VOLUME IV
NUMBER 4

ITEA NEWSLETTER

OCTOBER,1983

INTERNATIONAL TEST & EVALUATION ASSOCIATION

ITEA CHAPTER FOUNDED

NEW JERSEY COAST

ORGANIZATIONAL MEETING OF OFFICERS (LISTED BELOW LEFT TO RIGHT)

THOMAS J. BRINKA, TREASURER (DOD JOINT TACTICAL COMMUNICATIONS OFFICE)
RICHARD J. GALE, PRESIDENT (DOD JOINT TACTICAL COMMUNICATIONS OFFICE)
DR. MAUREY M. IRVINE, SECRETARY (BELL LABORATORIES)
SEYMOUR KREVSKY, VICE PRESIDENT (MITRE CORPORATION)

An organizational luncheon meeting was held at the Ft. Monmouth Officer's Club 19 October 1983 and was attended by thirty-three persons representing various elements of the U.S. Army Communications-Electronics Command, Bell Laboratories and local Defense Contractors. Mr. Richard Gale, Assistant Deputy Director for Test and Analysis, Joint Tactical Communications Office (JTCO), served as luncheon chairman.

Dick Gale outlined the purpose and objectives of ITEA, the organization, existing chapters and others being organized, planned monthly activities (guest speakers), and the benefits of a chapter at Fort Monmouth. Following an outline of the ITEA Bylaws, a slate of officers was proposed, and voted upon. Officers were selected for the year 1984. Several variations of an official designation for the local chapter were discussed. It was agreed that the new Chapter be called the New Jersey Coast Chapter.

The organization meeting was concluded with the announcement of the first chapter meeting, 2 November 1983; Mr. Charles K. Watt, ITEA National President, and DoD Deputy Director for Test and Evaluation, will be guest speaker. His subject will be "DoD Trends in Test and Evaluation."

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INTERNATIONAL TEST AND EVALUATION ASSOCIATION

ITEA Operating Headquarters
P.O. Box 603
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(301) 863-6556

Manuscripts: Submission of unsolicited articles or news items of interest to the T&E community is welcomed and encouraged. Articles should use Author's Kit. A brief biography and a small black and white glossy photograph of article authors are desired. Only original (or quality reproduction) art and black and white photographic prints can be accepted. All submissions are subject to approval and editing by the ITEA Editorial Board. Authors assume full responsibility for submitting unclassified and/or non-propritary articles approved by proper authority. Mail submissions to ITEA Operating Headquarters. Request advance instructions with Author's Kit from ITEA to expedite publication.

Advertising: Camera ready copy required. Contact ITEA Operating Headquarters for rates. Submission by 15th of proceeding month of desired issue.

Publication Schedule: Published in January, April, July and October by the Headquarters of ITEA, P.O. Box 603, Lexington Park, MD. ITEA is a non-profit professional society dedicated to the advancement of test and evaluation education and technology. The Newsletter is an official ITEA publication mailed to U.S. members in accordance with the regulations of U.S. Postal Service non-profit mailing privileges and first class to foreign addresses.

Purpose of Newsletter: The Newsletter is published to provide a medium of information exchange among professional test and evaluation personnel. Statements of fact or opinion appearing in this Newsletter are solely those of the authors and are not endorsed by any government agency, industry or non-profit organization, including ITEA, unless specifically so stated.

Membership Dues and Subscription Rates: Annual membership dues include the Newsletter. Non U.S. mailing address requires an additional first class mailing fee. Dues are for calendar year 1984. Individual dues are $40 U.S. and $60 Foreign (non APO). Corporate dues are $500. Dues paid by members in last quarter of year pay for that and following year. **Join last quarter of 1983 at current rates of $25 individual U.S., $40 individual foreign, and $300 Corporate.**

INTERNATIONAL TEST AND EVALUATION ASSOCIATION (ITEA)

BACKGROUND. ITEA is a non-profit corporation. It was incorporated in Washington, D.C., on the 18th of January, 1980. The principal organizers were Dr. Allen R. Matthews, currently serving as Secretary/Executive Director of the Association, COL Floyd A. McLaurin, USAF(Ret). The three served as the initial Board of Directors, which has since been expanded.

PURPOSE. From the Articles of Incorporation, as amended:

"Third: The purpose or purposes for which the Corporation is organized are: To provide an organization for individuals who have a common interest in the discipline of test and evaluation and who wish to foster, preserve, educate, and advance the art of test and evaluation; to provide the exchange of ideas and information in the field of test and evaluation; to conduct professional meetings as well as symposia and seminars, and courses in the practice of test and evaluation; to support and promote the development and advancement of the state-of-the-art in test and evaluation in allied branches of science, technology, and management; to support similar objectives in related organizations including government, industry, academia and professional societies; to recognize the advances and contributions to testing and evaluation; to document contributions and the history of test and evaluation; and to commemorate fittingly the memory of persons who have made substantial contributions in the field of test and evaluation."

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BYLAWS NOTICE: Calendar dues paid by new members (Individual or Corporate) during the last quarter of the year pays dues for both the current and following year regardless of changes in dues rate or member classification.

IN MEMORIAM

MAJOR GENERAL RICHARD G. CROSS, JR.USAF(Ret.)

The passing of Dick Cross on 6 October 1983 leaves many pains and memories of a man that devoted his life to his country and family, Dorothy, Deborah and Richard III, as well as being as he often jokingly said with humility "a dumb fighter pilot". Dick's expertise was applied in many areas as the Commander of AFOTEC, V.P. of the BDM Corporation, and a major supporter of ITEA as the Chairman of the Senior Advisory Board and member of the ITEA Board of Directors.

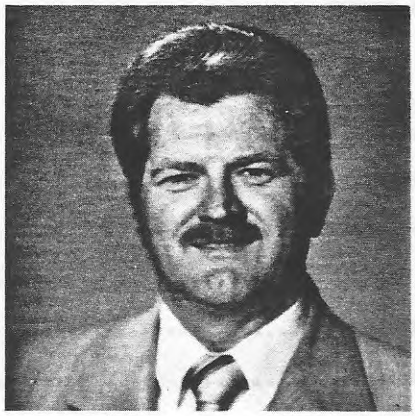
Dick was counsel and advisor on all ITEA actions. He was the moderator, counselor, and father confessor to all that sought his guidance. He was a leader in the Air Force as well as a leader in industry and professional societies. Dick made his contributions to the United States Society and did not ask for any return on his investment. We loved him for his compassion, integrity, honesty, and professional skill.

As Chairman of the ITEA Senior Advisory Board, Dick would advise to keep up the good work and build ITEA. In his name, we honor Dick as a gentleman, associate, and companion. Dick knew the value of T&E based on his extensive combat operational experience for which he received numerous military awards.

Love, honor and duty. God bless Dick in his future career. In memory of General Cross, let us all strive to be of the same quality.

Memorial contributions can be made to the American Cancer Society, P.O. Box 699, Vienna, VA 22180.

PRESIDENT'S CORNER



Charles K. Watt

Deputy Director Defense Test and Evaluation
Office of Secretary of Defense

At our recent Board of Director's meeting several issues were discussed that I would like to review with our membership. Perhaps of primary importance is the financial status of ITEA. As of the end of August, expenditures equalled approximately 77% of our CY 83 budget ($16,537). Cash on Deposit September 12th was $6,007.05. Consistent with our planned growth, the 1984 budget has been tentatively set at $31,000. Included in this figure are limited funds for management and secretarial assistance. Considering realistic goals of a 30% increase in individual membership and a 70% increase in Corporate membership, it is obvious that additional income is required during this next year. It is for this reason that the BOD reluctantly voted to increase dues. Details of these adjustments are being forwarded directly to all members separately. I appreciate your favorable consideration of this matter and assure you that we are evaluating other alternatives to preclude further increases.

In addition to improvements in our administration of ITEA, starting in January 1984 publications will continue to improve with the first issue of a Newsletter/Journal. Arrangements have already been made for several professional articles of the highest quality and additional articles from the membership would be most appreciated. Publication details may be obtained from Dr. Matthews, our Executive Director.

Plans are underway for the ITEA 1984 Symposium with Dr. Dickinson providing new leadership from what I am sure will be another "outstanding" success. We are pleased that income from the last Symposium paid all the bills and provided sufficient funding so that a loan from external sources will not be necessary to initiate planning for the 1984 Symposium. The organizational structure and the BOD member's assignments were released in my letter to the Board on September 14, 1983. The objective of these adjustments was to place priority on those mission critical functions, including establishment of Directors for Chapters, membership, symposia, technical, and the Senior Advisory Board. An Executive Committee, consisting of the President, Executive Vice President for Plans and Policy, Vice President for Finance, and Vice President for Operations, was also established to provide detailed guidance on critical operational issues. This provides more time for the BOD to focus on major areas and maintain oversight on Corporate affairs.

As you can readily perceive, ITEA is on the move with significant progress on a multiple of fronts. We are working hard to meet those objectives I outlined in the last Newsletter, and with your support our contributions to the T&E community will continue to be significant.

EDITORIAL

Brad Granum
Executive Vice-President, ITEA

Congressional interest in test and evaluation within the Department of Defense has led to legislation that creates a new Pentagon office for operational test and evaluation. The Director of Operational Test and Evaluation will serve under the Secretary of Defense with mandated reporting responsibilities to the Congress. Both the Senate and the House of Representatives created draft legislation defining the power and responsibilities of the OT&E Director; minor differences in their positions were resolved by the House-Senate Conference Committee during August 1983 and the final language incorporated into the FY 1984 DoD Authorization Act. This bill was voted out by the full Congress after the Labor Day recess, and signed by President Reagan on September 24, 1983. An implementation date of November 1, 1983 was specified.

The intent of Congress in establishing the new position is outlined in the report published by the House and Senate conferees:

"The ... Director of Operational Test and Evaluation would be the principal OT&E official in the Department of Defense and the principal adviser to the Secretary of Defense on OT&E. The conferees intend the Director to be responsible for policy formulation, evaluation, and oversight with status and duties comparable to an Assistant Secretary of Defense. The conferees also intend the Director to be independent of other Department of Defense officials below the Secretary of Defense. The Director should not be circumscribed in any way by other officials in carrying out his duties. He will report directly to the Secretary of Defense, but should keep the Under Secretary for Research and Development informed of his activities.

"The Director would be required to originate three types of reports; the conferees agreed on legislative language ensuring that designated Congressional committees receive those reports in precisely the same form and with precisely the same content as those reports are originally submitted by the Director to the Secretary of Defense, though the Secretary of Defense may append comments to the report.

"The conferees expect the Director to safeguard the integrity of operational testing and evaluation in general and with respect to specific major defense acquisition programs. He would be empowered to prescribe policies and procedures, to advise on budgetary matters, including test facilities and equipment, to monitor and review all operational testing and evaluation in the Department, to act as prior approval authority for operational test and evaluation plans and funding for each major defense acquisition program, and to evaluate the adequacy of operational testing and evaluation as a precondition to the final decision to proceed with a major defense acquisition program beyond low-rate initial production." (By "low-rate initial production" Congress means "the production of a system in limited quantity to be used in operational test and evaluation for verification of production engineering, and design maturity and to establish a production base prior to a decision to proceed with production.")

The language defining the appointment, powers and responsibilities of the OT&E Director is contained in the Conference Report No. 98-213, Department of Defense Authorization Act, 1984, pp. 74-76, for those ITEA members wishing to review the exact wording. Actions are currently underway within the Office of the Secretary of Defense to establish the new office in compliance with the legislation.

CONTINUOUS EVALUATION: CONCEPT AND EXAMPLE

FEATURE ARTICLE

John L. Miles, Jr., J.D.*
United States Army Research Institute
for the Behavioral and Social Sciences

FEATURE ARTICLE

ABSTRACT

The most recent initiative in Army test and evaluation is "continuous evaluation" (CE), which attempts to satisfy two previously irreconcilable goals: more adequate testing in less testing time. As CE is currently being planned, it just might work, and both goals be met. This paper examines the CE concept and gives an example of how it might be implemented by one technology area.

INTRODUCTION

The weapons a modern Army needs for defense--or, should deterrence fail, for subduing an aggressor--are planned, designed, manufactured, tested and fielded by an increasingly complex series of events known generically by such terms as the "weapons system acquisition process" (WSAP), "life cycle system management model" and "materiel acquisition process." Each U.S. armed service has its own process (with its own terminology and special concerns), but OMB Circular A-109[1] and implementing DoD Directives (e.g., 5000.1, 5000.2, 5000.3) provide the fundamental rules by which each process operates. Senior DoD managers who administer the WSAP have recently been faced with the dilemma of having to reconcile simultaneously two needs, the fulfillment of either of which seemed to require making the other need worse.

THE NEED FOR SPEED

As anyone who has ever dealt with the government knows, things take longer than in private industry. Certain of the time-consuming factors probably cannot be changed: for example, the responsibility of government to the taxpayer to monitor closely the expenditure of public funds. Other factors--particularly those caused by events in the WSAP--are clearly targets for the efficiency experts unleashed two years ago by the Carlucci Initiatives. It is hard to be against shortening the time the WSAP now requires. As a publication of the Defense Systems Management College noted--somewhat wistfully--Boeing built the 747 in 4 years, while it takes the Pentagon 12-15 years to produce a new military aircraft.[2] If the WSAP is to be compressed in time, delicate surgery is required; for each event described in such a document as the Army's Life Cycle System Management Model[3] is present for a good reason. Some authors who write eagerly about "Shortening the Acquisition Cycle"[4] give the impression that the whole process can be speeded up like an old-time movie. While some minor increases in defense industry productivity can be expected, any significant savings in time will come from not doing something we are now doing (or at least doing much less of it). Shortly after the Carlucci Initiatives were announced, it was predicted that testing and evaluation (T&E) would be an early target of the event and time-cutters.[5] Subsequent events have confirmed that prediction: Development and Operational Tests I and III are not conducted or are reduced in scope, and Development Test II and Operational Test II (usually the last real chances to assess system performance before production begins) are often combined and conducted under severe budget and time constraints. Evaluators increasingly tell of rushing into ASARC or DSARC meetings** with test data not completely reduced, reports not fully written and some of the data on which the decision should have been based not available (because the test schedule slipped). While such frenzy may give ASARC participants an air of red-hot data fresh from the proving ground, it also exacts a price.

THE NEED FOR PERFORMANCE EVALUATION

If it is axiomatic that the government owes the taxpayer a duty to know where revenue has been expended, it seems reasonable that it have a related duty to know what has been purchased. Press reports of amphibious vehicles that sink and of long-range missiles that crash within half a mile suggest that there's something wrong in either the Defense Department or the T&E community. Critiques of the WSAP and its products once limited to scholarly and industrial journals are now appearing in the popular press.[6] But it is not that DoD either doesn't care or can not discover how new weapons are performing: the point instead is that it takes time to do proper T&E. An implicit assumption in the WSAP is that, during testing, development stops. The testers test (DT and OT), the evaluators evaluate and at some fixed point in time and space we know what we have. ASARC/DSARC decision-makers can then decide whether or not to buy the product, based on an unhurried and thoughtful review of all the data. If the decision is to continue the project, the government can decide what changes, if any, must be made, and the contractor can make whatever redesigns are necessary. It should be obvious that the more test data available and the greater care taken in analyzing them, the higher should be the quality of the ASARC/DSARC decisions and of the weapon that is eventually fielded. Testing technology by and large is in good shape; all that's required to make it work effectively is enough time and money.

*The views of the author do not purport to represent those of ARI or the Department of Defense.

**Go-ahead decisions for major systems developed by the Army are made at meetings of Army or Defense System Acquisition Review Councils.

THE NEEDS CONFLICT

The assumption that development stops while testing is in progress is no longer true (if it ever was). It is not uncommon to have "low rate initial production" occurring while testing is in progress. It is in precisely those situations that ASARC and DSARC participants can have their toughest moments: what should be done when production has already started but subsequent T&E shows that the system isn't performing to expectations?

Tension between the need for speed and the need for performance verification has grown markedly of late. Despite recent Defense budget growth, there simply is not enough money allocated to T&E for that process as presently structured, to be done thoroughly, and there are no dramatic increases in T&E budgets scheduled for the immediate future. Meanwhile, Congress has grown restive about reports of fielded weapons that don't work. Bills have been introduced in both the Senate and the House of Representatives to create a Director of Operational Testing and Evaluation who would be confirmed by the Senate and make an annual report to Congress on just how well new weapons are performing.[7]

WHY "CONTINUOUS EVALUATION"?

Is there really a way to obtain more adequate testing in less testing time? Probably not, if all of the milestones in The Coordinated Test Program (CTP)[8] are followed. For there, in a carefully drawn scheme, a major new system is scheduled to undergo three major pairs of tests: three developmental tests (which are themselves often subdivided* and extended over time) and three operational tests. The testing described in the CTP is oriented toward producing a mass of data describing the system at three points in time, just prior to each of the three ASARC/DSARC meetings at which major decisions are made about continuing development or authorizing production. The size of these masses of data is constrained by both the test budget and the time allotted for testing (Figure 1). By contrast, the continuous evaluation process aims not to produce three masses of data in three short periods, but to cover all of the critical issues over the development time of the system. The CE concept recognizes that, as development really does not stop when testing occurs, there is no longer any good reason why testing should stop while development continues. While the principal effect of the CE concept is to give the test designer more time, there are two other effects one obvious, one subtle that need to be appreciated.

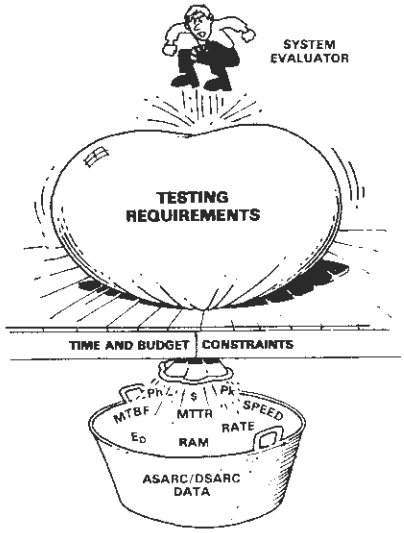


Figure 1. Determining the Scope of T&E

TEST PLANNING

If testing is to be spread over the development time of the system (instead of clumped into three piles), a different approach to test planning will be necessary. Rater than beginning test design around the blueprint of, say, a typical DT I, the individual technology tester asks instead, "What does my technology need to know about system performance? When during development is the earliest time that can be measured? How often will updates to that measurement be necessary in order to confirm that performance reaches and stays within the stated limits?" All technologies should thus be able to use the concept now followed by reliability testers and structure test requirements in terms of baseline data to be snpplemented by data (probably collected more and more by contractors) as the system matures.

As test requirements are stated in those new structures, a former power of the project manager (PM) is likely to be eroded. Under the former T&E process, a PM could virtually determine what data reached ASARC/DSARC meetings by tight control of the testing schedule. Certain of these data would, from time to time, reveal the existence of problems with the system. From the time of presentation of the analysis of these data at an ASARC/DSARC meeting, the PM would become accountable for solving or at least alleviating the effects of the problem. Under the CE process, reports of problems disclosed by test data don't have to be held for the next official high-level meeting, they can be provided promptly and directly to the PM. This series of correspondence is likely to provide a much clearer audit trail of when each system problem was discovered, under what circumstances, and what subsequently was done about it.

FEATURE ARTICLE

*Development testing includes the engineer design test, advanced development verification test, prototype qualification test and production validation test.

ONE PERSISTENT PROBLEM

Perhaps no other area in T&E has been responsible over the years for the number of problems and the level of exasperation in the R&D community as that of test criteria. In a perceptive and thoughtful paper entitled "Test and Evaluation: The Persistent Problem"[9] LTC J. N. Hoblit traces the origin of this problem to the requirements process. That process, mandated by OMB Circular A-109, causes system criteria to be stated:

> "...in engineering terms (range, speed, rate of fire, maximum weight, etc.) that can be contractually specified. The development tester characteristically tests against these criteria. He usually believes that when he does ao, he is determining the military utility of the system. The operational tester, on the other hand, will test the system in a 'realistic operational environment' against a set of criteria reflective of 'the real world.' Experience has been that the operational tester arrives on the scene well after the system has been conceived and developed and proposes his test against a set of criteria conceived independently of the advocates and developers. Frequently the operational tester sets up criteria in marked variance to that which is specified in the contract or initiating documentation for the system." (p. 9 of Ref. 9)

The fairly straightforward solution to that problem is to ensure that the T&E community participates in the requirements-writing process at the outset, so that neither the project manager nor the contractor faces unpleasant surprises after the performance requirements for the system have been agreed upon. However, experience to date in applying that straightforward solution has been mixed, at best. Although T&E agencies are normally afforded the opportunity to "comment upon" requirements documents, there is no sanction for not commenting and there is pressure to keep the documents short. Therefore, system requirements continue to be born with T&E criteria unstated. Continuous evaluation has the potential for significantly easing the confusion caused by this old conflict: if T&E is to go on for a longer time (with probably more people in more locations doing it), the ground rules for T&E should be established early for the sake of continuity and consistency. Among those ground rules should be the test criteria to be applied, certainly including a measure of effectiveness for the system and the conditions under which that measurement would be made.

Any major test, no matter what its title, invariably consists of sub-tests designed by specialists in different technologies and organized around a variety of critical issues (e.g., reliability). To illustrate how CE affects the test planning process, let us look at the response of one technology asked to support the CE of a system just authorized for development. The technology selected for this illustration has recently been undergoing some redefinition and restructuring as a result of high-level Pentagon attention. As it is emerging from Force Modernization planning, it bears the name "personnel systems" (PS) and includes at least manpower, personnel, training, and human factors. Rule 1 in PS is that, "Human performance affects system performance," and the theory behind the rule is well explained in a TRADOC pamphlet entitled "Analyzing Training Effectiveness."[10] The "performance gap" (shown in Figure 2)[11] between the potential or designed performance of the system (E_D) and its actual performance (E_A) is caused by the military personnel who operate and maintain the system. Therefore, the focus of the PS program in any system development project is to hold the size of that gap as close as possible to zero by the systematic application of PS technology. PS testing focuses on the four issues (Figure 3) which most affect the size of the gap.

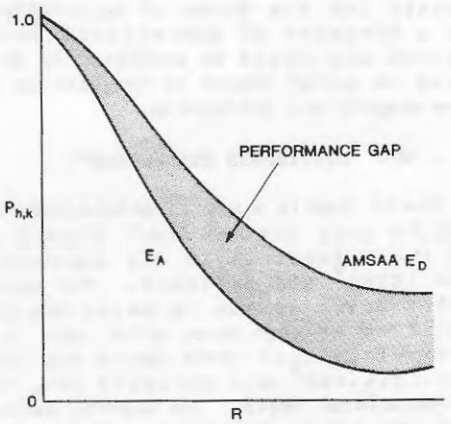


Figure 2. The Performance Gap

Figure 3. PS Test and Evaluation Concept

For each issue there should be developed a plan for determining baseline data and then for augmenting those data as design changes occur. Each issue should be tied to the measure of effectiveness (MOE) of system performance. Normally that MOE will be expressed in an equation where effectiveness (E) is computed as the product of serial probabilities that certain sub-units of performance will occur. In well-planned cases, such as the Army's STINGER air defense missile system,[12] there is a term in the equation which is the probability of correct performance by the operator of specified critical tasks. The PS tester, using the same task analysis data as the trainer, the human factors engineer, and the personnel specialist and working with all three, structures test requirements to produce the data from which the size of the performance gap can be determined and the trade-offs established for approaches to reducing it. The PS tester uses the profiling technique[13] in planning to obtain data on test participants and the methodology in DI-H-7058[14] for the other issues. It will be important for the PS tester to insure that data on all four issues are obtained, for the PS trade-offs (explained in HEL TM 29-76)[15] need to consider the availability and cost of aptitude requirements, and the cost of training as well as design of the equipment and the human performance it requires.

Where the system MOE makes no reference to human performance but an effectiveness equation is given, an additional term denoting human performance reliability (hpr) can be assumed. (The equation designer, believing that hpr = 1.0, omitted the term). The PS tester rewrites the equation, adding the hpr term as a multiplier of the other terms.[16] Next, the PS tester reviews the critical task analysis[17] (if available) or (if not) the system operational and organizational concept and determines what human performance tasks are likely to be the greatest contributors to performance gap and should therefore be included in the system effectiveness model. He or she then follows the steps set forth above.

The principal advantage of gathering and analyzing PS data under the CE process is that it provides substantially increased opportunity for feedback. A problem disclosed during a large "full-up" system test can be isolated and investigated "off-line" by technical specialists, and only limited data may be needed to confirm its fix. By being provided PS data throughout the system development, the project manager will be apprised earlier of problems which the contractor can address and verify in a more economical way than under the present T&E concept. The number of good reports of Army system performance reaching Capitol Hill should increase.

FEATURE ARTICLE

(FUNDAMENTALS ARE EVOLVING. ALSO SEE "T&E" AW&ST PAGE 108, 12 SEPTEMBER 1983 - EDITOR)

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2. J.R. Snoderly and D.D. Acker, "Another Look at Shortening the Acquisition Time." Program Manager, Nov-Dec 1981, p. 6.

3. Life Cycle System Management Model for Army Systems, Department of the Army Pamphlet 11-25, May 1975.

4. A.G. Martinez, "Shortening the Acquisition Cycle." Defense Systems Management Review, Autumn, 1979, p. 60.

5. J. Kaplan and J. L. Miles, Jr., "Human Factors in Weapon Design: The Performance Gap." Concepts, Autumn, 1981, pp. 88-89.

6. Some examples: "Fighting with Failures" in Reason, "The $13 Billion Dud" in California (later excerpted in Reader's Digest), and "Unready and Unwilling" in Penthouse.

7. Reported in the July - October (1982) Newsletter of the International Test and Evaluation Association.

8. The Coordinated Test Program (CTP). Department of the Army Pamphlet 70-21, May 1976.

9. LTC J. N. Hoblit, "Test and Evaluation: The Persistent Problem, Maxwell Air Force Base, AL: Air University Report No. 372, April 1978.

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12. Department of the Army. Approved Materiel Need for the STINGER Guided Missile System, May 1972, p. 26.

13. J. C. Geddie, "Profiling the Characteristics of the Developmental Test Participant." Aberdeen Proving Ground, MD: HEL TM 31-76, 1976.

14. Report(s) of Human Factors Engineering Test. Philadelphia: USN Publications Center, 1979.

15. B. L. Berson and W. H. Crooks, "Guide for Obtaining and Analyzing Human Performance Data in a Materiel Development Project." Aberdeen Proving Ground, MD: HEL TM 29-76, 1976.

16. There are more sophisticated ways to modify an effectiveness equation to include critical human performance, but the one suggested here is normally enough to prompt the proponent of the equation to propose them.

17. DI-H-7055, Critical Task Analysis Report. Philadelphia, PA: USN Publications Center, 1979.

ABOUT THE AUTHOR

John L. Miles, Jr.

John Miles received a baccalaureate degree in psychology in 1960 from Washington and Lee University in Lexington, Virginia. Upon his graduation he accepted a regular Army commission through the University's Distinguished Military Student program and served in the infantry for five years in airborne, special warfare, command and staff assignments. He was also a U. S. Adviser to the Vietnamese Army Psychological Warfare Training Center in 1964.

Following his military service, Miles earned a master's degree in psychology and a doctorate in law. He worked as an engineering psychologist in the U. S. Army Human Engineering Laboratory for 13 years, conducting human factors research in support of weapon system development programs and designing and validating management models for including elements of human factors engineering throughout the Defense Department's materiel acquisition process. He was the first engineering psychologist on the staff of the U. S. Army Materiel Systems Analysis Activity, where he pioneered techniques for accounting for the role of human performance in evaluating the effectiveness of weapon systems. He also served as Chairman of the Test and Evaluation Subgroup of the Defense Department's Human Factors Engineering Technical Advisory Group and has lectured on human factors at the Defense Systems Management College.

Mr. Miles is admitted to the practice of law by the Court of Appeals of Maryland and the United States District Court for Maryland. He is a member of the American Bar Association and has participated in symposia on product liability conducted for the Society of Automotive Engineers.

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1. **ITEA ANNUAL 1983 SYMPOSIUM PROCEEDINGS, 21-23 JUNE 1983, DEFENSE SYSTEMS MANAGEMENT COLLEGE; FORT BELVOIR, VIRGINIA.**

   a. Available for purchase per advertisement page 14 herein.

   b. Provided to Defense Documentation Center; Cameron Station, Alexandria, Virginia 22314. identified as B83-2860 and available for order through DDC channels.

   c. Copies provided by ITEA to all attendees, Corporate Member libraries, and offered to members through Chapters.

2. **NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) SIXTH ANNUAL REPORT AND DIRECTORY OF ACCREDITED LABORATORIES:** September 1983 National Bureau of Standards Special Publication 654. Library of Congress CCN 83-600578. For sale by U.S. Government Printing Office, Washington, D.C. 20402. Price $4.50 in U.S. See Federal Register Friday 22 July 1983 p. 33511. Covers test for commercial, industrial, and government procured materials. Anticipate program expansion.

3. **MAJOR RANGE AND TEST FACILITY BASE - SUMMARY OF CAPABILITIES;** June 1983, DOD 3200.11-D. Copies available from the Director, U.S. Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120. Excellent 84 page summary of MRTFB capabilities.

4. **BETTER PLANNING AND MANAGEMENT OF THREAT SIMULATORS AND AERIAL TARGETS IS CRUCIAL TO EFFECTIVE WEAPON SYSTEMS PERFORMANCE;** Report to the Congress of the U.S. by the Comptroller General, GAO/MASAD-83-27, June 23, 1983. Up to 5 copies free from USGAO, Document Handling and Information Services Facility, P.O. Box 6015, Gaithersburg, MD 20760. See Appendix II For "Our Reports Dealing with Test and Evaluation".

5. **TECHNOLOGY ADVANCES IN ENGINEERING AND THEIR IMPACT ON DETECTION, DIAGNOSIS AND PROGNOSIS METHODS:** Cambridge University Press, 32 East 57th Street, New York, NY 10022. Regular price $42.50. Includes 31 original papers on the technology of basic reliability testing, life prediction, diagnostics, and failure prediction. Subject is key to future testing.

6. **NATIONAL AND INTERNATIONAL DEVELOPMENTS CONCERNING PRODUCT CERTIFICATION - LABORATORY ACCREDITATION AND STANDARDIZATION:** The Marley Organization (TMO) publishes a short weekly Newsletter for $375 a year (52 issues). From: 11 Todds Rd., Ridgefield CT, 06877, (203) 438-3801, called TMO Update. Read and learn the scope of testing in basic areas for government and industry products. Another facet of the test industry (editor).

NON-ITEA MEETINGS

1. **THE MECHANICAL FAILURES PREVENTION GROUP:** Sponsored by NBS, Center for Material Science. Contact Executive-Secretary T. R. Shives, National Bureau of Standards, Washington, D.C. 20234. The fall meeting of MFPG at NBS, Gaithersburg, MD, 29/30 November and 1 December 1983. Program for academia, government and industry on: (1) material/structural failure, (2) composite/polymer materials, (3) Technology utilization, (4) computer data/information systems, and (5) non-destructive evaluation and failure prevention. Program Chairman Marty Devine (215) 446-8418

2. **ENVIRONMENTAL STRESS SCREENING OF ELECTRONIC HARDWARE:** Marriott Hotel, Philadelphia, PA., September 10-13, 1984. Call for papers. ESSEH Technical Program Committee, Institute of Environmental Sciences, 940 East Northwest Hwy., Mount Prospect, IL 60056, (312) 255-1561. Increased productivity is increased, not decreased, by improved quality control. Testing of materials and components has been proven cost effective. Testing of subsystems, and systems is still in the future with all indications of required for bottom line profit and marketability (editor).

3. **QUAL-TEST-2:** Held at the Dallas Convention Center in Texas from 25-27 October 1983. Interesting because it was sponsored by: (1) American Society for Nondestructive Testing, Inc., (2) American Society for Quality Control, and (3) Society of Manufacturing Engineers. This team of testing, QC, and manufacturing could be expanded by total testing, training and logistics. U.S. products are leaders only with customer acceptance. Why would the announced 4000 attendees spend their time and money if product performance was not the key to the future for consumers and industry as well as government like DoD (editor).

NOTICE

The 1983 (Vol IV, Number 3) issue of the Newsletter was printed expeditiously on 40 pound paper in order to reduce costs. In addition, some photographs were printed unsatisfactorily. We are indebted to our printer for immediately reprinting 3000 copies (700 pounds) at no additional cost except for the minor charge covering 60 pound paper.

In the process some members in areas of Connecticut and Massachusetts received the original marginal copies. These will be replaced upon request.

1983

INDIVIDUAL MEMBERS: COMPLETE IN ENTIRETY

(Print or Type)

THIS FORM MAY BE REPRODUCED AS REQUIRED

INTERNATIONAL TEST AND EVALUATION ASSOCIATION (ITEA) MEMBERSHIP APPLICATION AND RECORD FORM

I. NAME: ______________________________
Last First Middle Initial or Name

II. TITLE: Mr. Mrs. Miss Ms. Dr. (Circle One) Other ______________

III. RESIDENCE ADDRESS

____
Street/Court/Place/Etc.

____
P.O. Box/Apt. No./Other

____
City/State/Country/Zip

____
Area Code/Telephone Number

IV. OFFICE ADDRESS:

____
Organization/Mail Stop or Code

____
Street/Court/Place/Etc.

____
City/State/Country/Zip

____
Area Code/Telephone Number

V. PREFERRED ITEA MAILING ADDRESS: Residence ___ Office ___

VI. BRIEF BIOGRAPHY: (For ITEA Analyses of Membership Interests in Meetings and Publications)

Born: ______________________________
Place Date

Citizenship: ______________________________

Academics: ______________________________
Highest Degree Institution Major Fields

Technical Specialties: ______________________________

T&E Specialties: ______________________________

Other Specialties: ______________________________
(i.e., 'ilities/operations/manufacturing/prog. development/management)

Special Awards: ______________________________

Biographical Listings In: ______________________________

Membership in Other Professional Societies: ______________

VII. SPECIAL T&E INTERESTS: (discuss)

> BYLAWS NOTICE: Calendar dues paid by new members (Individual or Corporate) during the last quarter of the year pays dues for both the current and following year regardless of changes in dues rate or member classification

VIII. VOLUNTARY DONATION ($5 to $75): ______________
Designate Amount

IX. SPONSOR(S): ______________________________
(Not required for Charter Members (deadline, Last Day 1983 Annual Symposium)

X. ANNUAL DUES: $25 all membership classes and $10 for students. Foreign address (non APO) membership $40 U.S. currency. New membership dues paid during last quarter (Oct, Nov, Dec) cover that year plus the following year.

____
Signature Date

NOTE A: Enclose check payable to ITEA for dues plus donation to cover dues for calendar year (Tax Deductible).

NOTE B: Mail to ITEA, P.O. Box 603, Lexington Park, Maryland 20653

(ITEA Purposes Only)

ITEA Approved by: ______________ ITEA Recorded by: ______________

ITEA Record of Payment: ______________________________

Membership Card Issued by: ______________ Number: ______________

Form 101 (Nov 83) **OVER** MEMBERS: ENTER ASSIGNED MEMBERSHIP NUMBER

1983 CORPORATE MEMBERSHIP APPLICATION

INTERNATIONAL TEST & EVALUATION ASSOCIATION (ITEA)

I. Corporate Name: _____

II. Corporate Address: _____
Street/Mail Stop/etc.

_____
City/State/Zip

III. Senior Corporate Official: _____
Name Title

_____
ITEA Number (TBA)

_____
Telephone:Area Code/Local Number

IV. Two Additional Members Free:

_____ _____
Name Title

_____
Street/Mail Stop/etc.

_____
City/State/Zip

_____
ITEA Number (TBA)

_____ _____
Name Title

_____
Street/ Mail Stop/etc.

_____
City/State/Zip

_____
ITEA Number (TBA)

V. Attach Corporate Activities and Annual Report for Record.

VI. Corporate ITEA Advertising Planned: ____Yes ___ No

VII. Special T&E Interests:

VIII. Interest in Annual International Symposium: ____Yes ___ No

IX. Interest in Exhibit at Symposium: ____Yes ___ No

X. Newsletter Copy to Librarian: _____
(If Requested) Name

_____
Address

XI. Annual Dues for Future Billing: _____
(If Different Lines I,II,&III) Name

_____
Address

XII. Annual Corporate Dues are $300.00

_____
Signature Date

- -

(1)Enclose check(2)Mail to: ITEA, Box 603, Lexington Park, MD 20653

ITEA Only

* *

Approved By:_____ Recorded By: _____ Certificate Issued: _____

Record of Payments: _____

Membership Cards Issued: _____ Corporate ITEA Number: _____

Form 102 (Nov 83)

REPRODUCE AS REQUIRED

BYLAWS NOTICE: Calendar dues paid by new members (Individual or Corporate) during the last quarter of the year pays dues for both the current and following year regardless of changes in dues rate or member classification.

ASSOCIATION NEWS

MEMBERSHIP: Grown to over 550 individual members as shown in chart. Have over 16 Corporate members. Charter membership closed 23 June 1983. Initial officers of new chapters are automatically reclassified as Founders. Professional grades as shown by suffix on membership number are being reviewed for upgrading as appropriate. Join now at reduced dues - see Bylaws notice on page 3 and new rates, page 2.

CHAPTERS: Seven Chapters formally established. Thirteen Candidate Chapters are in various stages of organizing. Material supplied will need updating if there are significant delays in organizing. Be sure to include ITEA Operating Headquarters on each Chapter mailing list for general correspondence and announcements.

NEWSLETTER: Being expanded with different publisher. Will include more technical articles starting with January 1984 issue. Chapters must send news items for Newsletter to ITEA Operating Headquarters by 15th of month preceding issue in January/April/July/October.

FINANCIAL: Need more income to meet direct expenses. Increases in annual dues and advertising rates required. Proceeds from Annual Symposium essential to help with costs. Chapter financial reports are due at the Operating Office by 31 January 1984.

ANNUAL SYMPOSIUM: Plans on track with daily advances. Exhibits will be a big asset to ITEA. Outstanding Symposium Committee selected.

MANAGEMENT: All general administrative records and actions assigned to Executive Director at ITEA Operating Office except financial records and responsibility therefore to the Treasurer who interfaces regularly and controls all expenditures and budgets.

JOURNAL: ITEA desires to publish a slick professional journal and has explored candidates. This can be accomplished when ITEA has an increased financial base and can yield cash return.

ADVERTISING: Rate increases are still very low for the select membership of ITEA and guests. Basic prices are $500 per page for one issue and 20% discount for three issues. Special rates for fractions of a page are available.

BOD Meetings: Policy meetings are scheduled bimonthly. The last meeting was on 14 September and the next on 16 November. These meetings are normally of 3 hours duration and addresses the major current and long range activities of ITEA. The SAB is routinely invited.

EXECUTIVE COMMITTEE MEETINGS: Scheduled in alternate months with the BOD meeting and address current operating procedures and issues. The SAB is routinely invited.

CORPORATE MEMBERSHIP IN ITEA: Industrial Corporations, non-profit institutions and governmental agencies are all striving for increased productivity and reduced costs. Key elements are the educational training and motivation of employees. Corporate membership in ITEA can contribute in several ways.

ITEA has planned a number of symposia that facilitate the exchange of technical information and offer an opportunity to widen the range of contacts in the professional T&E world. The opportunity to participate in these symposia not only contributes to an employee's sense of professional pride and helps keep him updated in his profession, but also provides exposure for the company and enhances its image.

Corporate membership in ITEA offers employees an excellent opportunity to publish in official ITEA publications where their professional views and expertise will be recognized by leaders in the T&E field. Both the recognition and professional growth of the employee will be of benefit to the corporation.

Demonstrate your Corporate support by subscribing to a Corporate Membership in ITEA that will enhance your RDT&E approach, quality assurance, and employee rewards. Complete the application form in the name of the corporation and receive corporate recognition in all ITEA International Publications.

Corporate membership will also provide the following benefits:

- o Inclusion on mailing list for distribution of all ITEA headquarters general publications to three designated corporate officers and librarian as requested on application form.

- o Invitations to attend and participate in all ITEA member functions - both national and area chapters.

- o The selected individual members will have all rights and privileges including the right to vote and to hold office.

- o The three individual Corporate memberships selected on corporate application do not pay additional individual dues. (saves $120)

- o Librarian may be added to mailing list at no additional cost. (saves $60)

1983 Annual (CY) dues are $300 with an increase on 1 January 1984 to $500. New Corporate members joining in Oct/Nov/Dec 1983 at $300 automatically receive membership for both 1983 and 1984 without dues increase effective 1 January 1983.

See page 10 for roster Corporate members.

CHAPTER NEWS

SOUTHERN MARYLAND: #1 founded on 4 March 1981 in Lexington Park, MD. Officer elections in process and a 1984 program is being created.

GEORGE WASHINGTON: #2 founded on 6 March 1981. The original organizer Ed Connor is again President and an active program planned. Luncheon speaker on 14 September 1983 at the Army-Navy Country Club in WDC was extremely interesting with numerous slides and motion pictures. Dr. F. Charles Gilbert, Deputy Assistant Secretary for Nuclear Materials in the Department of Energy, spoke on Nuclear Testing to over 50 attendees.

Luncheon speaker on Wednesday 16 November 1983 again at the Army-Navy Country Club will be Mr. George Nicholas, Deputy Undersecretary of Defense for Research and Technology who will speak on T&E in Electronic Warfare. The GW Chapter will again assist in the 1984 Symposium.

TIDEWATER: #3 founded on 15 June 1981 in Chesapeake, VA. New officers are Jack Devlin, President; Bill Breed, V.P.; John Peterson, Secretary; and Ed Sierra, Treasurer. The New Year (September) began with a flurry of heavy weight speakers on Software Testing. The software theme will be continued throughout the fall season. Charles Watt, Deputy Director Defense T&E in OSD, and National President of ITEA spoke on DoD Policy and Technology Trends on 20 September 1983. He addressed the pending establishment of the office of T&E within DoD because of the recent sharp increase in the DoD budget coupled with perceived poor products delivered. Ronnie Martin, a Research Scientist from the Georgia Institute of Technology discussed the Software T&E Program (STEP) on 18 October 1983. The STEP is intended to identify the tools and procedures for testing a mission critical software in new DoD acquisitions to insure validity and reliability. Given the increasing role played by software in DoD systems and the increase in the software/hardware cost variation it is necessary that we establish testing criteria and procedures for the software which are applied beginning at the level of the TEMP. The STEP will come to a close at the end of FY 84 and result in recommendations for the use of certain software testing and the development of tools to fill in where tools do not currently exist.

The speaker for the 15 November 1983 luncheon will be Dr. Edward Lieblein, Director of Computer Software Systems-DDR&E, who will discuss ADA and the Software Technology for Adaptable Reliable Systems (STARS) program. STARS is expected to address the recommendations of the STEP and other software improvement techniques.

****

ORGANIZE A CHAPTER IN YOUR AREA

****

CHANNEL ISLANDS: #4 founded on 20 October 1981 at Point Mugu, CA. A Chapter social picnic was held on 17 September 1983 at a private club with 20 attendees plus spouses and children. On 19 October a formal meeting was held to review ITEA status, arrange for new officers, organize ballot procedure, and identify the future 1983-84 program. This meeting was held at the Point Mugu CPO Club in honor of the flooded beaches at the Officers Club. A meeting is scheduled for 15 November 1983 in Ventura with Mr. James Jones, NSWSES, speaking on Navy T&E Policies and Procedures with emphasis on vertical launch systems.

SO. CA. SADDLEBACK: #5 founded on 15 February 1982 in Aneheim, CA. The Saddleback Chapter 22 September meeting was a well received dinner featuring a presentation on the Global Positioning System (GPS) and Precision Tracking. The speaker was Mr. Carl Hoefener, Director of Business Development, Interstate Electronic Corp. The presentation encompassed the SOA in satellite aided location and positioning and the benefits to navigation accuracy. Thirty members and guests were in attendance.

The 27 October meeting was highlighted with a special presentation on Computer Aided Design (CAD). Mr. Gaylord Rogeness, CAE Program Manager at Interstate was the guest speaker. He described the benefits of CAE in freeing the engineer to be more creative. The payoff has become a better design in a shorter time.

NEW ENGLAND: #6 founded on 19 August 1982. Held a 2 hour panel discussion on 27 October 1983 on Independent Verification and Validation (IV&V) of Software. This is the 3rd biannual meeting. Key panelists were: (1) Larry A. Fry, Principal Software Engineer, Sanders Associates, Inc., (2) Martin F. McDonough, Manager Electronics Systems Department, Logicon, (3) Siba N. Mohanty, Mitre Washington CI Division, and (4) Annette C. Lanigan, Head Lexington Programs Section for Arvin/Calspan Advanced Technology Center. IV&V, air traffic control, and Over-the-Horizon backscatter radar software reviewed.

NEW JERSEY COAST: #7 founded 17 October 1983 at Fort Monmouth, NJ. Thirty-three attendees with 11 members present. Officers selected and new memberships being processed. Mr. Richard J. Gale did an outstanding job as organizer and was elected President. All officers will be identified as Founders. On 2 November 1983, the new chapter sponsored a luncheon with SOLE participation including 82 attendees. Mr. Charles K. Watt, Deputy Director T&E (OSD) was the guest speaker on DoD Trends in T&E. MG Robert J. Donahue, Director JTCO also hosted Mr. Watt. The strong leadership with support from both government and industrial personnel will make the **New Jersey Coast** Chapter outstanding. A future meeting on Aegis is planned.

ANALYSIS OF CHAPTER MEMBERSHIP AND MAILING LIST
AS OF 1 NOVEMBER 1983

EXISTING CHAPTERS

	Members				Non-Members			
Name (Permanent)	'84	'83	'82*	Sub-T	"A"**	Gen.	Sub-T	Total
1. S.MD	0	18	3	21	5	32	37	58
2. GW	9	131	10	150	16	216	232	382
3. Tidewater	1	36	7	44	5	23	28	72
4. Channel Island (1)	2	52	8	62	2	25	27	89
5. S.CA. Saddleback(2)	0	56	6	62	0	29	29	91
6. New England	1	32	1	34	0	30	30	64
7. New Jersey Coast	11	11	0	22	0	37	37	59
TOTAL	24	336	35	395	28	392	420	815

(1) Reduced for Cand. Chap. O (2) Reduced for Cand. Chap. I, J, N.

CANDIDATE CHAPTERS

	Members				Non-Members			
Name (Temporary)	'84	'83	'82*	Sub-T	"A"**	Gen.	Sub-T	Total
B. Eglin	0	8	1	9	0	10	30	39
C. Seattle	0	1	2	3	0	13	13	16
D. Dallas/Ft. Worth	0	7	1	8	1	15	16	24
E. WPAFB	0	2	0	2	2	56	58	60
F. Kirtland AFB	0	17	1	18	2	19	21	39
G. Huntsville	0	6	1	7	1	10	11	18
H. EPG	0	1	0	1	0	9	9	10
5I. San Diego	0	2	0	2	0	1	1	3
5J. EAFB/China Lake	0	4	0	4	0	20	20	24
K. HAFB/White Sands	0	12	0	12	0	13	13	25
L. Yuma PG	1	0	0	1	0	11	11	12
M. Dugway PG	0	0	0	0	0	5	5	5
5N. El Segundo	2	12	0	14	0	33	33	47
4O. Vandenberg AFB	0	3	6	3	0	10	10	13
TOTAL	3	75	6	84	6	245	251	335

SUMMARY

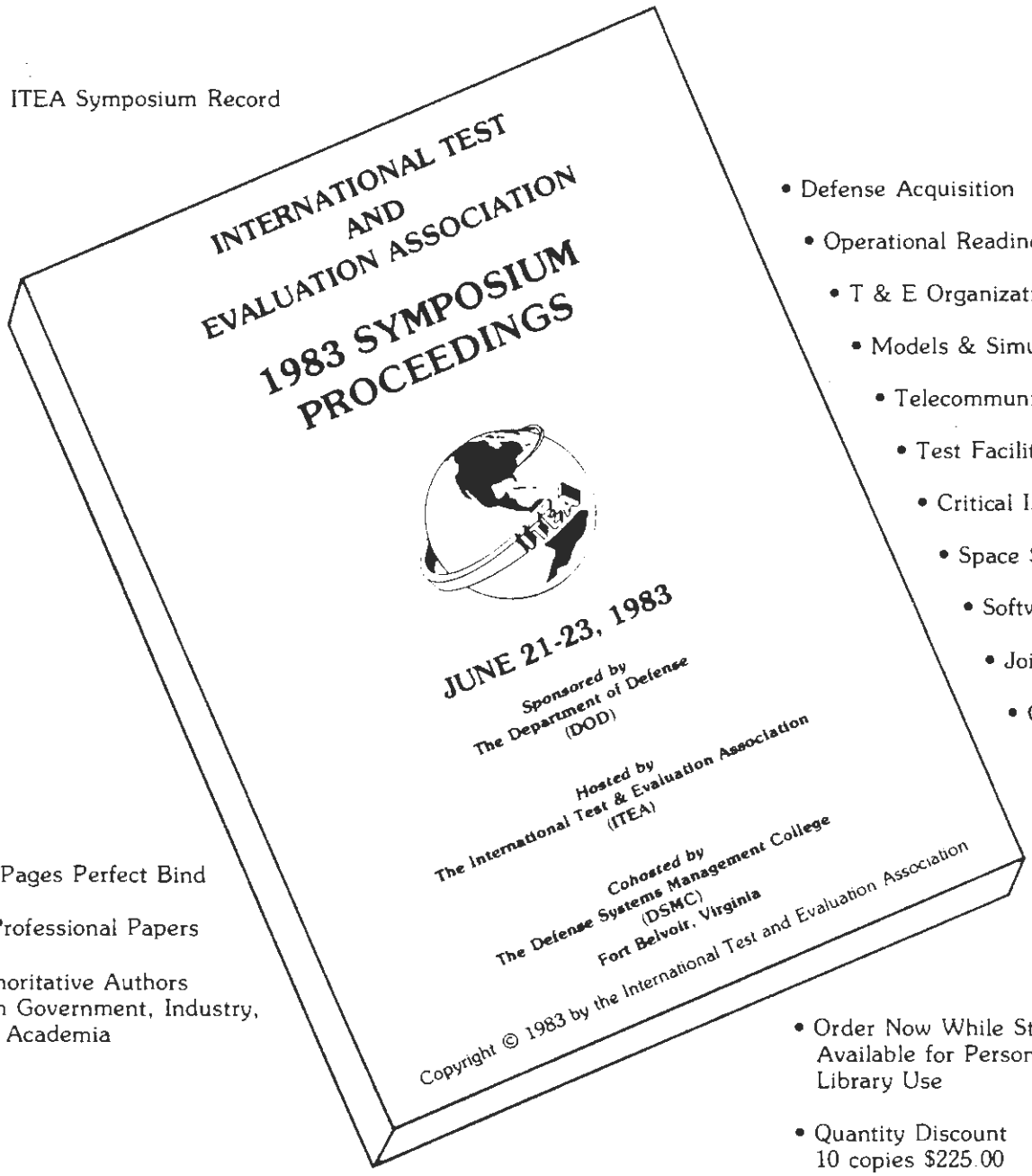
	Members				Non-Members			
Geographic Areas	'84	'83	'82*	Sub-T	"A"**	Gen.	Sub-T	Total
1. Existing Chapters	24	336	35	395	28	392	420	815
2. Candidate Chapters	3	75	6	84	6	245	251	335
3. At Large	7	53	11	71	5	335	340	411
TOTAL	34	464	52	550	39	972	1011	1561

* '82 members to be transferred to "A" category 1 January 1984
** "A" is Prefix for prior mbrs. with over 1 yr. delinquent dues (drop 1 Jan '84)

PROCEEDINGS

AVAILABLE FOR PURCHASE

- First ITEA Symposium Record



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The Logistics Support area encompasses all aspects of managing the preparation for and accomplishment of readiness/supportability plus life cycle cost management.

TEST AND EVALUATION

Test and Evaluation encompasses planning for and implementation of government and contractor factory and field test programs to support the development and also to verify operational suitability of the operational design.

PRODUCTION

Production management includes understanding of basic manufacturing processes, productivity, planning for production, government certification of production readiness and implementation and control of the actual production process.

Interested persons should send resume or SF-171 to:

MDW Civilian Personnel Directorate, Hoffman Civilian Personnel Office
Attn: ANCIV-HPL
200 Stovall Street, Dept. IT, Alexandria, Virginia 22332
(202) 325-8840/41

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