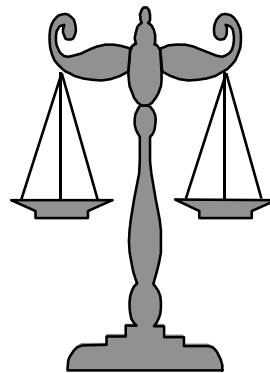




OPERATIONS MANUAL

METROLOGY DATA

CHAPTER 8



NOVEMBER 1994

GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM

TABLE OF CONTENTS

	<u>CONTENT</u>	<u>PAGE</u>
8.1	INTRODUCTION	8-1
8.2	SCOPE	8-1
8.3	POLICY	8-1
8.4	DEFINITIONS	8-1
8.4.1	CALIBRATION PROCEDURES	8-1
8.4.2	TECHNICAL MANUAL	8-2
8.4.3	GENERAL METROLOGY DOCUMENT	8-2
8.4.4	UNLIMITED DISTRIBUTION	8-2
8.4.5	LIMITED DISTRIBUTION	8-2
8.5	GUIDELINES FOR DATA TRANSMITTALS	8-2
8.6	DISTRIBUTION OF DATA	8-3
8.7	METROLOGY INFORMATION SERVICES	8-4
FIGURE		
8-1	METROLOGY DATA DECISION TREE	8-5
APPENDIX		
A	TYPES OF DOCUMENTS IN THE METROLOGY DATA BASE	8-7

CHAPTER 8 METROLOGY

8.1 INTRODUCTION

The GIDEP Metrology database is a collection of measurement science documents, including calibration procedures, technical manuals, measurement analytical studies, hardware specifications, measurement papers by renown authors in metrology. The GIDEP Metrology database is designed for the electronic exchange of metrology information between government and industry participants throughout the United States and Canada.

This chapter provides the GIDEP procedures for submittal, access, and distribution of metrology data.

8.2 SCOPE

The GIDEP Metrology database includes a wide range of measurement technology data, test and measurement systems information, fundamental standards, measurement traceability, calibration management systems, and authoritative technical papers on measurement sciences from the various national measurement laboratories. Documents prepared by participant activities, are collected and submitted by the participant's GIDEP Representative to the GIDEP Operations Center.

The metrology data is indexed in the GIDEP database. The actual documents are available on microform because of the amount of graphical information contained each document. Calibration procedures and selected documents received after 1994 are electronically down-loaded as text and image files. Documents prior to 1994 are archived on microform, primarily microfiche.

8.3 POLICY

Each participant should submit to GIDEP, measurement science related documents, including those on software, generated by their organization (or coming into their possession) in the normal course of business. These submittals include measurement and calibration procedures, technical manuals, and related metrology documents. The metrology data is reviewed and processed in accordance with the Metrology Data Decision Tree shown in figure 8.1. Copyrighted metrology documents may be submitted to the GIDEP database when permission to distribute is provided by the copyright holder.

In order to maintain their membership, each industry or government participant must submit an annual utilization report documenting the benefits, particularly the cost avoidance, which resulted from utilizing documents during the preceding year (Refer to Chapter 5, GIDEP Utilization Reporting).

8.4 DEFINITIONS

8.4.1 CALIBRATION PROCEDURE. A detailed procedure for the periodic verification of the accuracy of test, diagnostic, and measurement equipment. A calibration procedure may be a either document or a description of a computer software format.

- 8.4.2 TECHNICAL MANUAL.** A document providing detailed maintenance, and/or repair, and/or operation instructions. A TECHNICAL MANUAL may be in either hardcopy or computer compatible format.
- 8.4.3 GENERAL METROLOGY DOCUMENT.** For GIDEP classification purposes, any report on measurement science related topics, or containing metrology data, not fitting either of the two previous categories, but containing information of interest to individuals in the measurement community, especially Metrologists, metrology technicians, and engineers.
- 8.4.4 UNLIMITED DISTRIBUTION.** Distribution of a metrology document which is available to all GIDEP participants. Unlimited metrology documents are distributed electronically to all authorized GIDEP database users (See Chapter 2, Participation Requirements).
- 8.4.5 LIMITED DISTRIBUTION.** Distribution of a metrology document may be controlled by a limited distribution statement. The distribution statement is generated in accordance with applicable government directives by the originator and determines who may have access to the document. *GIDEP does not establish or remove the limited distribution statement .*

8.5 GUIDELINES FOR DATA SUBMITTALS

All appropriate metrology related documents and other software (except data which is proprietary or classified), should be submitted to the GIDEP Operations Center for inclusion into the Metrology Data Base. Submittal of metrology related data is a continuing responsibility of the participant's designated GIDEP Representative for each activity. General guidelines are:

- a. Documents should be of interest to other using organizations.
- b. Documents should be submitted in electronic format (i.e., 3.5" floppy disk, FTP file transfer, E-Mail) whenever possible.
- c. Amendments and/or revisions to documents should be submitted within reasonable time frame to ensure the currentness, integrity and accuracy of the data base.
- d. NCSL recommended practice, "RP3 Recommended Practice for the Preparation of Calibration Procedures", is a suggested guideline for the preparation of procedures and other documents for submittal. (RP3 *may* be obtained from the National Conference of Standards Laboratories (NCSL), Boulder, CO.) A participant's document preparation format may be acceptable, if it contains title, date and document number.
- e. Copyrighted documents with permission to electronically distribute by GIDEP.
- f. A list of the types of documents shown in Appendix A. The list is not an inclusive of all the documents which could be submitted.

8.6 DISTRIBUTION OF DATA

Authorized participation in GIDEP entitles the participant access to the GIDEP on-line database system. Metrology documents are accessed by using computer-assisted retrieval from a computer terminal and is most efficient method of obtaining GIDEP documents.

Documents which do not reside as electronic text and image files in the GIDEP data base, will be provided by the GIDEP Operation Center by request. Documents classified as Technical Manuals are available by request from the Operations Center on a case-by-case basis.

The GIDEP Representative is responsible for obtaining their organization's users passwords for computer access to Metrology Data. The Representative serves as the central point of contact for GIDEP to maximize the use of metrology data and GIDEP Metrology data base.

8.7 METROLOGY INFORMATION SERVICES

GIDEP is an officially designated repository for metrology documents issued by the National Institute of Standards and Technology (NIST) [NOTE: NIST was formerly known as the National Bureau of Standards (NBS)]. Older documents may have been indexed as "NBS" rather than "NIST". The GIDEP Operations Center has included an index of all NIST (or NBS) documents published since 1 January 1965, as an integral part of the GIDEP METROLOGY data base. Selected measurement science related documents issued between January 1965 and December 1976, and deemed appropriate to the objectives of the GIDEP METROLOGY data base, were microfilmed. NIST documents received after 1 January 1977 have been microfilmed. NIST documents received after 1 January 1994 were converted to electronic text and image files.

8.8. URGENT DATA REQUESTS

The Urgent Data Request system (UDR) allows a participant to query other GIDEP Participants to obtain metrology data unavailable from local sources. Whatever the information the user may need, (e.g. quality planning, hardware service reliability, exotic instrument calibration and/or repair, unusual hardware procurement sources, etc.) the UDR can provide a valuable resource for obtaining information. Procedures for UDRs are provided in Chapter 10 Urgent Data Request.

GIDEP Participants have access to entire GIDEP data bases. Other types of data available from the GIDEP data base is described in the following chapters of the Operations Manual:

Engineering Data	Chapter 6
Failure Experience Data	Chapter 7
Product Information Data	Chapter 11
Reliability-Maintainability Data	Chapter 9.

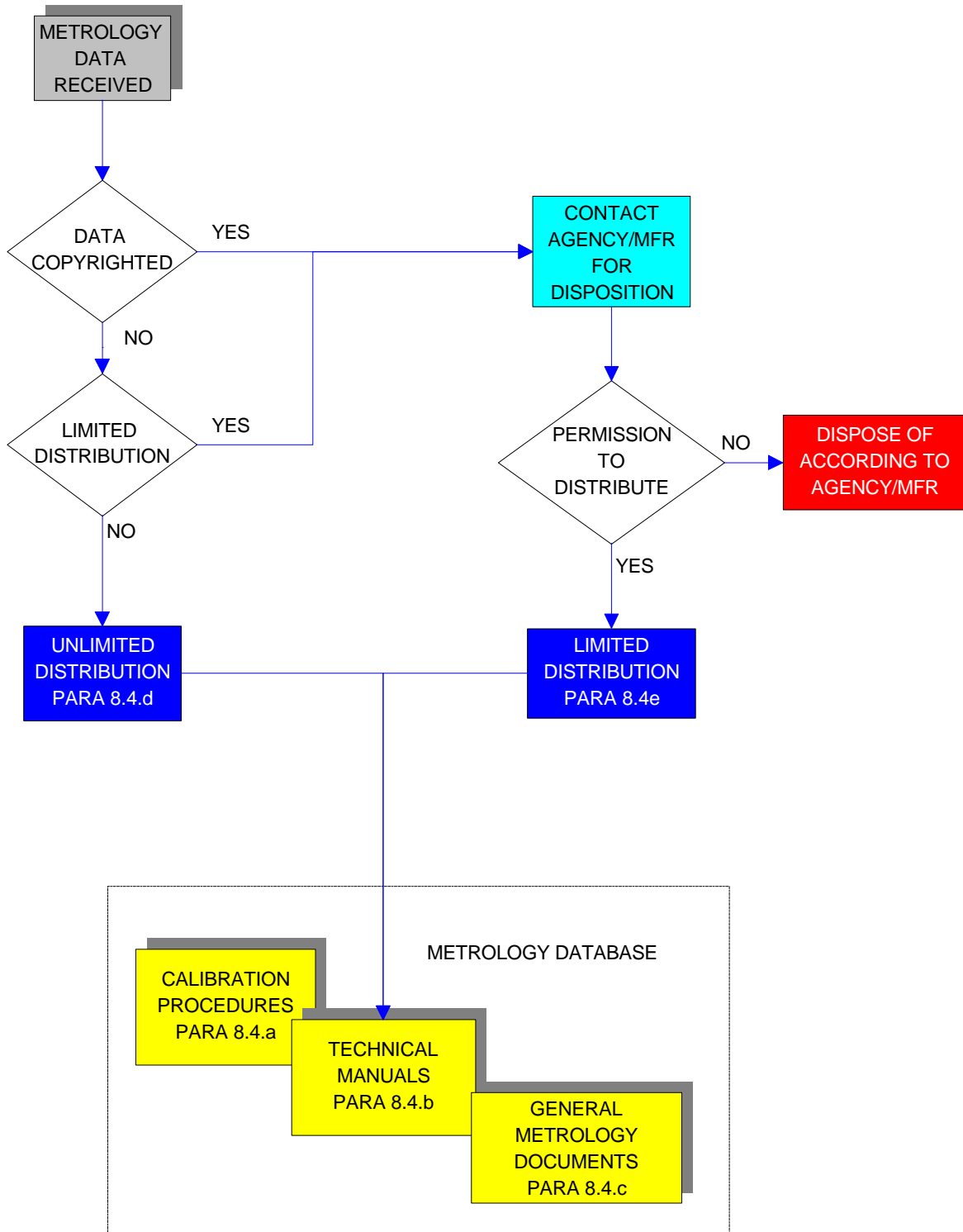


Figure 8.1 Metrology Data Decision Tree

APPENDIX A

TYPES OF DOCUMENTS IN THE METROLOGY DATA BASE

APPENDIX A

TYPES OF METROLOGY REPORTS

- Reports experiments and theory associated with measurement statistics, measurement analysis, measurement error prediction, or the theory and design of experiments.
- Calibration procedures for calibration of test, measurement and diagnostic instruments, including automated calibration equipment and test equipment.
- Objective and comprehensive evaluation tests for evaluating performance of test equipment or an instrument (i.e., comparison of several alternate models to select one best suited for a given application).
- Evaluation test reports from evaluation of manufacturer's specifications for test and measurement equipment and systems.
- Failure reports which identify instrumentation failed to perform satisfactorily under specified conditions.
- Problem with instrumentation families and recommended corrective actions.
- Calibration recall systems and intervals.
- Maintenance procedures pertaining to test, measurement and diagnostic equipment.
- Preservation instructions and procedures for storing and shipping test and measurement equipment.
- Operations manuals for test equipment or related measurement hardware.
- Automatic test equipment (ATE) software programs for automated calibration, test and measurement equipment. Programs may be shared between participants upon request.
- Training aids including presentation material, trainer and student guides.
- General metrology documents and reports on the field of metrology including bibliographies.
- Calibration facilities requirement documents for selection, design, layout, environmental controls and specifications for calibration laboratories.
- Calibration requirements documents which provide technical guidance for the preparation of calibration procedures to achieve uniformity and consistency in the designation of calibration requirements. They cover test requirements for selected generic classes of test and monitoring systems. These documents provide guidelines for the following data:

- (b) Rationale for performing tests
 - (c) Choice of test points
 - (d) Guidance for combination and sequence of tests to minimize testing time
 - (e) Functional check information.
-
- Technical requirements providing policies, rationale, and guidelines concerning technical elements of a metrology and calibration program. Technical requirements documents provide a baseline for technical decisions to be applied to the analysis of calibration requirements, determination of calibration approaches, selection and application of calibration equipment, preparation and review of calibration procedures, calibration interval analysis, and related calibration support requirements for test and monitoring systems.
 - Instrument calibration techniques which provides general instructions for calibrating physical/mechanical test instruments to specified standards.
 - Engineering documents which provided information regarding various types of test and monitoring systems and provide a general overview of how various parameters are determined and disseminated in a metrology and calibration program. The documents may also provide instruction on the maintenance of various standards (e.g., Care and handling of mercury).
 - Technical documents which describe the results of investigations into various measurement methods (e.g., Frequency Span Accuracy Test for Spectrum Analyzer), general information on equipment use or maintenance (e.g., Nickel-cadmium batteries, torque tool sealant application) or standard requirements for various test and monitoring systems (e.g., Electro-optical laboratory facilities recommendation).
 - Training manuals which provide instructions in the training, use or calibration of test and measuring equipment (i.e., Training in phase package standards, calibration of dimensional measurements, or calibration of panel meters). Includes documents providing guidelines for establishment of a local calibration program.