EVALUATION AND ACCREDITATION OF INSPECTION AND TEST ACTIVITIES

Harvey Schock, *editor*

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EVALUATION AND ACCREDITATION OF INSPECTION AND TEST ACTIVITIES

A symposium
sponsored by ASTM
Committee E-36 on
Criteria for the Evaluation
of Testing and Inspection
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Foreword

The symposium on Evaluation and Accreditation of Inspection and Test Activities was presented in Washington, D.C., 28–29 April 1981. The symposium was sponsored by ASTM Committee E-36 on Criteria for the Evaluation of Testing and Inspection Agencies. Harvey Schock, Product Assurances Consultant, presided as symposium chairman and editor of this publication.

Related ASTM Publications

Directory of Testing Laboratories, 6th edition, STP 333E (1982), 04-333050-32

The ILAC Directory (International Directory of Testing Arrangements and Testing Laboratory Accreditation Systems), 1982, 13-117082-32

Computer Automation of Materials Testing, STP 710 (1980), 04-710000-32

Computerized Laboratory Systems, STP 578 (1974), 04-578000-34

A Note of Appreciation to Reviewers

The quality of the papers that appear in this publication reflects not only the obvious efforts of the authors but also the unheralded, though essential, work of the reviewers. On behalf of ASTM we acknowledge with appreciation their dedication to high professional standards and their sacrifice of time and effort.

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Introduction

Growing complexities in testing and inspection have resulted in the need for a clear base to communicate information and criteria on actual capabilities and performance of testing and inspection agencies. Facts are required for business transactions and in capability reviews of outside party skills especially for new technologies. These facts are also useful as part of formal contracts and international understandings and treaties.

Proper use of evaluation and possibly resulting accreditation facts and practices should permit benefits without permitting systems to grow beyond commensurate value to concerned parties and the public. Obviously such systems should not impose any unnecessary restraints or release proprietary information.

To better understand these opportunities, an international Symposium was held in Washington on 28–29 April 1981, providing a forum for the exchange of experiences on benefits and problems encountered with evaluation and accreditation in the United States and in several other countries.

This publication provides papers presented at the Symposium arranged according to:

1—Evaluation and Accreditation Concepts.
2—Laboratory Applications and Computer Systems.
3—Evaluation and Accreditation in Government.
4—International Evaluation and Accreditation.

The development and use of evaluation and accreditation are growing rapidly in the United States and on a bilateral and multinational base internationally. This Special Technical Publication provides background to encourage participation in the further development of necessary standards and practices. Interested parties are cordially invited to participate in the generic work of ASTM Technical Committee E-36 on Criteria for the Evaluation of Testing and Inspection Agencies and in the specific work of many other committees working on the development of national and international standards and their application to products and methods.

The assistance of the authors, reviewers, and ASTM staff in the presentation of this material has been appreciated. Your interest and successful ap-

plication of this information is ample reward to all of those involved in this effort.

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Evaluation and Accreditation Concepts

D. M. Dymond[1]

Some Viewpoints on Evaluation/Accreditation Systems

REFERENCE: Dymond, D. M., **"Some Viewpoints on Evaluation/Accreditation Systems,"** *Evaluation and Accreditation of Inspection and Test Activities, ASTM STP 814,* Harvey Schock, Ed., American Society for Testing and Materials, 1983, pp. 5–10.

ABSTRACT: This paper describes the early development of ASTM Standard E 548, Recommended Practice for Generic Criteria for Use in the Evaluation of Testing and Inspection Agencies. It describes some of the essential concepts developed by Committee E-36 and its task forces and shows how these concepts relate to the work of other ASTM committees and to national and international accreditation programs. He defines the goals of a successful accreditation system as (1) credibility and (2) acceptance. He hopes that ASTM through its Committee E-36, working with the other ASTM committees and outside organizations, can provide national and international leadership in the development of accreditation systems.

KEY WORDS: laboratory accreditation, systems evaluation, laboratory evaluation

The purpose of this paper is to provide information concerning some of the essential concepts developed by Committee E-36 and its task forces and to show how these concepts relate to the work of other ASTM committees and to national and international accreditation programs. The overall objectives and outline of the work program of ASTM Committee E-36 on Criteria for the Evaluation of Testing and Inspection Agencies are described in the paper by G. A. Berman beginning on page 11.

The Resources Task Group that originally structured ASTM Recommended Practice for Generic Criteria for Use in the Evaluation of Testing and Inspection Agencies (E 548) was formed in 1973 and consisted of representatives from a number of organizations including testing laboratories, inspection agencies, associations, governments, and public interest groups. The representatives of testing laboratories included those from industry and from independent laboratories.

Documents issued by the American Council of Independent Laboratories, the National Bureau of Standards, the College of American Pathologists,

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and the Occupational Safety and Health Administration were used as reference materials by the original Resources Task Force.

During the discussions that lead to the formulation of ASTM method E-548–76, it was recognized by the Resources Task Force that a comprehensive approach to standardization in the evaluation of testing and inspection agencies should be undertaken by ASTM. The Appendix to the first edition of E-548 issued in 1976 reflected those concerns. The Resources Task Force was disbanded in 1976 when the first edition of E 548 was published.

The following statements were included in the Apendix to E 548–76:

> These basic criteria should be supplemented by more specific criteria and requirements for each particular class of testing and inspection agencies. Since this document is only a part of an ultimate system of judgement, it cannot be used in isolation. For specific services or applications the document (E548–76) must be supplemented by additional criteria.

This theme was taken a step further in 1978 when a new task force was appointed by Committee E-36 to review and report on future plans, programs, priorities, and resources. This new Task Force recommended a "framework" for an effective system for accrediting testing or inspection agencies. The framework developed by the Task Force took the form of a *triangle* consisting of four levels.

The apex of the triangle was an "overall systems document," which stated the scope and purpose of an accreditation system, and specified documentation, follow-up, and requirements for appeals and redress. The second level of the triangle would hold two documents: E-548 covering "accreditees" and a new generic standard for "accreditors." The third level of the triangle would include documents by discipline, field, or product and would provide specific guidance in the application of an accreditation system. The fourth level, or base of the triangle, would include the detailed methods of test, inspection, and evaluation of those materials, products, and processes covered under the accreditation system. This framework is outlined in Fig. 1.

When the Task Force was preparing its recommendations, a detailed study was made of accreditation systems, not only in North America but also in Australia, New Zealand, and other countries. By 1978, a number of public and private accreditation systems either were operating or were under development in several countries, including the United States. Within ASTM several technical committees also had activities underway related to the objectives of E-36.

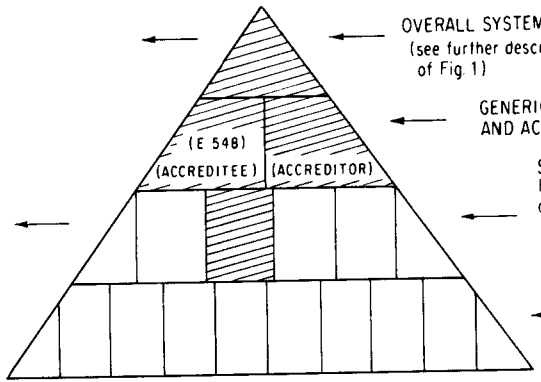
In 1980, another task force was established by Committee E-36 to develop the criteria for a model accreditation systems document (that is, the apex of the triangle) and the generic criteria for assessors. Work on these two docu-

NOTE 1: OVERALL SYSTEM DOCUMENT COVERS:

- Scope of system
- Purpose of system
- Criteria for accreditor
- Criteria for follow-up
- Procedures for appeals and redress

NOTE 2: SPECIFIC GUIDELINES DEVELOPED:

- Either through E 36, providing coordination and assistance to committees of ASTM (and other organizations) via guide details on organization, material resources, human resources, quality systems, and procedures and results
- Or through E 36, preparing guidelines in discipline or field or product category, upon request, provided the description of the discipline/field/product is acceptable to E 36 and fits into the overall E 36/ASTM organizational objectives. These guidelines would provide a meaningful response to a demonstrated need if suitable expertise can be obtained to assist in the preparation of the requested guidelines



OVERALL SYSTEM DOCUMENT (NEW)
(see further description at other side of Fig. 1)

GENERIC CRITERIA FOR ACCREDITOR (NEW) AND ACCREDITEE (E 548)

SPECIFIC GUIDELINES DISCIPLINE/ FIELD/PRODUCT(S) (For further description, see Notes 1 and 2)

DETAILED METHODS OF TEST/INSPECTION/ EVALUATION OF MATERIAL/PRODUCT/ PROCESS (including procedures relative to their application in the overall accreditation system if not included in the specific guidelines referenced above)

FIG. 1—*The accreditation of testing or inspection agencies or both: a recommended framework for an evaluation system. An Accreditation System is viewed as being composed of a series of documents serving various levels of need, starting with an overall system statement (represented by the apex of the triangle) and ending with detailed testing/inspection/evaluation methods (represented by the base of the triangle). It is considered that Committee E-36 should develop the outline of an overall system document (such as NVLAP) and the two basic or generic accreditation standards (E 548 for those being accredited; and a new standard for those doing the accrediting). Committee E-36 also might be involved in the preparation of guidelines by disciplines/field/products or alternatively would provide assistance and coordination (via direct consultation with the technical committees of ASTM and other concerned organizations) who are prepared to develop such guidelines as appropriate. The detailed standards or test methods used in the testing/inspection/evaluating procedure are provided by the appropriate technical committee of ASTM or other concerned organizations. The shaded areas pertain to E-36 generated documents; the unshaded areas refer to document generated by other committees.*

ments is proceeding at this time, and it is likely that suitable ASTM standards will be available by 1982.

It is proposed that the ASTM model "systems" document be patterned after the conditions for entry into the draft of the Directory of Laboratory Accreditation Systems being prepared by the International Laboratory Accreditation Conference (ILAC). This ILAC activity is being related to the work of the International Organization for Standardization (ISO) Guide 25 to ensure harmony between ILAC and ISO activities. It is considered desirable that the future work of ASTM Committee E-36 also be related to ILAC/ISO activities. By relating the ASTM model systems document to international activities in the field of laboratory accreditation, those establishing accreditation schemes based on the ASTM model should be able to achieve recognition in the international arena.

The conditions specified in the draft ILAC directory include criteria that are basic to the operational accreditation systems covered in the directory. The current draft of the directory lists accreditation systems in operation in eleven countries, including a number of North American systems. It is of interest to note that the United States is represented by 13 federal government systems, 8 state systems, and 12 professional and trade association systems.

The conditions for entry in the draft ILAC directory, although comprehensive, do not cover some criteria considered desirable to ensure credibility and broad acceptance. For example, it is proposed that the ASTM model systems document include adequate appeal procedures in the event of disagreements during the process of accreditation. Consideration also is being given to criteria for fully documented procedures, for an interpretation service, for discipline, for withdrawing accreditation, for follow-up evaluations, and for independent audit.

The generic criteria documentation being developed for "evaluators" or "assessors" poses a unique challenge to ASTM. There is, as yet, no international documentation containing criteria for assessors. Some national activity is underway in Canada to develop documentation to assess "technical auditors."

The development of generic criteria for assessors is complicated by the need to include criteria not only for individuals and organizations who carry out assessments, but also for teams of assessors who may represent different groups or organizations. Some national accreditation schemes already involve such team assessments (for example, the U.S. nuclear industry).

The short-term interpersonal relationships that are important to the success of a team assessment must be considered when criteria for assessors are prepared; particularly important are those cases where the team members come from different organizations and indeed from different backgrounds. Further complications are introduced in attempting to quantify criteria related to the personal traits and other attributes of individual assessors and teams of assessors. Yet the credibility of an accreditation scheme and ulti-