



# MANPRINT BULLETIN

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## TSM Forward: RAH-66 User Design Influence in Action

*Maj Mike Rusho  
TSM Forward Team Chief*

On 12 April 1991, the Army selected the First Team of Boeing Helicopter and Sikorsky Aircraft to continue the development of the RAH-66 Comanche. The Comanche provides Army Aviation the opportunity to move into the 21st century with a weapon system of unsurpassed warfighting capabilities crucial to the Army's future strategic vision. The selection of the First Team was the culmination of an exhaustive test of our ability to assess and design to future requirements. MANPRINT played a significant role in this process. The need for warfighting enhancements, made possible through designed-in man-machine interface, does not diminish now that the source selection process is completed. During the Demonstration/Validation Prototype Phase, we must continue aggressive application of the MANPRINT initiative.

Prior to downselect, the Army provided MANPRINT support to both Comanche industry teams—Boeing Sikorsky and McDonnell/Bell. This support influenced weapon systems designs and technologies through the design analyses and trade studies phase. The MANPRINT effort included providing user "greensuit" teams for each industry team. These teams consisted of aviators and maintainers selected from across the Army. The aviators participated in simulation development of crew stations and mission equipment, while the maintainers provided insights on the maintainability aspects of the emerging designs. Industry and government personnel agreed that these "greensuit" teams provided invaluable information to the contractors during this critical design phase.

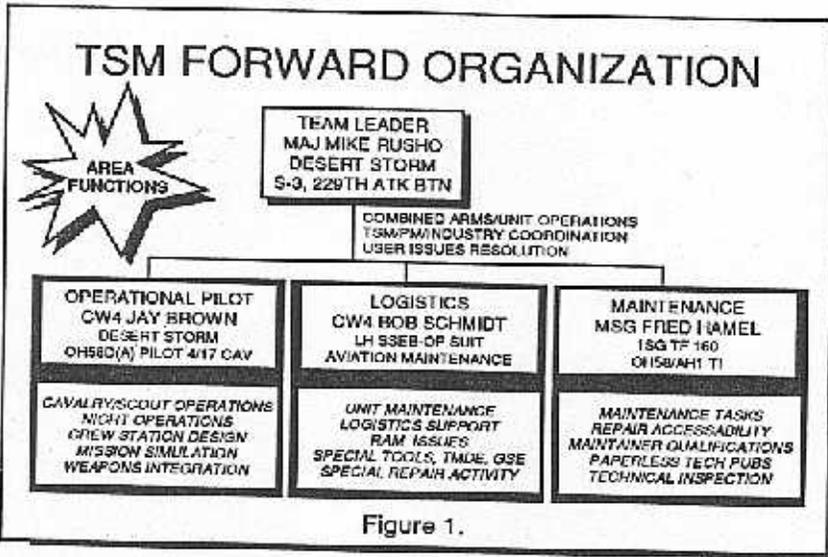
MANPRINT accounted for 17% of the evaluation during the Source Selection Evaluation Board (SSEB) for Comanche, and therefore had a strong influence on the winning design. After downselect,

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**"Remember the Soldier"**



TSM Forward established objectives to support the goal of addressing and prioritizing operational and MANPRINT concerns during the Dem/Val Prototype Phase. These objectives, shown in Figure 2, fully support the Army's goal and focus on the Preliminary Design Review (PDR), Critical Design Review (CDR), and first flight phases for Comanche. Since the team's arrival, members have interfaced daily with the contractor through Product Development Teams (PDTs) located at both the Sikorsky and Boeing plants.

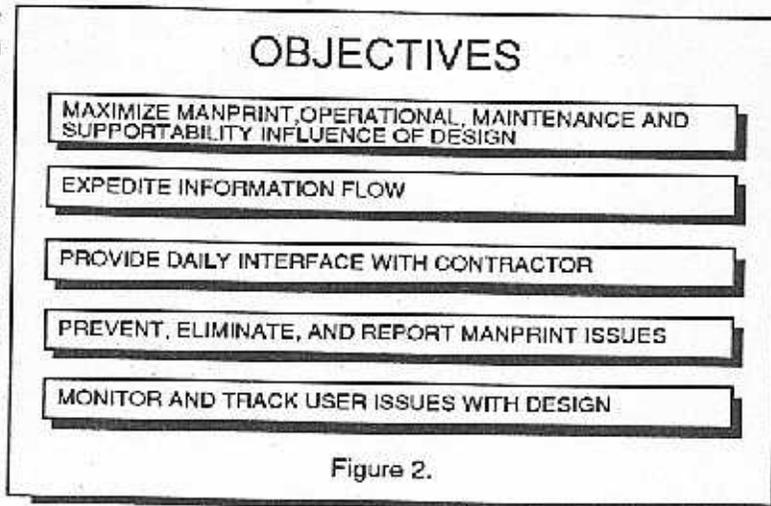
the Army desired to continue MANPRINT influence by establishing an even stronger interface with industry. Our challenge: "How could the warfighter best provide relevant near real time operational and MANPRINT input to industry?" To meet this challenge, the Army established a warfighter team at the factory. This team would ensure the government/industry team maximizes the benefits derived from up-front design influence. The "greensuit" team is known as TRADOC System Manager (TSM) - Forward.

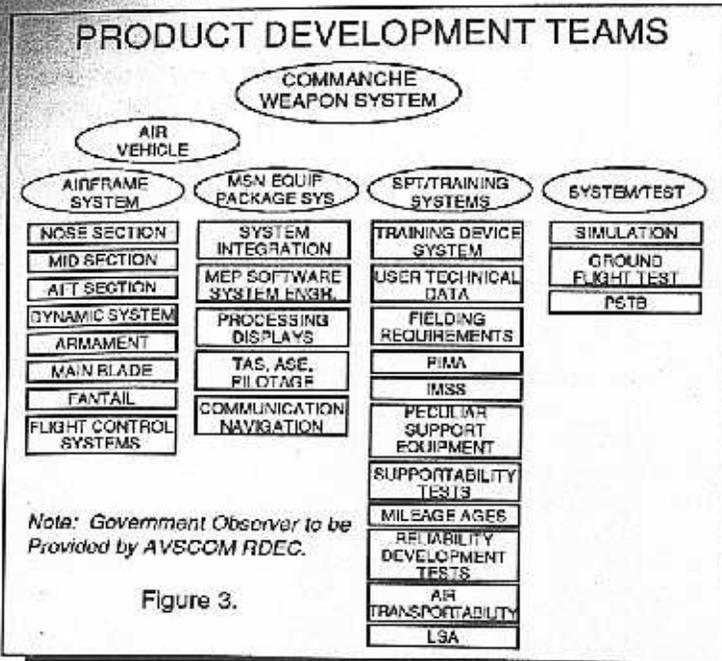
The Comanche weapons system is divided into five functional areas:

airframe, mission equipment package, support/training systems, test, and systems integration. Several PDTs were created to support each of these functional areas. Each PDT has representatives from the various disciplines such as RAM/ILS, safety, MANPRINT, DTC/LCC, training, manufacturing, and engineering. There are currently 41 working PDTs at the Boeing and Sikorsky plants (see Figure 3). The PDTs are charged with the day-to-day design effort of the Comanche weapons system. Our involvement in the PDTs is the most effective way to provide MANPRINT influence.

TSM Forward consists of four personnel with extensive operational and maintenance/logistics backgrounds. The team is neither a part of the Defense Plant Representative Office residing at contractor sites, nor a part of the Program Manager's office. Rather, it is an extension of the TSM for Comanche, and the personnel are assigned full time at the factory. TSM Forward team composition and functions are shown in Figure 1. Personnel were selected by the Army based on their performance and experience. TSM Forward personnel, who established a base of operations on 8 July 1991 at Sikorsky's Trumbull I facility in Connecticut, interfaces with Team Comanche industry members on a daily basis. The Comanche industry team consists of the Boeing Sikorsky Program Managers Office, Boeing Helicopter, Sikorsky Aircraft, and nine prime sub-contractors throughout the United States, and one in Europe.

TSM Forward is also a primary member of the Crew Systems Working Group (CSWG). The CSWG consists of an Operator Panel and a Maintenance/Support Panel. The Operator Panel participates in





simulation, mock-up evaluations, surveys, and analyses of selected aspects of the RAH-66 cockpit/crew station design. The Maintenance/Support Panel participates in maintainability demonstrations, mock-up evaluations, and surveys on selected maintainability and servicing aspects of the RAH-66 system design. TSM Forward coordinates the participation of operational aviators and maintainers from the MACOMs in CSWG activities. Additionally, TSM Forward serves as a member of the Comanche MANPRINT Joint Working Group and the System Safety Working Group.

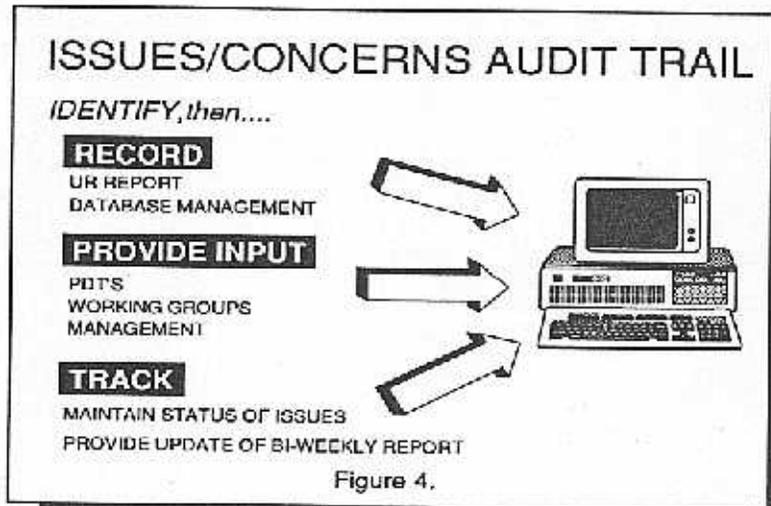
Prior to our arrival on site, TSM Forward received a list of operational and MANPRINT issues/concerns prepared by the SSEB. These are concerns the SSEB members felt merited oversight and attention during the DEM/VAL prototype phase. Since then we have identified other issues/concerns noted during our daily activities. Both lists are being consolidated into a database. The objective is to ensure our concerns, especially those impacting the operator and maintainer, are addressed by the industry. The development of the process to manage issues and concerns is depicted in Figure 4. Areas of concern involving the data base include:

- optimized placement of switches and

- compatibility of Comanche Helmet Integrated Display-Sight Subsystem and the Aircrew Protective Mask.
- unrestricted accessibility to aircraft systems for maintenance and repair.
- ensure design changes do not adversely affect air transportability capabilities.

This database will be used with TSM Comanche in conducting semi-annual Operational Suitability and MANPRINT Program Reviews. These reviews will provide the PM and industry with user's warfighting issues and concerns, and when appropriate, suggested solutions.

The TSM Forward Initiative benefits both the contractor and government. By having the team at the plant on a permanent basis the contractor gains continuous access to operational suitability considerations and perspectives. Industry has immediate access to personnel who can answer questions about how Army Aviation fights, maintains, and supports. TSM Forward expedites the flow of accurate and up-to-date operational information to the contractor, and provides the operators' and maintainers' perspectives to design engineers. For the government, TSM Forward provides MANPRINT and operational inputs early in the Comanche developmental process and reports progress to the TSM and PM. We are the on-site eyes and ears of the soldier to ensure the warfighter gets an operationally effective weapon system. TSM Comanche is "the Voice of the Soldier."



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# Comanche Contractor Visit

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LTC Nelson Laughton  
MANPRINT Directorate

In early September, the Deputy Chief of Staff for Personnel, LTG William Reno, accompanied by some of his MANPRINT staff including Dr. Harold R. Booher, visited Sikorsky Aircraft in Trumbull, Connecticut. Sikorsky, teamed with Boeing, are the prime contractors for the Army's RAH-66 Comanche helicopter program, formerly known as the LH program. Sikorsky has the lead for the airframe development while Boeing's primary thrust is the development and integration of the Mission Equipment Package (MEP).

MANPRINT has played a vital role in the development of the Comanche thus far. One initiative which has already produced very positive results is called TSM Forward. This novel idea is the result of the imagination and hard work of the TRADOC System Manager (TSM), COL Steve MacWillie. According to the TSM Forward Team Chief, MAJ Mike Rusho, this fledgling initiative has already provided significant input to the designers and engineers at the Trumbull facility.

The objective of the Comanche visit was several-fold, but primarily served to provide LTG Reno a first-hand update on the program, particularly with respect to MANPRINT. It also helped to re-emphasize the Army's commitment to the philosophy inherent in the MANPRINT program. Several areas were briefed, including Human Factors and Crew Station, System Safety and Health, Integrated Training System and the Cost Impact of MANPRINT. Tours of the MANPRINT lab and the Combat Mission Simulator and demonstrations of some contractor MANPRINT tools were also conducted.

Several very informative and frank discussions took place. One noteworthy item was the consensus that knowing the weight of MANPRINT and the other source selection factors prior to the actual source selection evaluation process, was and is key to leveraging necessary funding within the company to affect required MANPRINT analysis and up front design work. For example, it is estimated that 395 hours expended on one design effort alone will result in an avoidance of \$150 million in Life Cycle Costs (LCC). The Boeing Director for Supportability

emphasized that this avoidance was the direct result of the MANPRINT process and would not have been accomplished otherwise.

The visit concluded with a meeting with the Executive Vice President of Sikorsky Aircraft, who stressed again the company's commitment to MANPRINT, the TSM Forward Initiative, and the Army's Comanche program.

LTG Reno is very impressed with the MANPRINT effort being expended by both the government and the contractors and the significant results already achieved. To that end, he has sent a note to the Army Acquisition Executive urging him to encourage other PEOs and PMs to emulate the Comanche MANPRINT efforts.



## DID YOU KNOW?

- The MANPRINT Directorate is starting to plan another MANPRINT with Industry Conference for Spring of 1992. Suggestions about "who needs to be there" and presentations are welcome.
- Preparation of a new *SMMP Procedural Guide* has begun.
- The MANPRINT Directorate hosted a two-day HQDA MANPRINT Orientation Course 7-8 November. This course was put on by ALMAC. We have this course primarily for new PERSSOs and invite other DA staffers to attend on a space available basis.
- We have received few suggestions on TAD redesign. In the current SMMP format, the TAD is a listing of occupational specialties, job descriptions, etc. These would be followed by references to the detailed information. No TAD annexes would be necessary. Unless you suggest something better, this approach will be used in the next version of AR 602-2.

NOTE: The author for the ECA article in our November/December 1991 Issue was Beverly Van Hoff.

# The New LSAR: A Trip Report

Edward Boyle

Armstrong Laboratory (United States Air Force)

*Editor's Note: The author recently attended a seminar on the newly-issued MIL-STD 1388-2B, "DoD Requirements for a Logistics Support Analysis Record." This article, which is reprinted from the Nov/Dec 1990 issue of the IMPACTS Bulletin, describes what he learned, especially as it relates to human-system integration.*

The Logistics Support Analysis (LSA) process has been an important point of entry for human-centered issues to participate in acquisition planning and system design. The companion Logistics Support Analysis Record (LSAR) has been an important data source and destination for human-centered analyses and findings. Many of the elements of Integrated Logistics Support (ILS) that LSA and LSAR deal with are human-centered either directly or indirectly. The direct ILS elements include manpower and personnel (or human factors), training equipment and materials, and technical manuals. The aims of LSA and LSAR have always conformed with the aims of human-centered design: to influence design thinking for supportability, and to provide logistics data for planning system support.

LSA and LSAR do not satisfy all human-centered objectives or data needs, but they certainly warrant greater attention than they have received. They are the officially constituted standards of greatest practical relevance to human-centered design advocates. They are recognized within government and industry as part of system engineering. There are ILS departments in every system program office and contractor organization of any size. Finally, from a technology point of view, LSA is the only place at the table for human-centered specialists in concurrent engineering teams. The -2B version of LSAR is

the only human-centered data base targeted by the Computer-Aided Acquisition and Logistics Support (CALs) "to be" information architecture (pun intended!).

This last point is especially significant because the recent revision to the LSAR data standard is motivated in part by CALs thinking on the efficient creation, maintenance, and use of logistics information through modern computer technology. This revision recasts the former LSAR records from flat "card image" files into relational tables. This integrated data base technology is intended to help tie together engineering, manufacturing, and product support data as sources of LSAR documentation. The relational data base format for LSAR should help to bridge the "islands of automation" that currently separate design

disciplines and keep data management costs high.

The new 1388-2B has made LSAR more modern, but it hasn't made it less complex. The document is more than 600 pages end-to-end. Three more pounds of un-CALs-like paper. It's not a page turner either.

Appendix F contains a

list of 354 acronyms! The document contains a brief overview section. The bulk is in the six appendices, which describe the LSAR relational tables, LSAR reports, guidance for assigning LSA control numbers and alternate LSA control numbers, application and tailoring guidance for contracting LSAR, a data element dictionary, and the acronyms.

Information that was recorded on the old LSAR-2A forms is now recorded on relational data tables. Categories of information (data elements) are listed across the top of each table in columns. Data of in the rows. LSAR relational tables are two-dimensional matrices of related data. The tables are defined in

► page six

- A Tables: Government reliability & maintainability requirements
- B Tables: Reliability, maintainability, and availability; failure modes/effects
- C Tables: Task inventory (sequentially), task analysis
- E Tables: Support equipment and training material requirements
- F Tables: Facilities
- U Tables: Unit under test requirements
- G Tables: Personnel skill considerations (ASVAB/AFQT aptitudes)
- H Tables: Packaging and provisioning requirements
- J Tables: Transportation requirements
- X Tables: Establishes the basic data keys for LSAR cross functional analysis

Exhibit 1. LSAR-2B Functional Areas.

**LSAR: from page 5**

terms of these columns and rows. The interrelationships and hierarchy among tables is established through the use of "keys" which define a unique set of identifiers for each row of information in the data table. Data bases arranged in this way permit very flexible query and report capabilities.

There are nine functional areas for the LSAR-2B relational tables plus a data specification table, as shown in Exhibit 1 found on page 5.

Most of the data elements prescribed by the old LSAR-1A forms A through J have been carried forward in the new relational table format, however, there are changes throughout. Of special interest to human factors and MPT personnel are the B, C, E, and G tables (highlighted with arrows in Exhibit 1 on page 5).

The task analysis information in the C Tables can now be arranged hierarchically at the job, duty, task, subtask, and task element level to build a task inventory report.

This arrangement permits task lists to be ordered by performing specially or by physical or functional breakout of equipment, at many levels of detail. In addition, the data element definitions (Appendix E) include an extensive task descriptive taxonomy. There are 288 maintenance action words cited and defined there.

To support training analysis, the C Tables also include data elements for task learning difficulty, percentage of work force performing the task, percentage of total work time spent performing the task, and training setting (on-the-job, class, both, neither). These are very welcome additions. They make LSAR training data compatible with standard Air Force occupational analysis requirements. To support personnel analysis, the G Tables permit recording of Armed Services Vocational Aptitude Battery (ASVAB) and Armed Forces Qualification Test (AFQT) scores. In addition, there are narration fields in the G Tables to identify new or special skills, including physical skills, required for task performance. Information on the C Tables and G Tables can be easily

linked. Finally, there are new provisions for recording information about hazardous materials handling by personnel (C Tables), and HAZMAT cost and disposal (H Tables).

Appendix B describes 48 different LSAR reports. These reports provide summary information from the various LSAR tables that can be called out as contract data items. Often, it is the LSAR reports, not the data records or tables, that are delivered to the government for review. Of course, the relational data base format permits an unlimited number of ad hoc reports to be easily produced. The standard reports

of most significance to the human-centered domain are shown in Exhibit 2.

There is no guidance in either the -2A or -2B versions of LSAR on how to produce the various data elements, nor are supporting HF or MPT analytic tools mentioned specifically. Questions of validation discussed in the -2B

- LSA-001:** Manhours by Skill Specialty Code and Level of Maintenance
- LSA-004:** Maintenance Allocation Chart Summary
- LSA-006:** Critical Maintenance Task Summary
- LSA-011:** Special Training Equipment/Device Summary
- LSA-014:** Training Task List
- LSA-018:** Task Inventory Summary
- LSA-019:** Task Analysis Summary
- LSA-033:** Preventative Maintenance Checks and Services
- LSA-050:** Reliability-Centered Maintenance (RCM) Summary
- LSA-065:** Manpower Requirements Criteria
- LSA-075:** Consolidated Manpower, Personnel, and Training (MPT) Report
- LSA-078:** Hazardous Materials Summary

**Exhibit 2. LSAR Reports Related to MPT.**

document have to do with ensuring that the particular software used to manage LSAR data meets the established data management standards. From the human-centered design perspective, the critical need is for valid and economical task analysis procedures to support LSAR data requirements. For guidance on this, you must go elsewhere. There is nevertheless an increased emphasis in -2B on the human-centered logistics data element.

The companion Logistics Support Analysis (MIL-STD 1388-1A) has not been changed, but the documentation now refers to it as 1388-1, apparently so that it can go with either 1388-2A (which will continue to exist) or -2B data standards. This document describes fifteen LSA tasks which result in the LSAR data base. It is useful to enumerate these LSA tasks here as a reminder to human-centered logistics personnel that they have a role in every LSA activity. (See Exhibit 3, found on page 7.)

There is a plan to develop a joint-Service relational data base software system to implement the 2-B version of the LSAR. Contractors may develop their own systems or use commercially off-the shelf systems provided they meet the functionality standards. The Army Material Readiness Support Activity (MRSA) certifies LSAR software.

- 101 LSA Strategy
- 102 LSA Plan
- 103 Program and Design Reviews
  
- 201 Use Study
- 202 Support System Standardization
- 203 Comparative Analysis
- 204 Technological Opportunities
- 205 Supportability Design Factors
  
- 301 Functional Requirements Identification
- 302 Support System Alternatives
- 303 Tradeoff Analyses
  
- 401 Task Analysis
- 402 Early Fielding Analysis
- 403 Post Production Support Analysis
  
- 501 Supportability Test/Verification

**Exhibit 3. LSA Tasks.**

The new MIL-STD 1388-2B, Logistics Support Analysis Record, is out in pre-publication form. You can get a copy of this publication and any assistance with it from MRSA at the following address:

USAMC Material Readiness Support Activity  
Attn: AMXMD-EL  
Lexington, KY 40511-5001

(606) 293-3962

## MANPRINT NOTES



*From the MANPRINT Program Office*

- MANPRINT implements DODI 5000.2's requirements for Human Systems Integration. The SMMP is the Army's Human System Integration Plan. Army documents should refer to MANPRINT, not HSI.
- AR 70-1 Task Force has completed its work resolving suggested changes to the 6 Nov 91 draft AR. A final coordinating draft is in preparation and should be staffed to HQDA principals shortly.
- Work on Draft DA PAM 70-XX has started again. This PAM is supposed to provide all the "how-to" information needed to implement AR 70-1. 70-XX replaces the old TRADOC/AMC Acquisition Handbook. The new PAM's Table of Contents parallels DODI 5000.2.
- The MANPRINT Directorate will request a waiver on the operational requirements document (ORD) format in DOD 5000.2 M. We will ask that a separate MANPRINT paragraph be substituted for the subparagraph 5c of Part 3, Attachment 1. DODI 5000.2 separates HSI from ILS. The ORD format should be consistent with the instruction. Until we obtain a waiver, we recommend that para 4 c, Critical System Characteristics and para 7, Force Structure, be used as much as possible for MANPRINT-related issues.

## MOVERS & SHAKERS

### PEOPLE IN THE NEWS

• LTC Jim Rowan (pronounced ROW -an) has joined the MANPRINT Directorate as Chief of the Program Division. Previously, Jim was the Assistant PM for SINGARS Testing. His background includes an M.S. Operations Research, an M.B.A., and a tour at DCSRDA.

### YOUR INPUT IS NEEDED!

Have announcements or news about people in your workplace that might be of interest to others in the MANPRINT community? And of course, we're always on the lookout for good articles! Contact Mr. Harry Chipman, HQDA (DAPE-MR), Washington DC 20310; (703) 695-9213.

# MANPRINT: More Important Today

Jan Dykhuis  
U.S. Total Army Personnel Command

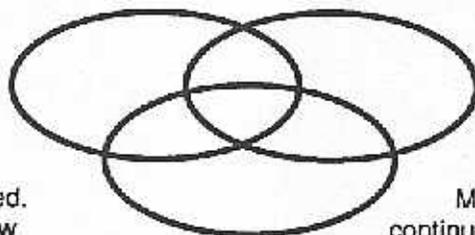
In the next few years, as the Army scales down to a smaller force with fewer personnel and weapon system acquisition programs, the need for MANPRINT will become more critical. This is especially true as the Army's need to achieve total system performance is being challenged by having to do more with less.

We are already committed to the MANPRINT program for two reasons. First, our unprecedented military success during Operation Desert Storm has created an "expectation of excellence from our Armed Forces by Congress and the American people." Second, mediocrity will not be tolerated as tax dollars are stretched. Further, return on investment in new technology must be demonstrated in terms of performance.

The complexity and danger inherent in the modern battlefield makes man-machine integration more critical. This leaves little tolerance for error, and it is our job to diminish this potential for error. The next time our troops are engaged in conflict, they must be equally effective. MANPRINT can help make this happen.

LTG William Reno, Deputy Chief of Staff for Personnel, opened the MANPRINT Conference in May 1991 by assuring participants of his commitment to MANPRINT. "In the past, MANPRINT has focused primarily on the objective of improved weapon performance through human system engineering integration, and although that remains a prime objective, there is a challenge from a new direction--that of organizational change." With the new acquisition corps and other ongoing centralization efforts, law and policy changes have led to a new and narrow emphasis on acquisition. If we are not careful, acquisition will become a dominant force that could threaten to bypass the needs of the user. MANPRINT and other means must be used to balance the process and to influence acquisition from the users' perspective.

Today, MANPRINT is the only program in the materiel acquisition process that integrates the domains of manpower, personnel, training, system safety; health hazards; and human factors engineering toward achieving optimal total system performance. It is almost impossible to work in one domain without having some impact on the others. Without the integration effort, costly mistakes could be made in terms of equipment design and soldier performance. Integrating the MANPRINT domains is the only way to achieve total system performance.



Our hard work in the MANPRINT process will influence Army acquisition decisions. MANPRINT issues and concerns, continuously assessed during the early phases of the acquisition process, are carefully considered by the Army System Acquisition Review Committee (ASARC) to determine whether the program should be terminated, delayed, or allowed to proceed to the next phase of development.

The Army leadership today recognizes the importance of MANPRINT. Army leaders know that a successful MANPRINT effort optimizes total system performance, reduces operation and support costs, and eliminates or reduces health and safety hazards. Hence, the Army Acquisition Executive has mandated that MANPRINT will be a separate major area of consideration in source selection.

As MANPRINT continues to improve in the U.S., a similar program is beginning to take hold in Europe. The British Ministry of Defence now has a fully staffed MANPRINT Office. The French will soon follow. Many other nations are attempting to study our battle tested weapon systems, such as the Apache, JSTARS, Patriot, M1A1, and the Bradley, to find out why they worked so well in Operation Desert Storm.

The Army's Cold War traditional roles and missions are being reexamined in light of the realities of a changing world. LTG Reno stated that he expects MANPRINT to contribute significantly to the future

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# MANPRINT-Related Publications Available from DTIC

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The following MANPRINT-related publications are available from the Defense Technical Information Center (DTIC) for agencies of the Federal government and government contractors holding DTIC accounts. Many other materials are available from DTIC as well. The reference number for each publication is in parentheses.

Advanced Human Factors Engineering Tool Technologies (AD-A195 252)

Army Manpower Cost System (AMCOS) Economic and Budget Cost Models (AD-A162 581)

Directory of Design Support Methods (AD-A229 180)

Early Comparability Analysis (ECA) Procedural Guide (AD-A181 260)

Handbook for Conducting Analysis of the Manpower, Personnel and Training Elements for a MANPRINT Assessment (AD-A235 430)

Health Hazard Assessment Primer (AD-A220 953)

Human Factors Engineering Data Management Handbook (AD-A179 691)

Human Factors Engineering Material for Manpower and Personnel Integration (MANPRINT) Provisions of the Request for Proposal (RFP) (AD-A175 186)

Integration and Application of Human Resource Technologies in Weapon System Design: Consolidated Data Base Functional Specification (AD-A059 298)

Integration of MPT (Manpower, Personnel and Training) Supply and Demand and the System Acquisition Process (AD-A130 229)

Integration of Manpower, Personnel and Training Issues from the Materiel System Acquisition Process Into the Planning, Programming and Budgeting System (AD-A117 553)

Making MANPRINT Count in the Acquisition Process (AD-A210 531)

MANPRINT Analysis Methodology: Victory through Design (AD-A230 494)

MANPRINT Handbook for RFP (Request for Proposal) Development (AD-A188 321)

MANPRINT On-Line (AD-A182 283)

MANPRINT Primer AD-A197 681)

MANPRINT Risk Assessment (AD-A185 995)

A Review of Major Issues Relating to Human-Machine Integration in the Development of Military Systems (AD-A136 739)

System MANPRINT Management Plan (SMMP) Procedural Guide (AD-A171 130)

Training Requirements for the Battlefield Management System (BMS): A Preliminary Analysis. (AD-A185 468)

To order materials or obtain abstracts, contact:

*Defense Technical Information Center (DTIC)  
Cameron Station,  
Alexandria, VA 22304-6045  
AV 284-7633 or COM (703) 274-7633.*

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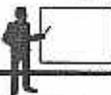
**More Than Ever** (continued from page 8)

Army that we have shaped in concept and are beginning to build in detail.

Yes, we need MANPRINT now more than ever so that we can achieve total system performance while doing more with less.

*For more information, contact Jan Dykhuis, DSN 221-2098 or (703) 325-2098.*

## MANPRINT TRAINING



### MANPRINT Action Officers Course

7 Jan - 17 Jan 92 (Ft. Devens, MA)  
4 Feb - 14 Feb 92 (Ft. Sill, OK)  
25 Feb - 6 Mar 92 (Fl. Leonard Wood, MO)  
16 Mar - 26 Mar 92 (Ft. Gordon, GA)

### MANPRINT for Managers Course

22 Jan - 23 Jan 92 (Ft. Monroe, VA)  
30 Jan - 31 Jan 92 (AMCCOM, Rock Island, IL)  
9 Mar - 10 Mar 92 (Resident, Ft. Lee, VA)  
26 Mar - 27 Mar 92 (Ft. Gordon, GA)

See "MANPRINT INFORMATION" below for contact information.

## MEETINGS OF INTEREST

● 15 - 17 January 1992

**Intl Conference on Hazard Identification and Risk Analysis, Human Factors, and Human Reliability in Process Safety.** Orlando, FL. Contact: ETA, 125 Elm St., POB 2008, Westfield, NJ 07091; 1-800-543-4451.

● 2-4 June 1992

**Concurrent Engineering/CALS Exposition.** Washington, DC. Contact: Mark Hooper, 5411 E. State St., Rockford, IL 61108-2392; (815) 399-8700.

● 22-25 June 1992

**16th Army Science Conference.** Orlando, FL. Contact: A.S.C. Registration, c/o Universal Technology Corp., 4031 COL Glenn Hwy., Dayton, OH 45431-1600; (513) 426-8530.

## ARTICLES & COMMENTS



Articles, comments, and suggestions are welcomed. Mail to: MANPRINT Bulletin, HQDA (DAPE-MR), Attn: Mr. Harry Chipman, Washington, DC 20310-0300; AV 225-9213, COM (703) 695-9213.

## MANPRINT INFORMATION

**POLICY:** MANPRINT Directorate, HQDA (DAPE-MR), Washington, DC 20310-0300. AV 225-9213, COM (703) 695-9213.

**MANPRINT TRAINING:** US Total Army Personnel Command, ATTN: TAPC-PI-MP, 200 Stovall St., Alexandria, VA 22332-0400. AV 221-3706, COM (703) 325-3706.

**PROCUREMENT & ACQUISITION:** US Army Materiel Command, ATTN: AMCDE-AQ, 5001 Eisenhower Ave., Alexandria, VA 22333-0001. AV 284-5696, COM (703) 274-5696.

**HUMAN FACTORS ENGINEERING STANDARDS AND APPLICATIONS:** Human Engineering Laboratory - MICOM Detachment, ATTN: SLCHE-MI, Redstone Arsenal, AL 35898-7290. AV 746-2048, COM (205) 876-2048

**MANPOWER, PERSONNEL AND TRAINING RESEARCH:** US Army Research Institute, ATTN: PERI-SM, Alexandria, VA 22333-5600. AV 284-9420, COM (703) 274-9420.

**TEST & EVALUATION:** Operational Test and Evaluation Command, 4501 Ford Ave, Alexandria, VA 22302-1458; (703) 756-2487.

LTG William H. Reno, Deputy Chief of Staff for Personnel

COL John R. Miller, DCS Personnel Integration, U.S. Total Army Personnel Command (Proponent for Army MANPRINT Training)

Mr. Harry Chipman, ODCSPER Coordinator

Ms. Nan B. Irick, Editor

Harold R. Booher  
Director for MANPRINT

The MANPRINT Bulletin is an official bulletin of the Office of the Deputy Chief of Staff for Personnel (ODCSPER), Department of the Army. The Manpower and Personnel Integration (MANPRINT) program (AR 602-2) is a comprehensive management and technical initiative to enhance human performance and reliability during weapons system and equipment design, development, and production. MANPRINT encompasses the six domains of manpower, personnel, training, human factors engineering, system safety, and health hazard assessment. The focus of MANPRINT is to integrate technology, people, and force structure to meet mission objectives under all environmental conditions at the lowest possible life-cycle cost. Information contained in this bulletin covers policies, procedures, and other items of interest concerning the MANPRINT Program. Statements and opinions expressed are not necessarily those of the Department of the Army. This bulletin is prepared bimonthly under contract for the MANPRINT Directorate, Office of the Deputy Chief of Staff for Personnel under the provisions of AR 25-30 as a functional bulletin.