpus Christi Army Depot uses QStar HSM software to store and access scanned documents and photos. Stored photos include (clockwise from bottom

left) a rubber ring from an aircraft, a microscopic view of a scraped aircraft instrument, and a microscopic view of a film deposit on a glass surface.



Accessing information back at the AIB is facilitated by the new system. Instead of using the Web interface, users can access information through the organization's intranet. Adds Gallegos, "We used to pull all the documents we needed from file cabinets. It was really difficult to ensure that you located all the information that was required."

Managing New And Old Information

New reports and manuals are scanned and stored on a server-attached RAID (redundant array of independent disks) system. This magnetic storage system provides security and instant, online access to information. As new information is added to the system, less frequently accessed data is migrated from the RAID system to the nearline storage of the jukebox. *QStar HSM* software, from QStar Technologies, handles this hierarchical storage-management process. The software also allows the jukebox and RAID system to appear as separate drive letters in the Windows directory tree. "The software really reduces the learning curve for anyone using the system. We can have up to eight concurrent users, and they will

all be looking at an easy-to-use interface," states Gallegos. "If we use all the storage in the jukebox, we can migrate some CDs offline. But, I don't think we'll get to that point for some time."

Building A Case For Information Management

Even with a new system in place, the primary objective of the AIB remains the same. The 16 civilians working under the auspices of the Army must still answer the question, "What happened?" Gallegos equates the mission of the AIB with that of forensic scientists. "In the vast majority of cases, we can find out what caused a helicopter to malfunction. We start with little clues and then we build our case," says Gallegos.

But, determining the value of little clues can often mean wading through big stacks of paper. That problem has been eliminated. Now, the AIB can quickly and authoritatively answer the question, "What happened?" □

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