

**NIST****UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology**

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X3T9.2/91-146

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TO: Workshop Participants, Members of TC X3B11, TC X3B11.1,
TC X3T9.2, and Other Interested Parties.

FROM: Fernando Podio, - *F. Podio*
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SUBJECT: Minutes of the Workshop on Monitoring and Reporting Techniques for
Error Rate and Error Distributions in Optical Disk Systems, August 5,
1991 in Colorado Springs, Colorado.

The Workshop on Monitoring and Reporting Techniques for Error Rate and Error Distributions in Optical Disk Systems took place August 5, 1991 in Colorado Springs, Colorado. Thirty five participants from Government and industry attended. F. Podio from the Computer Systems Laboratory of NIST chaired the Workshop. A copy of the workshop agenda and the attendance list are attached. Three members of different agencies in the Federal government gave presentations. F. Podio gave a presentation on the Computer Systems Laboratory (CSL) of the NIST program for investigating error reporting capabilities of optical disk drives, W. Callicott from the National Oceanic and Atmospheric Administration (NOAA) talked about the NOAA Data Management outlook, and C. Obermeyer from the National Archives and Records Administration (NARA) talked about the Records Management perspective on optical disk systems error detection and correction.

Industry speakers included two representatives from error correction and detection (ECC) chip manufacturers and from two drive manufacturers. N. Syrimis, from Cirrus Logic gave a presentation on the error measurement and recovery capabilities on the Cyrrus Logic chip set, B. Chang, from Advanced Micro Devices talked about their advanced burst error processor, W. Brown, from Eastman Kodak Co. talked about error statistics on Kodak media, S. Gerger also from Kodak gave a presentation on the error handling and reporting in the Kodak System 6800 optical drive, and R. Glisfmann from Laser Magnetic Storage International talked about the error reporting in the LD-4100\4500 SCSI event log.

There was also a panel discussion during the afternoon session on user requirements. A preliminary set of user requirements was identified. These are as follows:

1. Report on the consumption of spare sectors and the rate of change.
2. Report correction (on record base) rate above some threshold (corrections/capacity) at the codeword level.
3. Capability to display the uncorrected sector content at the host level.
4. Capability of reporting all soft errors on demand.
5. Capability of reporting all hard errors on demand.
6. Report on errors encountered reading header information.

Discussions took place on how to reach consensus on reporting error rate information to the host to satisfy the user requirements. During his presentation, the chair proposed the organization of a Working Group or similar structure sponsored by CSL. This idea was well received by the participants. He suggested that the first Working Group meeting be on October 7, 1991 in Phoenix, AZ (see attached meeting announcement and preliminary agenda). It is planned that the Working Group will be active for at least a year. A NIST guideline/standard and possible contributions to relevant standard committees is planned as a result of this activity. The following organizations already volunteered members for the WG:

Advanced Micro Devices
Cirrus Logic
Eastman Kodak Co.
Ericsson Telecom AB
Hewlett Packard
Honeywell Inc.
IBM Corp.
Laser Magnetic Storage International Co.
Library of Congress
Mitsubishi Japan
National Archives and Records Administration
National Institute of Standards and Technology
Olympus Corp.
Wang Laboratories Inc.

Ken Hallam, chair of Technical Committee X3B11, Optical Digital Data Disks, suggested that the approach to achieve consensus on standardized method(s) of reporting error rate information to the host should be the documentation of a Small Computer Systems Interface (SCSI) common command set for error rate monitoring and reporting. This suggestion was also well received by the majority of the participants. This subject and the user requirements will be part of the Working Group meeting agenda items (see attached preliminary Working Group meeting agenda).

**Workshop
on
Monitoring and Reporting Techniques for Error
Rates and Error Distributions in Optical Disk Systems**

August 5, 1991

Colorado Springs Marriott, Colorado Springs, CO

Agenda

- 9:00 Introductions and Workshop Organizational Issues**
- 9:10 The NIST Program for Investigating Error Reporting
Capabilities of Optical Disk Drives**
F. Podio, National Institute of Standards and
Technology (NIST)
- 9:30 NOAA Data Management Outlook**
W. Callicott, National Oceanic and Atmospheric
Administration (NOAA)
- 10:00 Error Statistics on Kodak Media**
W. Brown, Eastman Kodak Co.
- 10:40 Break**
- 11:00 Error Measurement and Recovery Capabilities on the
Cyrrus Logic Chip Set**
N. Syrimis, Cyrrus Logic

- 11:40 **Optical Disk System Error Detection/Correction: A
Records Management Perspective**
 C. Obermeyer, National Archives and Records
 Administration (NARA)
- 12:00 **Lunch**
- 1:15 **The Advanced Burst Error Processor**
 B. Chang, Advanced Micro Devices
- 1:45 **Error Handling and Reporting in the Kodak System
6800 Optical Drive**
 S. Gerger, Eastman Kodak Co.
- 2:20 **Error Reporting in the LD-4100\4500
SCSI Event Log**
 R. Glisfmann, Laser Magnetic Storage, Inc.
- 3:00 **Break**
- 3:15 **Panel Discussion**
- 4:30 **Closing Remarks**
 F. Podio, NIST

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