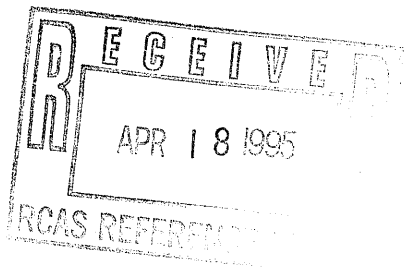
Army Regulation 602–2

Soldier Systems

Manpower and Personnel Integration (MANPRINT) in the System Acquisition Process



Headquarters
Department of the Army
Washington, DC
7 October 1994

UNCLASSIFIED

SUMMARY of CHANGE

AR 602-2
Manpower and Personnel Integration (MANPRINT) in
the System Acquisition Process

This revision--

- Implements DOD Directives 5000.1, 8120.1; DOD Instructions 5000.2, 8120.2, and DOD Manual 5000.2M throughout.
- Clarifies the relationship between the System MANPRINT Management Plan (SMMP) and the DoD Human System Integration Plan (HSIP) (Gloss).
- Expands the scope from Materiel Acquisition to all System Acquisition processes throughout.
- Adds a new seventh domain ''Soldier Survivability'' throughout.
- Redefines the responsibilities of the HQDA Staff, Major Army Commands, and Heads of other Army elements (Chap 2, Sections II, III, and IV).
- Establishes the responsibilities of the Functional Proponent for Major Automated Information Systems (MAIS) (para 2-14).
- Redefines MANPRINT assessment documentation requirements as Domain Reports and MANPRINT Integration Report, establishes the MPT Force Level Assessment, and prescribes their usage throughout.
- Establishes the MANPRINT requirements for Automated Information Systems (Chap 4).
- Revises SMMP policy (Chap 6).
- Redefines the Target Audience Description(TAD) and makes it a SMMP sub-element (Gloss Sect II).
- Expands policy guidance for MANPRINT in Clothing & Individual Equipment (CIE) Acquisition (Chap 5).
- Revises the text for consistency with AR 70-1 acquisition guidance and with DOD acquisition streamlining guidance throughout.
- Eliminates:
  MANPRINT Review
  Suggested Format for the System MANPRINT Management Plan (SMMP) (App C).
  Abbreviated SMMP(App D).
  Sample Source Selection MANPRINT Criteria Weighting (App E).
  AAE Policy Memo (App F)
  MANPRINT data base at Materiel Readiness Support Activity (MRSA)
  SMMP Format (App B).

Headquarters
Department of the Army
Washington, DC
7 October 1994

*Army Regulation 602–2

Effective 7 November 1994

Soldier Systems

Manpower and Personnel Integration (MANPRINT) in the System Acquisition Process

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the Secretary of the Army

History. This UPDATE printing publishes a revision of this publication. Because the publication has been extensively revised, the changed portions have not been highlighted.

Summary. This regulation implements Department of Defense (DOD) Directive 5000.1, DOD Instruction 5000.2, DOD Manual 5000.2–M, DOD Directive 8120.1, DOD Instruction 8120.2, AR 25–3, and AR 70–1 and is the basis for establishing effective integration of manpower, personnel, training, human engineering, health hazards, system safety, and soldier survivability considerations into the acquisition of Army Materiel, Information, or Clothing and Individual Equipment (CIE) systems. It prescribes policies and assigns responsibilities for the Army Manpower and Personnel Integration (MANPRINT) Program. The MANPRINT Program influences the design of systems and associated support requirements so that developmental, nondevelopmental, and modified systems can be operated, maintained, and supported to improve total system performance and reduce costs of ownership by focusing on the capabilities and limitations of the human.

Applicability. This regulation applies to the Active Army, the Army National Guard, and the U.S. Army Reserve.

Proponent and exception authority. The proponent of this regulation is the Office of the Deputy Chief of Staff for Personnel. The proponent has the authority to approve exceptions to this regulation that are consistent with controlling law and regulation. Proponents may delegate this authority, in writing, to a division chief under their supervision within the proponent agency who holds the grade of colonel or the civilian equivalent.

Army management control process. This regulation contains management control provisions in accordance with AR 11–2, but does not contain checklists for assessing management controls. Alternative management control reviews are used to accomplish assessment of management controls.

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from HQDA (DAPE–MR), WASH DC 20310-0300.

Interim changes. Interim changes to this regulation are not official unless they are authenticated by the Administrative Assistant to the Secretary of the Army. Users shall destroy interim changes on their expiration dates unless sooner superseded or rescinded.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to HQDA (DAPE-MR), WASH DC 20310-0300.

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*This regulation supersedes AR 602-2, 18 May 1990.

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Chapter 1
Introduction

1–1. Purpose

This regulation—

a. Establishes policy, responsibilities, and documentation requirements for implementing and supporting Manpower and Personnel Integration (MANPRINT) which implements DOD Directives 5000.1, 8120.1 ; DOD Instructions 5000.2, 8120.2, and DOD Manual 5000.2M.

b. Emphasizes front-end planning of soldier-system design for optimum total system performance as part of the Army Acquisition Policy (AR 70–1); Army Life Cycle Management of Information Systems (AR 25–3); and Life Cycle Management of Clothing and Individual Equipment (AR 700–86) which are referred to collectively as "system acquisition."

1–2. References

Required and related publications and prescribed and referenced forms are listed in Appendix A.

1–3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

1–4. The MANPRINT Program

a. MANPRINT is the Army's program to ensure that the "human" is fully and continuously considered as part of the total system in the development and/or acquisition of all systems and that human performance is always considered as part of "total system performance."

b. MANPRINT integrates and facilitates trade-offs among the following domains but does not replace individual domain activities, responsibilities, or reporting channels:

(1) *MANPOWER (MP)*
(2) *PERSONNEL (PER)*
(3) *TRAINING (TNG)*
(4) *HUMAN ENGINEERING (HE)*
(5) *SYSTEM SAFETY (SS)*
(6) *HEALTH HAZARDS (HH)*
(7) *SOLDIER SURVIVABILITY (SSv)*

c. To ensure MANPRINT is embedded in the system acquisition process, analytical tools must be applied when they can provide the greatest influence to the total system. MANPRINT Assessments will be conducted prior to Milestone Decision Reviews (MDR) I, II, III and IV for each system (Acquisition Category (ACAT) I thru IV and Major Automated Information System Review Council (MAISRC) systems) to ensure MANPRINT has been properly applied and to identify the impacts thereof.

d. The MANPRINT Joint Working Group (MJWG) is the body of expertise formed to assist the functional proponent in ensuring MANPRINT principles are applied to the system. The plan for execution to resolve identified issues and risks is the "System MANPRINT Management Plan (SMMP)."

e. MANPRINT program requirements will be communicated to industry through the Request for Proposal (RFP) process.

1–5. Filing and Records Keeping

A MANPRINT case file by system (MARKS No. 602–2a) will be established by all Army organizations involved in MANPRINT activities (See AR 25–400–2).

Chapter 2
Responsibilities

Section I
Army Acquisition Executive (AAE), Program Executive Officer (PEO), and Program/Project/Product Manager (PM)

2–1. Army Acquisition Executive (AAE)

The AAE will include MANPRINT as appropriate in directives and policy statements concerning system acquisition.

2–2. Program Executive Officer (PEO)

The PEO will hold the PMs responsible for properly funding and executing the MANPRINT Program.

2–3. Program/Project/Product Manager (PM)

The PM will—

a. Execute the MANPRINT Program for all systems including Nondevelopmental Items (NDI) and separately managed modification efforts.

b. Include MANPRINT as a separate major area, and integrate into other appropriate areas, in the source selection process. Request personnel qualified in specific MANPRINT domains from proponent and support agencies to participate as members of the Source Selection Evaluation Board (SSEB).

c. Participate in the MJWGs. For Materiel Systems assume lead, chair the MJWG post Milestone 1, and with the Combat Developer (CD) jointly approve the SMMPs prior to each MDR. For MAISRC systems assume lead, chair the MJWG post Milestone 0, and with the Functional Proponent (FP) jointly approve the SMMPs prior to each MDR.

d. Provide resources and proper funding for effective MANPRINT Program implementation and maintenance.

e. Provide, in appropriate sections of the Integrated Logistics Support Plan (ILSP), for the use of a common task data base in the ILS and MANPRINT programs (especially at the point of linkage between Logistic Support Analysis (LSA) Report 018 and the process of task performance analysis.

f. Resolve MANPRINT issues and concerns as a prerequisite for type classification before production.

g. Monitor system prime contractor's and subcontractors' accomplishment of MANPRINT objectives and requirements as specified in the Statement of Work (SOW).

h. Ensure that the MANPRINT status and issues are briefed during the Army Systems Acquisition Review Council (ASARC) and/or the Major Automated Information Systems Review Council (MAISRC)

i. Ensure MANPRINT domain representatives participate in Advance Technology Demonstrations (ATDs) and Top Level Demonstrations (TLDs).

j. Ensure MANPRINT considerations, as referenced in the SMMP, are addressed in the Test and Evaluation Master Plan (TEMP).

Section II
HQDA Elements

2–4. Assistant Secretary of the Army (Manpower and Reserve Affairs) (ASA(MRA))

The ASA(MRA) will—

a. Exercise primary Secretariat responsibility for the MANPRINT Program.

b. Coordinate with Deputy Chief of Staff for Operations and Plans (DCSOPS); Deputy Chief of Staff for Personnel (DCSPER); Deputy Chief of Staff for Logistics (DCSLOG); and Director of Information Systems for Command, Control, Communications, and Computers (DISC4) to ensure that the manpower, personnel, and training requirements to support systems are integrated into the Army long range planning processes, including the Total Army Analysis, to ensure that systems, when fielded, should be adequately manned and supported.

c. Review the Army Soldier-Oriented Research and Development (SORD) program and human performance Research, Development, Test and Evaluation (RDT&E) efforts.

d. Review the Manpower Estimate Report (MER) required by Section 2434, Title 10, U.S. Code, and the Manpower Bill Payer Plan, both of which are provided by ODCSOPS. Transmit the approved MER to the Office of the Assistant Secretary of Defense (Personnel and Readiness).

2–5. Assistant Secretary of the Army (Research, Development, and Acquisition) (ASA(RDA))

The ASA(RDA) will—

a. Establish Army policy and guidance for integrating MANPRINT within the research, development, and acquisition community.

b. Fund contracted MANPRINT studies and development of methodologies.

c. Include Research, Development, Test, and Evaluation (RDT&E) funds for MANPRINT in the annual submission for the Program 6 budget.

2–6. Director of Information Systems for Command, Control, Communications, and Computers (DISC4)

The DISC4 will—

a. Integrate MANPRINT considerations into requirements documents for acquisition of information management systems.

b. Sponsor RDT&E activities to develop technology for measuring the effectiveness of Automated Information Systems (AIS) and for estimating the effectiveness of AIS components and design concepts. Ensure application of MANPRINT methodologies to hardware and software development, modification, and acquisition programs that come under the responsibility of the Information Mission Area (IMA).

2–7. Director of Army Safety (DASAF)

The DASAF will—

a. Develop, coordinate, and disseminate system safety policies defining the interface with the other MANPRINT domains.

b. Provide System Safety domain reports.

c. Provide the ODCSPER (MANPRINT Directorate) a copy of the independent safety assessment provided to the ASARC Secretary for ASARC systems and a copy of independent safety assessment for MAISRC systems.

d. Make the Army automated safety information data base accessible to MANPRINT practitioners.

2–8. Deputy Chief of Staff for Personnel (DCSPER)

The DCSPER will—

a. Exercise primary Department of the Army (DA) staff responsibility for the MANPRINT Program to include but not limited to:

(1) preparing the MANPRINT Assessment for the ASARC and MAISRC reviews;

(2) encouraging the establishment of civilian programs and policies to ensure sufficient numbers of MANPRINT qualified professionals are available in the work force to support the implementation of the MANPRINT programs;

(3) providing career progression paths within the Army to ensure that enough MANPRINT practitioners with proper knowledge, skills, and abilities are available to meet program requirements; and

(4) supporting efforts to incorporate MANPRINT management concepts in educational curricula of government and private institutions.

b. Establish, coordinate, and disseminate DA MANPRINT program policy, guidance, procedures, and documentation formats to all Army commands and agencies.

c. Establish policy, in coordination with ODCSLOG, on how MANPRINT and ILS programs will interface.

d. Oversee, in coordination with PERSCOM (DCSPLANS) and TRADOC, the content and quality of MANPRINT training courses.

e. Oversee the application of MANPRINT in Army combat models and analyses.

f. Serve as the proponent for the MANPRINT technical base research and development program and identify and prioritize research needs. Coordinate the MANPRINT technical base program with the SORD program under AR 70–8. Encourage industry to initiate Independent Research and Development (IR&D) projects which support and improve MANPRINT technology.

g. Serve as Army focal point for MANPRINT Program interface with other services, government agencies, and international programs as pertains to policy, standards, and research and development. Sponsor an annual MANPRINT Practitioners Conference to further professional coordination and collaboration among manpower, personnel, training, human engineering, system safety, health hazards and soldier survivability specialists in government, industry, and the academic community in both the U.S. and allied nations.

2–9. Deputy Chief of Staff for Logistics (DCSLOG)

The DCSLOG will—

a. Establish policy, in coordination with the ODCSPER, on how the ILS and MANPRINT programs will interface.

b. Provide ODCSPER with a copy of the ILS Assessment for all ASARC and MAISRC systems.

2–10. Deputy Chief of Staff for Operations and Plans (DCSOPS)

The DCSOPS will—

a. Establish Army policy and guidance for ensuring the integration of MANPRINT into the Army training program in coordination with ODCSPER.

b. Establish and publish Army training policy and guidance for new and improved systems in AR 350–35, Army Modernization Training.

c. Assure MANPRINT is appropriately addressed during approval of critical operational issues and criteria for ACAT I and II materiel systems.

d. Ensure MANPRINT requirements are included during the preparation of requirements documents for systems and non-systems training devices/simulations and simulators.

e. Ensure that MANPRINT is considered in Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI) policy (See AR 71-2).

f. Integrate the results of MANPRINT analyses and models into force development modeling for mature systems.

g. Ensure that MANPRINT is considered in policy regarding formulation of materiel objectives and requirements (AR 71–9).

2–11. Deputy Chief of Staff for Intelligence (DCSINT)

The DCSINT will establish policy and guidance to integrate MANPRINT principles into the development and acquisition of intelligence and security systems.

2–12. The Surgeon General (TSG)

TSG will—

a. Exercise primary Department of the Army (DA) staff responsibility for the health hazard assessment program.

b. Through the U.S. Army Medical Command (Provisional) (MEDCOM):

(1) provide consultation and advice on medical aspects of MANPRINT. (See AR 40–10 and AR 40–5).

(2) establish and issue all medical policies that relate to exposure of personnel to actual or potential hazards throughout the life cycle in support of the MANPRINT program.

(3) develop the physiological, medical, and health standards data bases needed to support the MANPRINT program.

2–13. Chief of Engineers (CE)

The CE will—

a. Establish MANPRINT programs that incorporate the provisions of this regulation in their systems acquisitions.

b. Ensure research findings relating to or affecting human performance are reported to ODCSPER (DAPE-MR).

2–14. Functional Proponent (FP)

The FP for MAISRC level systems will—

a. Ensure the implementation of the MANPRINT program in all MAISRC level systems which use Information Mission Area (IMA) resources.

b. Prepare the MPT Domain Report, in conjunction with the Total Army Personnel Command (PERSCOM) (DCSPLANS), for inclusion in the MANPRINT Integration Report prior to MDR I, II, and III.

c. Initiate and chair the MJWG pre-milestone 0 to develop MANPRINT goals and constraints for the MNS. Serve as a member of all subsequent MJWGs.

d. In concert with the MAISRC level system PM, jointly approve the SMMP prior to each MDR.

Section III
Commanders of Major Army Commands

2–15. Commanding General, U.S. Army Training and Doctrine Command (CG, TRADOC)

The CG, TRADOC will—

a. Establish and chair the MJWG and initiate SMMP development in conjunction with identification of the most promising materiel concepts.

b. Provide support for each MJWG.

c. Approve, along with Program Sponsor, the SMMPs for materiel acquisitions.

d. Conduct MANPRINT training for the Army in accordance with guidance from the proponent, PERSCOM (DCSPLANS).

e. Ensure TRADOC System Managers (TSMs) receive MANPRINT training.

f. Include MANPRINT responsibilities in TSM charters.

g. Identify the total proposed system training burden (in time and cost) of operations, maintenance and support personnel, to include training aids and devices, and how that training links with their projected aptitudes and total system performance (both effectiveness and availability).

h. Describe the operational and maintenance training concept (pipeline, training devices, embedded training/onboard training, interactive course ware). Identify manpower, personnel, and training constraints. Establish objectives and thresholds if applicable for training. Specify the manpower and training methodologies to be used.

i. Include MANPRINT considerations in Cost and Operational Effectiveness Analyses (COEA), Mission Need Statements (MNS), Operational Requirements Documents (ORD), and Critical Operational Issues and Criteria (COIC). All other procurement and requirement documents should have MANPRINT issues and considerations cross walked through them.

j. Ensure the timely consideration and development of MANPRINT requirements in systems and nonsystem training devices/simulations and simulators for which HQ TRADOC is the proponent.

k. Represent the user throughout the system acquisition process.

l. Based on input from the materiel developer, produce MPT domain reports for all materiel systems for which TRADOC is proponent.

m. Ensure that system safety engineers are assigned to support materiel acquisition programs.

2–16. Commanding General, U.S. Army Materiel Command (CG, AMC)

The CG, AMC will—

a. Through Army Research Laboratory (ARL) provide technical assistance on integration of the MANPRINT Program (including inputs from manpower, personnel, training, human engineering, system safety, health hazards and soldier survivability) into the materiel research, ATDs and TLDs, developmental, nondevelopmental, and systems modifications acquisition programs.

b. Through Army Research Laboratory-Human Research and Engineering Directorate (ARL–HRED):

(1) Conduct exploratory development of MANPRINT tools and techniques and research into soldier capabilities in emerging technologies.

(2) Provide MANPRINT support on the development of materiel and information system technology bases and Advanced Technology Transition Demonstrations (ATTDs).

(3) Provide support to Battle Labs Advanced Warfighting Experimentation.

(4) Produce MANPRINT Integration Reports for materiel systems.

(5) Provide Human Engineering domain reports for materiel and MAISRC systems.

(6) Provide technical advisory assistance to combat developers in developing the MPT analyses and domain report for a system.

(7) Support developmental and operational test and evaluation through review of plans and perform specialized data collection and analysis as requested, in conjunction with MJWGs and Test Integration Working Groups (TIWGs).

(8) Support MJWGs.

(9) Support Program Sponsors.

(10) Include MANPRINT technology in DOD standards.

(11) Review MANPRINT portions of IR&D proposals submitted by industry.

(12) Provide MANPRINT input to the Program Risk Assessments.

(13) Provide HE support to the Combat and Training Developers during development of concepts, studies, analyses, system requirements, and user tests and evaluations.

c. Through Army Research Laboratory-Survivability and Lethality Analysis Directorate (ARL–SLAD):

(1) Provide Soldier Survivability domain reports.

(2) Support MJWGs.

(3) Support Program Sponsors.

d. Design, develop, and produce systems which meet MANPRINT requirements.

e. Provide resources, including funding, for effective MANPRINT program implementation and maintenance.

f. Provide a MANPRINT manager for all AMC-developed materiel systems.

g. Provide representation to all Special Tasks Force (STFs) and Special Study Groups (SSGs) to ensure that MANPRINT is considered early and throughout the system acquisition process. (See AR 71–9.)

h. Ensure that relevant MANPRINT material contained in the SMMP and ORD are contained in the appropriate sections of ILSPs and RFPs for which AMC is responsible.

i. Include MANPRINT as a separate major area, and integrate into other appropriate areas, in the source selection process. Request personnel qualified in specific MANPRINT domains from proponent and support agencies to participate as members of the SSEB.

j. Chair the MJWG, post milestone I, for AMC managed systems.

k. Ensure technical trade-off analyses include human performance reliability considerations.

l. Include MANPRINT in developmental tests of systems by measuring and reporting the performance of the manned system under controlled conditions. Identify and document MANPRINT problems and concerns.

m. Prepare System Safety domain reports for materiel systems.

n. Request a review of health hazards by Army Medical Department Center and School (AMEDDC&S) during each phase of the acquisition program. Provide data required to identify potential health hazards.

o. Prepare MANPRINT Assessments to support MDRs for ACAT III & IV systems.

p. Ensure MANPRINT training is provided to all scientists, engineers, logisticians and contract management personnel involved in the research and development process.

q. Approve or disapprove, based on recommendations submitted by ARL–HRED, IR&D proposals concerning MANPRINT submitted by industry.

2–17. Commanding General, U.S. Army Medical Command (Provisional) (CG, MEDCOM)

The CG, MEDCOM will—

a. Through the U.S. Army Environmental Hygiene Agency (HSHB-MO-A), Aberdeen Proving Ground, Maryland 21010-5422, prepare system Health Hazard domain reports for inclusion in the MANPRINT Integration Report throughout the development and acquisition cycle. Provide technical assistance to medical personnel supporting MANPRINT Joint Working Groups and provide medical input to related system acquisition documents. Provide technical assistance to combat and materiel developers.

b. Through the Preventive Medicine Activities at installations provide reviews of MANPRINT and requirements documents during the Concept Exploration and Definition Phase and subsequent phases to identify potential health hazards issues.

c. Through the U.S. Army Medical Department Center and School (HSMC–FCM), Fort Sam Houston, Texas 78234–6100:

(1) provide reviews of MANPRINT and requirements documents during Concept Exploration and Definition and subsequent phases to identify potential health hazards.

(2) as medical combat developer, plan and execute a MANPRINT program for Medical (Class VIII) materiel development and acquisition.

(3) provide representation at MJWGs as required for HHA.

d. Through the Commanding General, U.S. Army Medical Research, Acquisition and Logistics Command (Provisional) (USAMRDAL):

(1) Establish MANPRINT programs that will incorporate the provisions of this regulation in their materiel acquisition and testing responsibilities.

(2) Provide System Safety domain reports for their medical materiel acquisition systems for inclusion in the MANPRINT Integration Reports of their respective programs.

(3) Ensure research findings relating to, or affecting human performance, reliability, and soldier survivability are reported to ODCSPER (DAPE–MR).

(4) Maintain a research program to characterize the behavioral, physiological, and toxicological responses to military unique exposures common to generic Army systems. Maintain an ongoing research program to elucidate the mechanism of action for behavioral exposures common to generic Army systems. Assist, on a reimbursable basis, Combat and Materiel Developers in the design and execution of developer sponsored studies, to obtain biomedical data required for proper assessment of individual systems.

2–18. Commanding General, U.S. Army Information Systems Command (CG, ISC)

The CG, ISC will—

a. Develop implementing MANPRINT policy and procedures for non-major AIS and other IMA systems.

b. Provide MANPRINT support to functional users, functional proponents, and PMs.

c. Provide system safety support to the MJWGs for AIS.

d. Provide System Safety domain reports on AIS systems.

e. Provide resources, including funding, for effective MANPRINT Program implementation and maintenance.

2–19. Commanding General, U.S. Army Intelligence and Security Command (CG, I&SC).

The CG, I&SC will—

a. Establish MANPRINT programs that incorporate the provisions of this regulation in their systems acquisitions.

b. Ensure research findings relating to or affecting human performance are reported to ODCSPER (DAPE-MR).

2–20. Commanding General, U.S. Army Space and Strategic Defense Command (CG, SSDC)

The CG, SSDC will—

a. Establish MANPRINT programs that incorporate the provisions of this regulation in their systems acquisitions.

b. Ensure research findings relating to or affecting human performance are reported to ODCSPER (DAPE-MR).

Section IV
Heads of Other Army Elements

2–21. Commanding General, U.S. Army Operational Test and Evaluation Command (CG, OPTEC)

The CG, OPTEC will—

a. Analyze unresolved MANPRINT issues in the SMMP as potential Operational Test & Evaluation (OT&E) issues.

b. Develop MANPRINT Additional Operational Issues and Criteria (AOIC) as required.

c. Validate that operational test participants are representative of the user population in the Target Audience Description (TAD).

d. Provide representation to the TIWG and MJWG.

e. Ensure Test and Evaluation Plans (TEP) address collection of time and accuracy data for critical tasks by performer and duty position.

f. Ensure human resource expenditures during Initial and Follow-on Operational Tests are consistent with personnel sections of proposed Table of Organization and Equipment (TOE) and Tables of Distribution and Allowances (TDA).

g. For Automated Information Systems, evaluate effectiveness and suitability of human-computer interfaces.

2–22. Commanding General, U.S. Total Army Personnel Command (CG, PERSCOM)

The CG, PERSCOM, specifically the Deputy Chief of Staff for Plans, Force Integration and Analysis (DCSPLANS), will—

a. Develop, manage and institutionalize MANPRINT training within the Army.

b. Review system's objectives, requirements documents, SMMPs, acquisition strategy documents, and other pertinent acquisition related documents for ASARC and MAISRC systems in development or modification.

c. Draft the DA ODCSPER MANPRINT Assessment for ASARC and MAISRC systems.

d. Produce the MPT Force Level Assessments for ASARC and MAISRC systems.

e. Prepare, in conjunction with the FP, the MPT domain reports for input into the MANPRINT Integration Report for MAISRC systems.

f. Prepare MANPRINT Integration Reports for MAISRC systems.

g. Support the MAISRC systems MJWGs.

h. Manage the FOOTPRINT relational data base for the Total Army.

i. Collect, catalog, review, and distribute technical information on MANPRINT, including methods, tools, and techniques.

2–23. Director, U.S. Army Materiel Systems Analysis Activity (AMSAA)

The Director, AMSAA, as the logistician in the materiel acquisition process for other than medical equipment (AR 700–127), will—

a. Review and recommend changes to requirements documents, SMMPs, ILSPs, materiel fielding documents, solicitation documents, other program management and LSA documentation for MANPRINT and ILS considerations.

b. Participate in MJWG activities, when appropriate.

c. Ensure MANPRINT considerations and unresolved MANPRINT issues in the SMMP are included in Test Design Plan (TDP), Independent Evaluation Plan (IEP), Independent Evaluation Report (IER) and TEMP.

Chapter 3
MANPRINT in the Materiel Acquisition Process

3–1. Introduction

a. MANPRINT is intended to influence the design of developmental systems and the selection of nondevelopmental systems with the primary goals of *achieving maximum total system effectiveness* at a *reasonable cost of ownership.* The implementation of MANPRINT impacts total system performance (both effectiveness and availability) making explicit the role that *soldier* performance plays (and how that performance is shaped by design factors). MANPRINT also addresses the MPT resources needed to achieve the required performance and, where possible, indicates more affordable configurations of MPT resources.

b. The engineering design philosophy of MANPRINT is focused on optimum system performance on the battlefield, which includes consideration of both soldier and equipment capabilities and survivability. MANPRINT is an *option-oriented process* as opposed to an objective-oriented process. The MANPRINT process will provide decision makers information upon which to make trade-offs in areas such as quality and numbers of people, training times, technology, conditions, standards, costs, survivability, safety, health hazards risks, design and interface features, and personnel assignment policy.

3–2. MANPRINT in System Design and Development (Phases 0 through IV)

a. MANPRINT technology base activities are concerned with increasing the body of knowledge relevant to actual or potential military human performance requirements. MANPRINT research and development produces information relevant to the design of systems, equipment, and facilities. MANPRINT focuses on defining the human-centered issues identified for any given developmental approach. In addition, MANPRINT research focuses on emerging technologies to identify soldier performance enhancements and limitations and to indicate the most effective use of technology to replace or supplement human activity.

b. MANPRINT supports determination and definition of system or materiel needs by providing total system performance forecasts for various concepts and by estimating the MPT costs of alternatives. Human performance reliability data should be collected and evaluated to determine whether the proposed system concept delivers the expected performance using personnel with no greater aptitudes and no more training than planned.

c. MANPRINT supports the concept and studies activities through analyses focused on the human element impact on operational effectiveness and manpower resources.

d. MANPRINT front-end analyses performed early in the development process should focus on predecessor systems and lessons learned.

e. MANPRINT products, requirements, and activities should be integrated into the system procurement documents and processes (specifically the RFP, SOW, and Work Breakdown Structure (WBS)). Preparation for contracting is made by tailoring of appropriate military specifications, standards, and contract data item descriptions, and by composing appropriate work statements, system specifications, and portions of Section L and M of the solicitation package.

f. MANPRINT should be integrated into the source selection process as a separate major area of evaluation.

g. The SMMP should be prepared by the existing MJWG at the time the Mission Need Statement (MNS) is approved. The SMMP should contain the Measures of Effectiveness (MOE) and Measures of Performance (MOP) for obtaining measures of soldier performance to be used in assessing total system performance as well as the MANPRINT exit criteria which the system must demonstrate before transitioning to the next phase of development. The SMMP should be reviewed and updated for each MDR.

h. The MJWG will oversee and coordinate the MANPRINT activities.

i. The MANPRINT domain experts for Manpower, Personnel, and Training shall provide input to development of paragraph 5, "Constraints" of the MNS. The MANPRINT domain experts shall provide input to development of the MANPRINT portions of the ORD, including critical system characteristics, any particular performance requirements, and the clothing and individual equipment with which the system will ordinarily be expected to interface.

j. As appropriate, MANPRINT data should be developed to support the COEA, BOIP, and QQPRI.

k. MANPRINT should be a topic to be covered in all design reviews.

l. MANPRINT issues and criteria should be included in tests and evaluations conducted based on the MOEs and MOPs stated in the SMMP.

m. Determination should be made as to whether or not the MANPRINT exit criteria were met.

n. A MANPRINT Assessment shall be prepared for Milestone I and updated for each subsequent MDR.

o. In preparation for fielding, MANPRINT actions should ensure new equipment training and institutional training are ready to prepare personnel to operate, maintain, and support the emerging materiel, and manpower spaces are documented with sufficient lead time to ensure that personnel with the requisite skills and abilities are available to fill these spaces.

p. MANPRINT activities should continually assess the fielded system for potential improvements that could enhance MANPRINT aspects of the system or the potential follow-on systems. MANPRINT problems not resolved during materiel development should be addressed, resolved, or reconciled during the fielding of the system. MANPRINT analyses should validate total system performance and the level of MPT saved and/or consumed as a result of the deployment of the system. Lessons learned data should be collected so MANPRINT procedures and the current or future system can be improved.

3–3. MANPRINT in Nondevelopmental Items (NDI)

a. MANPRINT contributions to NDI acquisition are similar to those made for system development programs. The selection of an NDI acquisition strategy does not eliminate the requirement to apply MANPRINT to the program.

b. As with other acquisition strategies, the principal means of managing the MANPRINT program in NDI procurement is with the SMMP.

c. MANPRINT portions of source selection plans should contain language highlighting the risks to the Army associated with any offeror's proposal whose total system performance cannot be forecast.

d. MANPRINT should be an evaluation factor in the Market Survey.

e. A MANPRINT Assessment shall be prepared for Milestone I and updated for each subsequent MDR.

3–4. MANPRINT in Systems Modifications

a. MANPRINT is critical to all systems modifications. In general, the same MANPRINT activities executed during the system development process should be part of the system modification process but at a level appropriate to the magnitude of the change. Care should be taken to insure that configuration changes do not bring fresh MANPRINT problems.

b. As in other acquisition strategies, the SMMP is the primary means of managing the MANPRINT Program during the systems modification.

c. A MANPRINT Assessment for the modified system shall be prepared for Milestone I and updated for each subsequent MDR.

Chapter 4
MANPRINT in the Major Automated Information System Acquisition Process

4–1. MANPRINT in the System Design and Development (Phase 0 through IV)

a. The Functional Proponent (FP) for the system should initiate the MJWG, appoint a chairperson, and invite participation from organizations and agencies involved in the related domains and technologies. The MJWG shall develop the MPT constraints for inclusion in the MNS based on lessons learned from the current system and/or process. The MJWG shall oversee and coordinate all MANPRINT activities.

b. After approval Milestone 0 (Concept Studies Decision) the Program Manager (PM) assumes the chair of the MJWG and the lead for the MANPRINT effort.

c. The SMMP should be developed upon approval of a MNS in accordance with this regulation, and should be reviewed, updated, and approved prior to each MDR. Joint approval by the FP, PM, and CD (if applicable) is required.

d. If the system is being developed under the accelerated software development process and there are incremental blocks or modules, an Annex to the SMMP should be developed for each block or module. The annex should contain issues and TADs relevant to that block or module.

e. MANPRINT products, requirements, and activities should be integrated into the system procurement documents and processes-specifically the RFP, SOW, and the source selection evaluation criteria.

f. A MANPRINT Assessment shall be prepared and submitted prior to each MDR (I through III).

g. In preparation for deployment, emphasis should be placed to ensure that all MANPRINT issues have been resolved. Specific responsibilities for post-fielding MANPRINT analyses should be identified and in place. At the end of the deployment phase the responsibility for MANPRINT will transfer to the AIS Operations Manager.

h. MANPRINT activities shall continually assess the deployed system for potential improvements by analyzing the collected data according to the schedule in the revised SMMP. The gathering of "Lessons Learned" data concerning problems that were not detected during design and development should be used to ensure that MANPRINT procedures for the current or future systems can be improved.

4–2. MANPRINT for Tailored or Compressed Acquisition

a. The total system performance concept (which includes the human as a major part of the system) allows accelerated acquisition, especially when there is improved front-end planning and analyses. This concept includes acquisition of commercial off-the-shelf hardware and software. The SMMP is still developed and, as a living management tool, should be continually updated.

b. Continued MANPRINT application can reduce or eliminate any potentially adverse impacts of an accelerated acquisition. A Project Board may be appointed to oversee the development of the increments or modules for accelerated software development programs. If there is a significant MANPRINT risk on any or all of the increments or modules, the Project Board should have an ODCSPER member to assess that risk.

Chapter 5
MANPRINT in the Acquisition of Clothing and Individual Equipment (CIE)

5–1. Introduction

a. CIE refers to materiel worn or carried by the soldier during mission performance. These items normally serve to protect the soldier and increase survivability. These items range from body armor to boots and socks. An extensive list of CIE items is given in Common Table of Allowances 50–900.

b. The MANPRINT interest in CIE lies in the form, fit, function and body or skin compatibility of these items. CIE items must be compatible with other military systems to optimize total system performance.

c. CIE is acquired by both developmental and nondevelopmental acquisition. Historically, the acquisition of CIE has been governed by AR 700–86 (not AR 70–1 or AR 25–3), and falls into the category of "non-major systems," thus the Materiel Developer plays a greater role in the preparation of CIE item requirements and documentation.

5–2. MANPRINT in CIE Development

a. Concept Exploration and Definition. The Combat Developer prepares the Mission Need Statement (MNS) which documents operational capability needs in broad terms. An AMC Research, Development and Engineering Center (RDEC) (usually Natick) provides a technical review of the MNS for feasibility of meeting this need. The Operational Requirements Document (ORD) should specify critical operational issues within each MANPRINT domain. The ORD is written by the Combat Developer, and an AMC RDEC (usually Natick) provides technical review. User schools and test agencies may also provide a review of the ORD.

b. Demonstration and Validation (Phase I of Development). The organization charged with applying MANPRINT during this phase should participate in writing the detailed functional specification of the item and the appropriate portions of the acquisition and procurement documents. Any contractual efforts for research, design or prototyping of CIE should include MANPRINT in the RFP, SOW and in the evaluation criteria.

c. Engineering and Manufacturing Development (Phase II of Development). Organizational functions are the same as noted in paragraph *b* above.

d. Production (Phase III of Development). Contractual efforts for production of CIE items should include MANPRINT in the RFP Statement of Work and in the evaluation criteria.

5–3. MANPRINT in Testing of CIE

a. Critical MANPRINT issues and criteria should be included in all test plans and reports. During testing of the item, particular attention should be paid to issues of compatibility with other equipment with which the items must be used. Where appropriate, actual performance measures should be made to confirm the absence of design characteristics which negatively affect required performance.

b. The organization charged with applying MANPRINT during the acquisition of the CIE item should participate in the writing of the TEMP and other test plans.

5–4. CIE MANPRINT Documentation

a. The SMMP should be prepared for Milestone I and updated for each subsequent MDR.

b. A MANPRINT Assessment shall be prepared for Milestone I and updated for each subsequent MDR.

Chapter 6
System MANPRINT Management Plan (SMMP)

6–1. Introduction to the SMMP

a. The SMMP is a planning and management tool that outlines and documents the MANPRINT management approach, associated decision and planning efforts, user concerns, and resolution of MANPRINT issues during system acquisition. Identification and documentation of these issues early in the acquisition cycle increases the probability of their resolution thereby enhancing total system performance, affordability, supportability and conservation of the Army's resources.

b. The SMMP is the cornerstone of the MANPRINT effort to ensure human considerations are effectively integrated into the development and acquisition of Army systems.

(1) The SMMP enhances and documents the Army's effort to focus on total system performance. Consequently, goals to optimize total system performance and reduce the cost of ownership must consider military and civilian personnel, constructing, operating, maintaining, training, supporting, and disposing of systems.

(2) The SMMP serves as a record of the continuous evolution of a system. At a minimum, it provides a status update prior to each MDR. Specifically, objectives for the system's human element that are established at Milestone I and are traceable to readiness, force structure, affordability, and wartime operational objectives must be updated at successive milestone decision points.

(3) The SMMP documents the MANPRINT issues that arise during the acquisition of a system and contains the plans and schedule of MANPRINT activities to resolve these issues and any subsequent issues identified during a system's life cycle. The data bases and analyses that may provide answers for MANPRINT issues are also identified in the SMMP along with references to other MANPRINT data sources.

(4) Information contained in the SMMP "feeds" other documents (e.g., ORD, Functional Description (FD), TEMP, RFP, STRAP). Likewise, new MANPRINT information contained in other documents will "feed" the SMMP.

6–2. Preparation and Approval of the SMMP

a. The MJWG shall prepare the SMMP upon approval of a MNS.

b. The SMMP shall contain, at a minimum, the information identified in this regulation.

c. A SMMP should be prepared for each developmental, nondevelopmental, system modification, non-major systems and non-system training device or simulator prior to Milestone I and updated for each subsequent MDR.

d. For materiel systems, the SMMP should be jointly approved by the Combat Developer and the Materiel Developer or Program Sponsor.

e. For MAISRC systems, the SMMP should be jointly approved by the Functional Proponent (Combat Developer, where applicable) and the PM.

f. For medical systems, the SMMP should be jointly approved by the Combat Developer and the AMEDDC&S Materiel Developer.

g. Copies of the approved SMMP should be furnished to HQDA ODCSPER (DAPE–MR), HQ PERSCOM (TAPC–PLM), HQ TRADOC (ATCD–RM), HQ AMC (ARL–HRED), and AEHA (HSHB–MO–A) by the MJWG..

Chapter 7
MANPRINT in the Source Selection Process

7–1. Treatment of MANPRINT

a. MANPRINT should be a separate major area of the same visibility as performance, management, and cost and should be evaluated throughout all aspects of design, development, integrated logistic support, and program management.

b. Treatment of MANPRINT should be tailored to suit the nature and priorities of the program and contract effort.

7–2. Implementation

a. The SOW should contain appropriate MANPRINT tasks for the contractor to perform and provision for that work should be made in the contract WBS.

b. The specifications should describe how the system is to look and act to the user and in the quality assurance paragraphs, how those requirements should be verified.

c. MANPRINT data (i.e., program plans, reports, drawings) to be delivered under the contract should be included in the Contract Data Requirements List (CDRL).

d. MANPRINT considerations should be included in Section L, Instructions to Offerors, and Section M, Evaluation Factors for Award.

e. MANPRINT considerations should be included in the SSEB Plan.

f. The SSEB should include experts from all of the operative MANPRINT domains.

Appendix A
References

Section I
Required Publications

AR 25–3
Army Life Cycle Management of Information Systems. (Cited in Summary and paras 1–1b and 5–1c.)

AR 25–400–2
The Modern Army Record Keeping System (MARKS). (Cited in para 1–5.)

AR 40–5
Preventive Medicine. (Cited in para 2–12b.)

AR 40–10
Health Hazard Assessment Program in Support of the Army Materiel Acquisition Decision Process. (Cited in para 2–12b.)

AR 70–1
Army Acquisition Policy. (Cited in Summary and paras 1–1b and 5–1c.)

AR 70–8
Soldier-Oriented Research and Development in Personnel and Training. (Cited in para 2–8f.)

AR 71–2
Basis of Issue Plans (BOIP), Qualitative and Quantitative Personnel Requirements Information (QQPRI). (Cited in para 2–10e.)

AR 71–9
Materiel Objectives and Requirements. (Cited in paras 2–10g and 2–16i.)

AR 350–35
Army Modernization Training. (Cited in para 2–10b.)

AR 700–86
Life Cycle Management of Clothing and Individual Equipment. (Cited in paras 1–1b and 5–1c.)

AR 700–127
Integrated Logistics Support. (Cited in para 2–23.)

DOD Directive 5000.1
Defense Acquisition. (Cited in para 1–1a.)

DOD Directive 8120.1
Life Cycle Management of Automated Information Systems. (Cited in para 1–1a.)

DOD Instruction 5000.2
Defense Acquisition Management Policies and Procedures. (Cited in para 1–1a.)

DOD Instruction 8120.2
Automated Information Systems (AIS): Life Cycle Management Review and Milestone Approval Procedures. (Cited in para 1–1a.)

DOD Manual 5000.2–M
Defense Acquisition Management Documentation and Reports. (Cited in para 1–1a.)

Section II
Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this publication.

AR 5–11
Army Model and Simulation Management.

AR 5–22
The Army Proponency System.

AR 40–60
Policies and Procedures for the Acquisition of Medical Materiel.

AR 73–1
Test and Evaluation Policy.

AR 350–10
Management of Army Individual Training Requirements & Resources.

AR 381–11
Threat Support to U.S. Army Force, Combat and Materiel Development. AR 570-2 Manpower Requirements Criteria.

AR 570–4
Manpower Management.

AR 570–5
Manpower Staffing Standards System.

AR 700–129
Management and Execution of Integrated Logistics Support Program for Multi-Service Acquisitions.

AR 750–1
Army Materiel Maintenance Policy and Retail Maintenance Operations.

DOD–HDBK–743
Anthropometry of U.S. Military Personnel.

DOD–HDBK–761
Human Engineering Guidelines for Management Information Systems.

DOD–HDBK–763
Human Engineering Procedures Guide.

MIL–H–46855
Human Engineering Requirements for Military Systems Equipment and Facilities.

MIL–HDBK–759
Human Factors Engineering Design for Army Materiel.

MIL–STD–143
Standards and Specifications, Order of Preference for the Selection of.

MIL–STD–882
System Safety Program Requirements.

MIL–STD–970
Standards and Specifications, Order of Preference for the Selection of.

MIL–STD–1388–1
DOD Requirements for a Logistic Support Analysis.

MIL–STD–1472
Human Engineering Design Criteria for Military Systems, Equipment and Facilities.

MIL–STD–1474
Noise Limits for Military Materiel.

Section III
Prescribed Forms

This section contains no entries.

Section IV
Referenced Forms

This section contains no entries.

Glossary

Section I
Abbreviations

AAE
Army Acquisition Executive

AEHA
U.S. Army Environmental Hygiene Agency

AIS
Automated Information System

AOC
Area Of Concentration (Officer Skill)

AMC
U.S. Army Materiel Command

AMEDDC&S
Army Medical Department Center & School

AMSAA
U.S. Army Materiel Systems Analysis Activity

ARL-HRED
U.S. Army Research Laboratory - Human Research and Engineering Directorate

ARL-SLAD
U.S. Army Research Laboratory Survivability and Lethality Analysis Directorate

ASA(MRA)
Assistant Secretary of the Army (Manpower and Reserve Affairs)

ASA(RDA)
Assistant Secretary of the Army (Research, Development and Acquisition)

ASARC
Army Systems Acquisition Review Council

ATD
Advanced Technology Demonstration

ATTD
Advanced Technology Transition Demonstration

BOIP
Basis of Issue Plan

CD
Combat Developer

CDRL
Contract Data Requirements List

CE
Chief of Engineers

CG
Commanding General

CIE
Clothing and Individual Equipment

COEA
Cost and Operational Effectiveness Analysis

DA
Department of the Army

DASAF
Director of Army Safety

DCSINT
Deputy Chief of Staff for Intelligence

DCSLOG
Deputy Chief of Staff for Logistics

DCSOPS
Deputy Chief of Staff for Operations and Plans

DCSPER
Deputy Chief of Staff for Personnel

DISC4
Director of Information Systems for Command, Control, Communications, and Computers

DOD
Department of Defense

DT
Developmental Testing (technical testing)

DTP
Detailed Test Plan

FP
Functional Proponent

HE
Human Engineering

HH
Health Hazards

HQDA
Headquarters, Department of the Army

HIS
Human Systems Integration

IEP
Independent Evaluation Plan

IER
Independent Evaluation Report

ILS
Integrated Logistics Support

ILSP
Integrated Logistics Support Plan

IMA
Information Mission Area

IR&D
Independent Research & Development

ISC
U. S. Army Information Systems Command

LSA
Logistic Support Analysis

LSAR
Logistic Support Analysis Record

MAISRC
Major Automated Information System Review Council

MANPRINT
Manpower and Personnel Integration

MDR
Milestone Decision Review

MEDCOM
U.S. Army Medical Command (Provisional)

MER
Manpower Estimate Report

MJWG
MANPRINT Joint Working Group

MNS
Mission Need Statement

MOE
Measure of Effectiveness

MOP
Measure of Performance

MOS
Military Occupational Specialty

MP
Manpower

MPT
Manpower, Personnel and Training

MRDLAC
Medical Research, Development, Acquisition and Logistics Command (Prov)

NDI
Nondevelopmental Item

OI
Occupational Identifier

OPM
Office of Personnel Management

OPTEC
U.S. Army Operational Test and Evaluation Command

ORD
Operational Requirements Document

OT
Operational Test (user testing)

OT&E
Operational Test and Evaluation

PEO
Program Executive Officer

PER
Personnel

PERSCOM (DCSPLANS)
Total Army Personnel Command (Deputy Chief of Staff for Plans, Force Integration and Analysis)

PM
Program, Project or Product manager

PS
Program Sponsor

QQPRI
Qualitative and Quantitative Personnel Requirements Information

RDEC
Research, Development and Engineering Center

RDT&E
Research, Development, Test, and Evaluation

RFP
Request for Proposal

SSv
Soldier Survivability

SMMP
System MANPRINT Management Plan

SORD
Soldier Oriented Research and Development

SOW
Statement of Work

SS
System Safety

SSEB
Source Selection Evaluation Board

STF
Special Task Force

STRAP
System Training Plan

T&E
Test and Evaluation

TAD
Target Audience Description.

TDP
Test Design Plan

TEMP
Test and Evaluation Master Plan

TEP
Test Evaluation Plan

TER
Test Evaluation Report

TIWG
Test Integration Working Group

TLD
Top Level Demonstration

TNG
Training

TRADOC
U.S. Army Training and Doctrine Command

TSG
The Surgeon General

TSM
TRADOC System Manager

TT
Technical Test

UT
User Test(ing)

WBS
Work Breakdown Structure

Section II
Terms

Functional Proponent (FP)
The FP is the representative of the Army Agency responsible for the subject area in which Information Mission Area (IMA) resources are utilized or to be utilized for Major Automated Information Systems Review Council (MAISRC) level systems.

Health Hazards (HH)
The inherent conditions in the use, operation, maintenance, support and disposal of a system (e.g. acoustical energy, biological substances, chemical substances, oxygen deficiency, radiation energy, shock, temperature extremes, trauma, and vibration) that can cause death, injury, illness, disability, or reduce job performance of personnel.

Health Hazard Domain Report
The HH Domain Report is one of the domain reports prepared under the MANPRINT Program. Its purpose is to identify potential health hazards which may be associated with the development, acquisition, operation, and maintenance of Army systems. This identification will be done early in the system life cycle to preserve and protect the humans who will operate, maintain, and support the equipment; enhance total system effectiveness; reduce system retrofit needed to eliminate health hazards; reduce readiness deficiencies attributable to health hazards; and reduce personnel compensation. Data from this report and subsequent updates are input to the SMMP and the MANPRINT Integration Report.

Human Engineering (HE)
The technical effort to integrate design criteria, psychological principles, and human capabilities and limitations as they relate to the design, development, test, and evaluation of systems. The HE goals are to maximize the ability of soldiers to perform at required levels by eliminating design-induced errors, and to ensure system operation, maintenance, and support are compatible with the capabilities and limitations of the range of fully-equipped soldiers who would be using such systems. HE provides an interface between the other MANPRINT domains and system engineers. HE supports the MANPRINT goal of developing equipment that will permit effective soldier-machine interaction within the allowable, established limits of training time, soldier aptitudes and skill, physical endurance, physiological tolerance limits, and soldier physical standards. HE provides this support by determining the soldier's role in the system, and by defining and developing soldier-machine interface characteristics, workplace layout, and work environment.

Human Engineering Domain Report
A Human Engineering Domain Report is a review of the status of human engineering (HE) of a system as it approaches the end of a developmental phase of the Materiel Acquisition Life Cycle. Its purpose is to influence and support the Milestone Decision Review process which determines whether the system is ready to transition to the next scheduled phase. Broad areas addressed by the Human Engineering Domain Report are HE detail design and soldier performance considerations as they relate to the operation, maintenance and support of the system being evaluated and how these factors might impact the system's pre-established Manpower, Personnel and Training (MPT) goals and constraints. A major thrust of the Human Engineering Domain Report is to identify any design flaws which, taken singularly or collectively, may be so objectionable that, if not remedied, would warrant a decision not to transition to the next phase. The Human Engineering Domain Report will also identify, should they exist, problems or concerns which while not serious enough to preclude transitioning, should be resolved to enhance total system operational effectiveness. Last, as appropriate, the Human Engineering Domain Report will address the HE issues identified in the approved SMMP. Data from this report and subsequent updates are input in the SMMP and the MANPRINT Integration Report.

Independent Research & Development (IR&D)
An IR&D effort is non-contracted, company funded technology development work initiated and performed by DOD contractors to maintain technical superiority.

Manpower (MP)
The personnel strength (military and civilian) available to the Army. Manpower refers to the consideration of the net effect of Army systems on overall human resource requirements and authorizations (spaces), to ensure that each system is affordable from the standpoint of manpower. It includes analysis of the number of people needed to operate, maintain, and support each new system being acquired, including maintenance and supply personnel, and personnel to support and conduct training. It requires a determination of the Army manpower changes generated by the system, comparing the new manpower needs with those of the old system(s) being replaced, and an assessment of the impact of the changes on the total manpower limits of the Army.

MANPRINT (Manpower and Personnel Integration)
The comprehensive technical effort to identify and integrate all relevant information and considerations regarding the full range of manpower, personnel, training, human engineering, system safety, health hazards, and soldier survivability into the system development and acquisition process to improve individual performance, total system performance, and reduce the cost of ownership throughout the entire life cycle of a system.

MANPRINT Assessment
A document that summarizes the results of the MANPRINT Integration Report and the MPT Force Level Assessment into a source document for input to the milestone decision review process. The objective of the MANPRINT Assessment is to present any unresolved MANPRINT issues or concerns to the decision makers at the appropriate decision points.

MANPRINT Critical System Characteristic
Those MANPRINT characteristics associated with the development and acquisition of a system that are of primary importance to the decision authority in deciding whether to allow the system to continue into the next phase of development. A MANPRINT critical characteristic may be either a system characteristic (e.g., weigh less than 35 pounds when rigged for carry) or a detailed performance characteristic (e.g., process at least 30 standard messages per hour).

MANPRINT Exit Criteria
MANPRINT exit criteria are specific minimum requirements, capable of empirical, objective measurement which must be demonstrated, from a MANPRINT perspective, before a system or program is ready to transition to the next phase of its acquisition process. MANPRINT exit criteria typically link human performance to totalsystem performance, becoming, for a particular acquisition phase, a priority subset of total system requirements. However, they could also be written to require demonstration of a particular outcome (e.g., a performance-based demonstration of the feasibility of a particular training concept). MANPRINT exit criteria are normally written by the MJWG (often in coordination with the TIWG) and documented in the SMMP.

MANPRINT Integration Report
A single source document that integrates the results of all seven domain reports (Manpower, personnel, training, human engineering, system safety, health hazards, and soldier survivability) as well as other pertinent information. The objective of the MANPRINT Integration Report is to determine the status and adequacy of the MANPRINT effort during the acquisition process and to identify any unresolved MANPRINT issues or concerns. A MANPRINT Integration Report will be prepared or updated prior to each milestone decision review for all materiel and major automated information systems, including nondevelopmental items and system modifications.

MPT Analysis
The application of Manpower, Personnel and Training analytical tools/methodologies to a system, to determine MPT constraints, identify current or potential issues, and estimate MPT requirements. Analysis results are used to prepare the MPT Domain Report and furnish MPT data to the MJWG.

MPT Domain Report
The MPT Domain Report assesses the manpower, personnel, and training risk of the system. It identifies all favorable attributes, critical issues, major issues, and concerns. It addresses the impact the system has on MPT resources by examining a myriad of domain characteristics. Also examined is the extent of trade-offs between domains, e.g., training length can be reduced by increasing entry personnel skill requirements. The data from this report and subsequent reports are input to the SMMP and the MANPRINT Integration Report.

Manpower, Personnel, and Training (MPT) Force Level Assessment
The MPT Force Level Assessment assesses changes in the total force MPT requirements caused by acquisition or modification and fielding of new systems. The results of the report will be used as input to the MANPRINT Assessment which is prepared prior to each ASARC & MAISRC MDR.

Personnel (PER)
Military and civilian persons of the aptitudes and grades required to operate, maintain, and support a system in peacetime and war. Personnel refers to the consideration of the ability of the Army to provide qualified people in terms of specific aptitudes, experiences, and other human characteristics needed to operate, maintain, and support Army systems. It requires detailed assessment of the aptitudes which soldiers must possess in order to complete training successfully and operate, maintain, and support the system to the required standard. Iterative analyses must be accomplished for the system being acquired, comparing projected quantities of qualified personnel with the requirements of the new system, any system(s) being replaced, and overall Army needs for similarly qualified people. Personnel analyses and projections are needed in time to allow orderly recruitment, training, and assignment of personnel in conjunction with system fielding.

Program Sponsor
Generic term for the manager of the program or system at its basic level; i.e., Combat Developer, Program Manager, Project Officer, Functional Proponent.

Soldier
The term "soldier" in this regulation refers to human beings, military and/or civilians.

Soldier Survivability (SSv)
SYSTEM: The characteristics of a system that can reduce fratricide, as well as reduce detectability of the soldier, prevent attack if detected, prevent damage if attacked, minimize medical injury if wounded or otherwise injured, and reduce physical and mental fatigue.
SOLDIER: Those characteristics of soldiers that enable them to withstand (or avoid) adverse military action or the effects of natural phenomena that would result in the loss of capability to continue effective performance of the prescribed mission.

Soldier Survivability Domain Report
The SSv Domain Report assesses the system's effects in regards to soldier survivability. Data from this report and subsequent updates are input to the SMMP and the MANPRINT Integration Report.

System MANPRINT Management Plan (SMMP)
The SMMP is the Army's Human Systems Integration Plan. It serves as a planning and management guide, and audit trail to identify tasks, analyses, trade-offs and decisions that must be made to address MANPRINT issues during the system development and acquisition process. The SMMP will be updated as needed throughout the acquisition process and prior to each MDR.

System Safety (SS)
The application of engineering and management principles, criteria, and techniques to optimize safety within the constraints of operational effectiveness, time, and cost throughout all phases of the system or facility life cycle.

System Safety Domain Report
The System Safety Domain Report is one of the domain reports prepared under the MANPRINT program. The purpose of the report is to assess the overall safety of the

emerging or changing systems and ensure the system safety issues and concerns identified, and the recommended solutions, are integrated into the MANPRINT program. The data from this report and subsequent reports are input into the SMMP and the MANPRINT Integration Report.

Target Audience Description (TAD)

The TAD lists occupational identifiers for personnel who are projected to operate, maintain, repair, train, and support a specific future Army system. Further, for each identifier, the TAD provides an information source which will describe the characteristics of the personnel identified and estimates of the quantities required. Describing projected system personnel early in the acquisition process increases the Army's flexibility to achieve the best system solution in terms of design, affordability, supportability and performance.

Total System

A total system is a composite of skilled people, procedures, materials, tools, equipment, and software that provides an operational capability to perform a stated mission (in the case of a materiel system) or a particular function or set of functions (in the case of an AIS). A total system includes manpower (the number of people required for its operation, maintenance, and support), personnel (the aptitudes, capabilities, and limitations of the designated operators, maintainers, repairers, and support personnel), the affordable school and unit training necessary to ensure that those personnel can achieve the system performance requirements, and the required support equipment and doctrine.

Total System Performance

The performance of the system defined above is customarily measured in two relatively independent areas: effectiveness (how well it performs its mission when used by representative personnel) and suitability (degree to which system can be placed satisfactorily into operational use). Both areas are heavily dependent upon human performance, but usually from different personnel: effectiveness is largely influenced by operator behavior (based on aptitudes and training), while availability is influenced by the behavior (often based on different aptitudes and different training) of maintenance and support personnel. Different measures of performance are used in the test and evaluation of operations and maintenance.

Training

Consideration of the necessary time and resources required to impact the requisite knowledges, skills, and abilities to qualify Army personnel for operation, maintenance, and support of Army systems. It involves (1) the formulation and selection of engineering design alternatives which are supportable from a training perspective, (2) the documentation of training strategies, and (3) the timely determination of resource requirements to enable the Army training system to support system fielding. It includes analyses of the tasks which must be performed by the operator, maintainer, and supporter; the conditions under which they must be performed; and the performance standards which must be met. Training is linked with personnel analyses and actions in that availability of qualified personnel is a direct function of the training process.

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