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Imation Completes Cleaning & Stabilization of Magnetic Tape Recovered from Space Shuttle Columbia's Data Recorder

Imation scientists provide technical expertise assisting in recovery of valuable data

OAKDALE, Minn. (March 26, 2003) — Imation Corp. (NYSE: IMN), a worldwide leader in data storage, completed the cleaning and stabilization of the magnetic instrumentation tape recovered from the space shuttle Columbia's salvaged Orbiter Experiment Support System (OEX) data recorder. The recorder, which stores sensor information about temperature, aerodynamic pressure, vibrations and other data from hundreds of sensor locations on the orbiter, operates only during launch and re-entry. The OEX uses magnetic tape to record data that is not sent to the ground by telemetry. Working for NASA (National Aeronautics and Space Administration) and the Columbia Accident Investigation Board (CAIB), Imation's role had previously been identified by NASA.

The OEX recorder, which had been recovered Wednesday in Texas, was delivered to Imation's Discovery Technology Center by NASA officials on Friday. Imation scientists worked over the weekend to inspect and evaluate the tape. The visual inspection was conducted using a proprietary non-destructive process based on Imation's extensive recording experience that enabled Imation scientists to pinpoint the place on the tape where it had stopped recording instrument data. In consultation with NASA officials, they developed a process for cleaning and stabilizing the tape, which began on Monday and concluded Tuesday. The cleaning process required Imation scientists to immerse the tape in filtered, deionized water by hand, then dry it. The tape was delivered to NASA on Tuesday for transfer to the Kennedy Space Center in Florida where playback and dubbing of the data onto a new tape will occur. According to NASA, the freshly-dubbed tapes will be sent to Johnson Space Center in Houston and other facilities where analysis of the data by NASA and the CAIB will occur.

"Imation is proud to employ our capabilities, facilities and expertise to help NASA and the CAIB as they search for the cause of the Columbia tragedy," said Frank Russomanno, president, Imation's Data Storage and Information Management business. "Imation's data recovery expertise grows out of our core competency built over 50 years

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in developing and manufacturing data storage removable media. Our Discovery Technology Center, housing more than 300 technology scientists, is the only research and development facility in the United States focused solely on removable data storage media."

Following are answers to frequently asked questions concerning Imation's role in assisting NASA and the CAIB:

What has Imation's role been with the Orbiter Experiment Support System (OEX)?

Imation has been working with the NASA team to clean and stabilize the instrumentation tape recovered last Wednesday from the space shuttle. Imation has worked in close interaction with NASA to prepare the tape so that NASA and the Columbia Accident Investigation Board can recover and evaluate the data on the tape.

What are the qualifications and background of the scientists working on the project?

The Imation Data Recovery team is assembled from the breadth and depth of the magnetic and optical recording skill base as needed by the specific recovery project. In the case of the Columbia disaster, the team was composed of scientists and engineers with background and experience in the US security community, the USAF, NASA and other DOD agencies. The skill sets included Recording, Research & Development, Technical Service, Product Development engineers, a Magnetic Head scientist, and a Government Contracts Manager with a total of over 100 years of experience. In addition a Media Formulation scientist and the Imation Analytical manager were called upon to consult on specific issues. All members have participated in data recovery projects in the past and brought to the current challenge a dedicated and innovative spirit required to reach a successful conclusion.

What kind of tape is it?

The tape is 1-inch wide #799 instrumentation tape, which is a magnetic data recording tape made specifically for aerospace and government applications. The tape was mounted on two 14-inch reels, one supply reel of unrecorded tape and a take-up reel for tape that had recorded information.

What did you find?

Imation received the OEX recorder Friday evening, March 21st, in our research facility in Oakdale, Minn. Imation and NASA experts opened the recorder in the lab on Saturday morning. Most of the tape was still intact on both the supply reel and the take-up reel inside the device, but the tape had broken between the two.

The visual inspection was conducted using a proprietary non-destructive process based on Imation's extensive recording experience that enabled Imation scientists to pinpoint the place on the tape where it had stopped recording instrument data.

A portion of the tape was stretched or wrinkled on both ends of the take-up and supply reels, most of the tape was in fairly good condition on visual inspection. There was some contamination inside the recorder from dirt and water that had accumulated on the tape from its impact on the ground.

How was the tape cleaned?

Over the weekend, the scientists assessed the physical condition of the tape and developed a plan for cleaning and stabilization of the tape to ensure that recorded information could be retrieved with minimum errors. Working with a NASA-approved approach that would minimize any chance of data loss, the team began cleaning the tape by hand—immersing multiple times in a filtered de-ionized water bath. The tape was then dried with a lint free cloth and nitrogen, allowed to air-dry overnight, and wound to the appropriate tension on the original hub with new flanges.

When will you be done?

The tape was transferred back to NASA at 1 p.m. Tuesday, March 25.

Did you read the tape?

No. Imation evaluated the tape and found that a very valid piece of media had been recovered. Our role was to prepare it so that it was in condition for NASA and the CAIB to review the data.

Why did NASA choose Imation?

In the weeks following the Columbia tragedy, Imation scientists consulted with NASA scientists to develop a media recovery procedure. In addition, NASA, as with virtually all other organizations handling large amounts of digital information, is a customer for Imation data storage media products.

Imation, with its 50-year legacy, as part of 3M Company, was the first to develop magnetic data storage media. Imation, and previously 3M, served as administrator of the National Media Laboratory, which was a consortium of companies that support the information storage needs of the government. As a result of this affiliation, NASA was familiar with Imation's technical skills in recorded media. Imation's core competency in data storage media provides a unique resource and expertise for this kind of work.

Has Imation participated in other data recovery efforts similar to this one?

Imation has, on occasion, worked with customers to help them in the recovery of data on media that has been damaged. It is a capability that grows out of our core competency of developing and manufacturing a broad range of removable data storage media products, both magnetic and optical.

About Imation

Imation Corp., with data storage revenue of more than US\$1 billion in 2002, is a leading developer, manufacturer and supplier of magnetic and optical removable data storage

media. With one of the broadest product lines in the industry—spanning from a few megabytes to hundreds of gigabytes of capacity in each piece of media—Imation serves customers in more than 60 countries in both business and consumer markets. With more than 300 data storage patents in the U.S. alone, Imation continues to pioneer today's proven magnetic and optical media technologies.

As of December 2002, Imation employed approximately 2,800 people worldwide. Revenues from outside the U.S. contribute approximately 49 percent of total sales. Additional information about Imation is available on the company's website at www.imation.com, or by calling 1.888.466.3456.

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