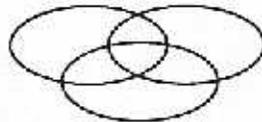




MANPRINT BULLETIN

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Reducing the Impact of Combat Stress on Human and System Performance via MANPRINT

Theodore Marton, Ph.D.
and
Anthony Arbisi, Cpt., USMC (Ret.)
Dynamics Research Corporation

"Combat stress" is a term used to describe those negative physical and emotional influences originating from actual or impending exposure to battle, and/or the debilitating conditions associated with areas of tactical activity. Severe levels of combat stress can destroy or degrade a soldier's ability to perform his mission role and can also hamper mental or physical well being.

Combat stressors are not the exclusive product of actions initiated by the hostile force or physical characteristics of the combat environment. Stress is frequently generated by basic inadequacies in system design or functional capabilities; poor reliability due to inadequate accommodations for field maintenance requirements; ineffective man/machine interfaces; improper system manning; inadequate training or logistic support capabilities; improper allocation of system functions to man/machine or software; or even the incorrect tactical or operational application of the system. A weapon system can also generate combat stress when its design does not provide for the health and safety of the personnel who will operate, maintain and support that system in the real world.

View from the Top:

An interview with the Honorable Delbert L. Spurlock, Assistant Secretary of the Army for Manpower and Reserve Affairs, begins on **page 4**. In addition to this exclusive interview, **Inside** you will find...

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The MANPRINT process focuses on assuring the effective, safe, and supportable use of humans in weapon system design. To this end, it is essential that the proponents for each of the six MANPRINT domains are fully aware of the missions and functions that the system must satisfy, as well as the environments and other tactical conditions in which the system must perform.

Human capability levels are not a constant, and

(Continued on page 2)

"Remember the Soldier"

Combat Stress (continued from page 1)

indeed, in times of heavy or sustained combat conditions, may be significantly degraded. Therefore, the proponents for each of the six domains must examine all aspects of the system under development for concerns associated with their specific domains. Such scrutiny will ensure that the system design, its man/machine interfaces, and its operational protocols will permit and support acceptable levels of system performance across the range of human capabilities expected in the anticipated combat environment. In addition, those proponents must ensure that no aspect of the total system will add to, compound, or magnify combat-related stress to which system personnel might be exposed.

To attain these goals, MANPRINT proponents must be provided with projected operational combat scenarios which accurately and comprehensively describe and quantify those aspects of combat environments that are capable of generating stressors which may degrade system-related human performance potentials. Such scenarios are usually based on information generated in early Mission Area Analysis (MAA) and Required Operational Capability (ROC) documentation for the weapon system under development.

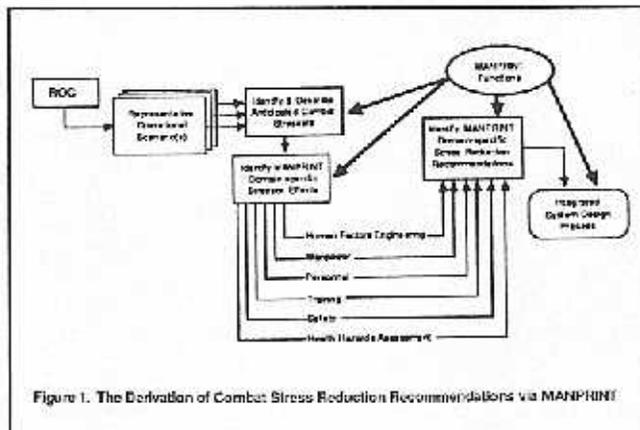


Figure 1. The Derivation of Combat Stress Reduction Recommendations via MANPRINT

As illustrated in Figure 1, the initial MANPRINT function in this effort is an analysis of the combat scenario. In this analysis, the generic types and levels of anticipated combat stressors expected during the wartime deployment of the proposed weapon system are identified and described. A cooperative effort by proponents from all six domains would benefit from the differing viewpoints of the various disciplines involved and would help to identify and allocate responsibilities for concerns that cross the interests of more than one domain.

Such an effort would ensure the effective integration of common concerns, the elimination of wasteful redundant efforts, and that all six domains of MANPRINT are marching to the same set of driving concepts.

After identifying generic stressors, the proponents for each of the six MANPRINT domains must identify both the stressors that can effect the specific concerns of the domains with which they are involved, as well as where and how their domains may be affected. Once the "cause and effect" has been established, each proponent may identify and develop recommendations for how each of these areas of significant combat-induced stress might best be eliminated, reduced, countered, by-passed or managed in terms of the design or operational options available to their specific domain. Once recommendations are established, the proponent for each domain **must** exercise every method and opportunity available in the MANPRINT process to effectively integrate the resulting recommendations in the continuing design, implementation and test procedures of the developing system.

The overwhelming majority of system failures during combat are attributable in whole or significant part to human error or failure. Therefore, MANPRINT efforts aimed at lessening the potential degrading influences of combat stress on the system's human components can not only help to provide and sustain effective levels of mission performance, but can also significantly add to the improvement of system readiness and availability when such systems are needed most: in wartime—during combat!

For more information, contact Theodore Marton or Anthony Arbisi, Dynamics Research Corporation, 1755 Jefferson Davis Highway, Arlington, VA 22203 (703) 521-3812.

CORRECTION

The article entitled "MANPRINT Through Logistics Support Analysis" (September/October, 1988) was falsely attributed to Mr. Willard F. Stratton. The author of this article was Ms. Janice Elwood. We apologize for the error.

MANPRINT: A Spreadsheet Approach

Ronald J. Pinckney
The Kairos Company

In industry, the overall responsibility for MANPRINT--from defining the scope of work for each member of the MANPRINT committee, to administering the MANPRINT budget, to compiling a final MANPRINT report--is generally assigned to one department. Though clearly defined areas of accountability are required to successfully implement any program, the selection of a single department responsible for MANPRINT can result in an unbalanced MANPRINT analysis.

While the department selected to write the final MANPRINT report may accurately assess the impact of the data submitted by other departments on its own area of specialization, this department probably cannot fully assess the impact of individual department reports on other specialized areas.

The key to a successful MANPRINT program lies in the last three letters of the acronym, INT: the synergistic integration of interrelated facts. If representatives from each of the MANPRINT disciplines are required to submit a report (which will be compiled into the final MANPRINT report), that final report is likely to be little more than a collection of reports. Many manhours could be saved by simply binding all of the original reports together under one cover sheet. That, however, would not fulfill the aim of a MANPRINT analysis.

The objective of a MANPRINT report is integration, not compilation. It is less a word processing function than a spreadsheet function. Consider the spreadsheets routinely used to analyze the impact of changes in one group of numbers on numbers in a different cell. When there is a change in one cell, numerous other cells on the spreadsheet may also change. Only by approaching MANPRINT analysis in the same manner can the full impact of every fact be accurately assessed.

The first step in implementing a spreadsheet approach to MANPRINT is to eliminate the requirement for each department to submit a report to the department responsible for the overall MANPRINT analysis. Instead, each department representative would bring a stack of index cards to a working

meeting prepared to address MANPRINT issues and concerns with everyone present.

Since spreadsheets work well with numeric data, and because MANPRINT requires verbal input and lots of fuzzy logic, a MANPRINT spreadsheet must be done manually. The column headings of the spreadsheet would indicate the different disciplines MANPRINT represents; the row headings would specify each issue the representatives from the different disciplines have identified. Department representatives would list impacted items on separate index cards, each of which represent one cell of the spreadsheet. Every issue would be addressed in terms of how each discipline might be affected before the next issue is discussed. As the impacts on other disciplines are identified, an additional card would be filled out and placed in a cell corresponding to the appropriate row and column. The entire group of cards would become part of a dynamic "table-top spreadsheet" which, when completed, would be used as a basis for the final report. The final MANPRINT report would then be constructed from the interrelated cells of the spreadsheet, integrating each of the issues into every discipline affected.

While this conceptual approach is simplistic, the actual process may be quite cumbersome. Several meetings may be required as each discipline's representative analyzes the effect of issues identified in other areas on his or her own area. A worst case scenario would be an item which affected every other cell of the spreadsheet. The reality is that the effects on other cells is exactly what MANPRINT is all about.

And what does an organization get from this approach? First, separate department-level reports are eliminated. Secondly, an analysis involving expertise from each of the MANPRINT disciplines is provided, eliminating the need for one individual to integrate numerous reports. Finally, the spreadsheet approach yields a final report which will put the "INT" in MANPRINT.

For more information, contact Ronald J. Pinckney, The Kairos Company, 1001 N. Rengstorff Ave., Ste 100, Mountain View, CA 94043-1715, (415) 962-8453.

VIEW FROM THE TOP

An Interview with the Honorable Delbert L. Spurlock
Assistant Secretary of the Army for Manpower and Reserve Affairs

Editor's Note: On November 9, 1988, the Honorable Delbert L. Spurlock was interviewed exclusively for the MANPRINT Bulletin by Richard Patrick of Automation Research Systems, Ltd.



Q: Mr. Spurlock, some of our readers may not be familiar with the Office of Manpower and Reserve Affairs. Would you describe for them briefly some of your key responsibilities?

A: We are responsible for the care and management of the Army's human resources—its people. This responsibility includes the Active and Reserve Components and the Army civilian workforce. One of our principle concerns involves recruiting the enlisted force. We are involved in structuring the Army, where we place people and how to make the most efficient use of our human capital. We're involved in the training of people. Those are but a few of the things that my office does.

Q: Your role in MANPRINT has been very low key; only in certain circles are you recognized as one of the principle architects of MANPRINT. What precipitated your decision to get involved in MANPRINT?

A: There were actually two factors. First, I was very concerned with the rapidly escalating quality requirements being imposed on our personnel system. The '80's represented a period of Army modernization, and we anticipated the need for competent people to operate and maintain the new equipment; however, the early eighties also saw a significant debate over the merits of continuing with an all-volunteer force. Proponents for reinstating the draft believed that the Army could not continue to attract the quality young men and women that we needed. The second thing that got me involved was sitting in at the ASARCs (Army System Acquisition Review Councils) and noting that human concerns were rarely, if ever, addressed. We knew, however, that the costs to access, train and sustain the quality people we required were hidden—we never really addressed

those costs in the ASARC. My concern was how to best stem the tide of escalating quality requirements and not place an undue manpower and training burden on the Army. We had to find a way to quantify the total manpower, personnel and training burden associated with force modernization.

Q: The bipartisan Congressional Military Reform Caucus wrote a report that addresses the increasing cost and complexity of modern weapons. MANPRINT reduces life-cycle costs and tries to reduce weapons complexity by influencing materiel design decisions. I'm wondering if you have informed the Congress of your success with the MANPRINT program?

A: I became the Assistant Secretary in 1984, back when the Army was just beginning to recognize that force modernization was leading to a people problem. There was much rhetoric but little direct action to attack the problem. I decided then that the personnel community would have to take a more active role if the people problems were ever to be resolved. About that time I was asked to respond to a series of questions posed by Les Aspin, Chairman of the House Armed Services Committee. In preparing a statement in response to Mr. Aspin's questions, I discovered that I had essentially written my concept of how the Army should develop and further enhance MANPRINT. That statement was our first mention to Congress that we were working on the problem. My testimony was somewhat rhetorical and expressed a degree of skepticism about whether the Army was willing to stick to its MANPRINT master plan.

Q: What caused your skepticism?

A: I discovered that approaches similar to MANPRINT had been tried in the past without much lasting success. Some extraordinary work had been done by people like John Welsz (Dr. John Welsz, Director of the Army's Human Engineering Laboratory) but the combat developers, training developers and materiel developers did not want to be burdened with MANPRINT kinds of considerations. As a

Continued on page 5

Spurlock (continued from page 4)

consequence, the human dimension in weapons development just didn't surface during ASARC presentations.

Q: Has there been any follow-up from Congress, for example, asking how the Army is doing in regard to MANPRINT?

A: I recommended that Congress get more involved in the process—not the tendency towards micro-management that we see so much of today—and require some sort of analysis from the Services that quantified the MPT (manpower, personnel and training) burden. That is essentially what led to the Manpower Estimate Report.

Q: What is the Manpower Estimate Report (MER)?

A: The MER is a document that lays out the human costs associated with operating and supporting a weapon system throughout its life cycle. The MER process was statutorily imposed on the Department of Defense by the FY 87 Defense Authorization Act. The report itself must be submitted to Congress by the Secretary of Defense prior to his approval of full-scale development and/or production and fielding of major weapon systems and programs that have Congressional interest.

Q: Any similarity between MANPRINT and manpower estimating?

A: Yes. MANPRINT is the heart of the MER process. You cannot quantify the kinds of operating and support costs we are talking about without first performing a MANPRINT kind of analysis.

Q: Industry says there is nothing for them to gain from doing MANPRINT. There is a perception among your industry counterparts that the Army will continue to award contracts based solely on cost, schedule, and technical performance. Can you cite any examples of winning proposals that placed a heavy emphasis on MANPRINT?

A: First, let me explain my theoretical basis for MANPRINT and then I'll address industry's skepticism. The insertion of the human dimension in the weapons design and development process offers a great potential for out-year savings that can be plowed back into weapons development and acquisi-

tion. Industry should realize that we, the U.S. Army, are but one of its customers. Reduced weapons complexity and lower life-cycle costs will prove attractive to our allies and to Third-World countries. A successful MANPRINT program within industry could lead to increased foreign military sales. We must recognize that the technological know-how of the military and the private sector is inextricably intertwined. The Army's success with MANPRINT could easily be transferred to the private sector. MANPRINT could help the nation compete in global markets. Those are equally important considerations. With regard to successful proposals, the Line-of-Sight-Forward (Heavy) weapon proposal submitted by Martin Marietta/Oerlikon merits mention. Another success story is the T-800 engine contract won by the LHTEC. The excellent work done by the Allison-Garrett team validates the value of MANPRINT, if done right. LHX and some of the other programs will be a true test for MANPRINT, and they are all coming along quite well. If the Army is ever going to afford advanced weapons platforms like the LHX, we must apply the MANPRINT test. That will help us to sell the programs to OSD and the Congress.

Q: If I understand you correctly, you see MANPRINT as being of benefit to the nation as a whole?

A: Yes. The Army consumes resources to produce a service—national defense. MANPRINT allows us to improve that service.

Q: And by including MANPRINT in its programs, industry not only increases potential sales to the Army but improves its position in the area of foreign military sales.

A: Exactly.

Q: I'm sure that will be good news to industry. That is the ideal win-win situation. Earlier you mentioned that the ASARC process sometimes neglected to address the human element in the weapon acquisition process. Has that changed? Are MANPRINT issues now examined during the ASARC process?

A: Yes they are, and to a much greater extent than ever before. As MANPRINT matures, we in the personnel community are becoming more sophisticated with regard to the development and acquisition of weapons and other equipment. We are starting to

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Spurlock (continued from page 5)

ask the hard questions at ASARC. The fact that PMs are having trouble getting through ASARCs, and complaining a little about the imposition of MANPRINT requirements on their programs, is evidence that the system is working. We don't want to be bureaucratic, but the Army can no longer afford to ignore the human costs associated with force modernization. We must design our weapons right the first time, and stop this incessant practice of using ECPs and PIPs (engineering change proposals and product improvement proposals) to correct our mistakes. Those corrections usually come late in a program and are costly. Let's do it right the first time.

Q: What is the status of the DOD Directive to standardize MPTS (manpower, personnel, training, safety) across the Services?

A: A number of our young officers are in day-to-day contact with their counterparts in OSD and they helped sell the concept. I went upstairs and spoke with Mr. Godwin [the Honorable Richard Godwin, former Under Secretary of Defense for Acquisition and Defense Acquisition Executive]. We spent an hour or so talking about MANPRINT and why he should make this a requirement for all of the Services. I think he understood the kinds of things that you and I have been talking about—transferability to the private sector, reducing our outlays in the out years, and identifying MPT cost drivers up-front. The Army has reviewed the draft DOD Directive and sent comments to OSD. I'm told that the document is in for signature and should soon be promulgated throughout DOD.

Q: You mentioned the hidden costs of MPT. Some people call that "the stem wave," a cost that doesn't appear until post fielding. Isn't that a part of the operations and support costs that eat up so much of the OMA (Operations and Maintenance, Army) account?

A: Yes it is, and OMA constraints are going to be a near-term problem for the Army. Those OMA dollars are limited but very important to the Army. They pay for spare parts, maintenance, recruiting, training, travel and other critical programs, not to mention a lot of civilian salaries. When those hidden O&S costs eat up that account we start to suffer a degradation in our readiness programs. Clearly, the kinds of things that MANPRINT is trying to do—impact materiel design and selection decisions—will result in savings in OMA dollars. We must also consider the impact that MANPRINT will have on the readiness of our

Reserve Components. Half of our combat and support strength resides in the Reserve Component but they have only about 38 training days a year to maintain a level of proficiency that, if called upon, would allow them to fight alongside the Active Component. We must expand the MANPRINT program to include the Reserve Forces. We must make better use of the training time available and develop simulators that allow that time to be used more efficiently. But we must be smart in the way in which we approach the development of simulators used for training. If we are not careful, and fail to consider MANPRINT, we could find ourselves paying an enormous MPT bill just trying to operate and maintain our simulators. It's essential that we maximize our MANPRINT efforts. Dr. Sculley [Dr. Jay Sculley, Assistant Secretary of the Army for Research, Development and Acquisition] has been very supportive of MANPRINT and a partner in the effort. MG Woods, the new commander of the Soldier Support Center, has clearly stated his concern for MANPRINT and, under his stewardship, I'm sure that the program will continue to flourish. GEN Thurman, of course, has been closely associated with MANPRINT since the start. He got ARI into the game early and it has been a hidden, but enormously important success for ARI [U.S. Army Research Institute]. GEN Thurman and GEN Wagner are making sure that the subordinate commands within AMC and TRADOC are on track. They understand clearly that we must wrestle with this O&S monster before it gets the best of us. MANPRINT is a team effort.

Q: Do you think that MANPRINT will continue to increase in importance as you move towards the Army of the twenty-first century?

A: Certainly it will. The Army can in some respects be viewed as a testbed for the rest of society. Many of this century's great organizational thinkers—from Peter Drucker to Buckminster Fuller—have recognized the military's ability to develop innovative organizational techniques. MANPRINT is one of those techniques that we must exploit fully if we are to realize the full potential of our human resources. It will, however, be increasingly difficult to maintain or accelerate the current pace of MANPRINT because great institutions have very short memory spans. That is one reason why we must institutionalize MANPRINT throughout the Army. Dr. Seth Bonder, who is managing the Army's Competitive Strategies Analysis, believes that it will be very difficult to embed MANPRINT throughout the Army. A short time ago I would have agreed with him, but now, after

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MANPRINT Success Story

Joint Surveillance Target Attack Radar System (Joint STARS) HMPT Model

Gary Ketchie, Ph.D.
Honeywell, Inc.

Honeywell, Inc. has successfully utilized MANPRINT methods in the Joint Surveillance Target Attack Radar System (Joint STARS) program for the Army. A Human Factors, Manpower, Personnel, and Training (HMPT) model was applied to Joint STARS to define human-machine interfaces where no similar systems existed.

The model guided the documentation of the personnel subsystem and man-machine interface. This documentation was then used to form a functional specification for hardware and software that will process radar imagery and deliver target information to users in the tactical operation center.

Criteria for selecting among alternative designs included consideration of human capabilities in information processing and decision-making and the effect of these capabilities upon system throughput of target information. The human role was considered in both individual and team member terms. The design and evaluation process entailed allocating functions between operator and machine in accordance with human strengths and weaknesses, and devising job and decision aids that enhance the man-machine interface.

The products of this work formed the basis for preparing design requirements and training needs. Included in the design were such elements as workspace layout, crew station configuration, and crew composition. Consideration was also given to

the development of formats for displaying target imagery and data, and the specification of function keyboards and control devices. The design of the man-machine interface, which included procedures for processing, manipulating and transmitting target information, was thus cast in terms of man's requirements and capabilities.

The description of operator tasks and system functions has subsequently served as the foundation for the nine-week Joint STARS (Army) Operator Course. This course trains both Target Surveillance Supervisors (TSS) and Search Track Operators (STO) in the skills necessary for Ground Station Module (GSM) operation. The systematic procedure used in course development has led to the documentation and incorporation of changes to the GSM hardware/software configuration and deployment concepts into course lesson plans.

Deliverables included a functional and operational specification, the Joint STARS simulator, a nine-week Joint STARS operator course of instruction, and a trained cadre of military Joint STARS instructor personnel. The ability of each discipline to effectively contribute its expertise to the total effort was enhanced through the use of the MANPRINT model.

For more information, contact Gary Ketchie, Honeywell, Inc., Advanced Systems Facility, 2855 Anthony Lane South, St. Anthony, MN 55418, (612) 782-7117.

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seeing all of the great work that's been done, I believe the Army will be successful. MANPRINT, and programs like it, will be very important in the twenty-first century.

Q: It's been a pleasure talking with you today, Mr. Spurlock. Are there any personal thoughts that you would like to share with our readers before we conclude this interview?

A: Everything that I've learned about the Army, the people in the Army taught me. MANPRINT is the

product of some dedicated officers and civilians who had the foresight to see the long-term value of the program. It is Army professionals like GEN Thurman, John Weisz, and those who follow them who will make the program a continuing success. We must recognize and reward people for their drive and initiative in the face of seemingly insurmountable obstacles, and for my part, that is exactly what I am trying to do. I've taken what they have given me and tried to challenge the system with their thoughts. So my hat's off to those people who are making the system more responsive to human needs—hope they keep supporting MANPRINT.



Can MANPRINT and Fightability Be Tested? (A Reprise)

John Miles, Jr., J.D.

U.S. Army Research Institute, Alexandria, VA
and

Kathleen A. Quinkert, Ph.D.

U.S. Army Research Institute, Fort Knox Field Unit

Most of us have childhood memories of our parents telling us, "Anything worth doing is worth doing well." As we matured, some of us were trained to be professionals, and our mentors told us, "If it's not written down, it didn't happen; if your name's not on it, you didn't do it." Then we went to work for the Army, and the project managers told us, "If it can't be tested, we're not going to spend money on it." All of this advice resurfaced as we read LTC Joe Bishop's article on MANPRINT testing in the November/December 1987 issue of the *MANPRINT Bulletin*.

We do not want to oversimplify the situation at hand. It's a given fact that the test and evaluation community, or any Army agency, for that matter, has yet to make a complete MANPRINT assessment of any system; it is also a given fact that accurately measuring soldier performance can be a difficult task. But can we honestly justify the expenditure of valuable resources on any program whose efficacy cannot be measured? How would one know how much effort to budget? How would one determine whether the program is producing results in the proper direction? How would one know when to stop the efforts? These are all basic management decisions which rely on the assumption that the program has measurable goals. MANPRINT, like any other program, must submit to this same level of scrutiny.

When a representative from the office of the Program Manager, M1A1, reasonably asked how OTEA was planning to test and evaluate MANPRINT and 'fightability' in the Block II Program, LTC Bishop provided an essentially correct answer to the fightability portion of this question. Certainly an operational definition of "fightability" is necessary. This definition should be prepared with inputs from the combat developer and the operational tester; additionally, it should be fully understood by those agencies intimately involved in the system's development. To determine whether there was an improvement or decrement in "fightability," changes in the objective

measures of the "fightability" components would be assessed for the Block II designs. LTC Bishop might also have pointed out, however, that "fightability" is a hypothetical construct whose primary value lies in its relationship to soldier performance. With a good MANPRINT testing program, the need to simultaneously assess "fightability" might decrease.

With respect to the MANPRINT portion of the question, there is a fundamental flaw in the logic of LTC Bishop's answer. He presented the MANPRINT program as a bureaucratic process which cannot be tested, instead of a collection of six technologies, each of which has been testable for years. While it is arguably not OTEA's job to test specifically for each of the six domains of MANPRINT, the trend in each of those domains in the last decade has been to link measurements within the domain to system effectiveness. The U.S. Army Human Engineering Laboratory, for example, has led in the development of a test and evaluation methodology for measuring peak transients of carbon monoxide in terms of its likely effects on crew performance.

Collecting soldier performance data has been made considerably easier by rapid developments in electronic technology. For example, miniature cameras and recorders can be used for non-intrusive videotaping of critical task performance during operational tests employing tactical realism. Additionally, in recent tests of the Forward Area Air Defense (FAAD) candidates at Fort Bliss, sophisticated devices were used for measuring soldier performance at critical portions of system missions.

The whole point of the MANPRINT program, as pointed out in the first paragraph of the regulation from which it is promulgated, is to achieve "optimum total system performance" (AR 602-2, p. 3, 1987). Clearly, the soldier contribution to that performance needs to be identified, measured, and analyzed in terms of system effectiveness and availability requirements. A concept for expressing soldier performance data in terms of system metrics was discussed by Berson and Crooks (1976), and a quantitative methodology for accomplishing this was explained by Lowry and Seaver (1986). This methodology enables OTEA to discharge its specific responsibility to "include soldier performance data on critical operations

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Flightability (continued from page 8)

and maintenance tasks in any calculations of system effectiveness and availability presented to ASARC reviews" (AR 602-2, p. 6, 1987).

OTEA's answer to the PM, M1A1 could have been along these lines:

"MANPRINT will be operationally defined and measured for the M1A1 Block II Program in terms of soldier performance of critical operations and maintenance tasks. Appendix A to our IEP contains the specific mathematical formula which we will use to compute system effectiveness and availability, and describes how the MANPRINT term in each of those equations will be calculated. Appendix C lists the operations and maintenance tasks which are considered 'critical.'

We plan to exercise the M1A1 equipped with the Block II enhancements with crews selected from the designated MOSs, and we will have verified their skill levels at the conclusion of the pre-test M1A1 Block II training. Each Block II-enhanced M1A1 in the test will have an unobtrusive instrumentation package which will record each instance of critical task performance. We will also obtain from the Defense Manpower Data Center (DMDC) the ASVAB profile (aptitude scores) for each soldier in the test, so that we can correlate the objective measures of critical task performance with the aptitude scores (to see if the Block II M1A1 demands aptitude levels above those in the lower 20% of the MOSs).

Our test design plan calls for the Block II M1A1 to perform in three different scenarios, which we refer to as "Combat," "Extended Combat" (equivalent to continuous operations), and "Contaminated Battlefield" (requiring the use of NBC protective clothing and equipment). We plan to calculate system effectiveness and availability under each of these scenarios. Those values will be compared to data collected by TECOM during technical testing, which we are going to use as a "Training Baseline."

We will determine the expected frequency of any safety problems which occur during the running of the scenarios, and will decrement our task performance values depending upon the projected injuries to the crew.

We look forward to your review of our plans and to your help in explaining to your contractors how we

will be making and using MANPRINT measures in the objective assessment of the Block II M1A1 performance."

These MANPRINT issues are only a subset of those available for testing; serious consideration of the user-generated System MANPRINT Management Plan (SMMP) will provide many more possibilities. The real issue, however, is not in the number of MANPRINT issues generated for or resolved in testing. Rather, it is the Army's confidence that these MANPRINT issues can be resolved. This concern appears to be shared by industry. If we are serious about building confidence in MANPRINT, shouldn't we be more straightforward about the employment of our objective technology for measurement?

For more information, contact John Miles, U.S. Army Research Institute Alexandria, VA, (202) 274-8815 or Dr. Kathleen Quinkert, U.S. Army Research Institute, Fort Knox Field Unit, Ft. Knox, KY 40121-5620, (502) 624-6928.

A New SSC Commander Takes the Helm!



MANPRINT integrator Major General Stephen R. Woods, Jr. assumed command of the Soldier Support Center (SSC) on July 29, 1988. Located at Fort Benjamin Harrison, Indiana, SSC is one of three commands designated as TRADOC Integrating Centers. Among MG Woods' many responsibilities is continuing the successful development of the Army's MANPRINT Program.

Past assignments include two tours in Viet Nam—one as a battalion commander—and command of units in the 82d Airborne Division and the 8th Infantry Division. In his most recent assignment, MG Woods served as Director of Army Program Analysis and Evaluation, Office of the Chief of Staff of the Army.

The MANPRINT Bulletin staff wishes MG Woods all the best as he takes charge of TRADOC's MANPRINT Program.

• *Look for Richard Patrick's exclusive interview with MG Woods in the January/February 1989 Issue of the MANPRINT Bulletin.*



Schedule of MANPRINT Courses for FY89

MANPRINT Senior Training Courses

09 Jan 89 - 13 Jan 89 (Ft. Rucker, AL)
13 Feb 89 - 17 Feb 89 (Rock Island, IL)
20 Mar 89 - 24 Mar 89 (Ft. Benning, GA)

MANPRINT Staff Officers Courses**

06 Mar 89 - 24 Mar 89	05 Jun 89 - 23 Jun 89
03 Apr 89 - 21 Apr 89	10 Jul 89 - 28 Jul 89
01 May 89 - 19 May 89	11 Aug - 25 Aug 89

**All courses will be held at the Casey Bldg., Humphrey's Engineer Support Activity Complex, Ft. Belvoir, VA.

MANPRINT INFORMATION

POLICY - MANPRINT Directorate, HQDA (DAPE-MR), Washington, DC 20310-0300. AV 225-9213, COM (202) 695-9213.

MANPRINT TRAINING - Soldier Support Center-National Capital Region, ATTN: ATNC-NM, 200 Stovall St., Alexandria, VA 22332-0400. AV 221-3706, COM (703) 325-3706.

PROCUREMENT & ACQUISITION - US Army Materiel Command, ATTN: AMCDE-PQ, 5001 Eisenhower Ave., Alexandria, VA 22333-0001. AV 284-5696, COM (202) 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 - Army Research Institute, ATTN: PERI-SM, Alexandria, VA 22333-5600. AV 284-9420, COM (202) 274-9420.

LTG Allen K. Ono, Deputy Chief of Staff for Personnel

MG Stephen R. Woods, Jr., Commander, Soldier Support Center (Proponent for Army MANPRINT Training)

Mr. Harry Chipman, ODCSPER Coordinator

Ms. Nan B. Irick, Editor, ARS



11 January 1989

MANPRINT/Industry Executive Seminar. Alexandria, VA. Contact: LTC Rudy Laine, MANPRINT Directorate, HQDA (DAPE-MR), Washington, DC 20310-0300. Telephone: AV 225-9213 or COM (202) 695-9213.

14-16 February 1989

Tactical Vehicles Conference. Orlando, FL. Contact: COL William King, (USA, Ret.), American Defense Preparedness Assn., TMAS, Rosslyn Center, Suite 900, 1700 N. Moore St., Arlington, VA 22209. Telephone: (703) 522-0416.

6-10 March 1989

Technology and Innovations in Training and Education Conference (TITE '89). Atlanta, GA. Contact: Cpt. Nelson Jackson, (USN, Ret.), American Defense Preparedness Assn., TMAS, Rosslyn Center, Suite 900, 1700 N. Moore St., Arlington, VA 22209. Telephone: (703) 522-0416.



GENERAL INFORMATION



• Proposed articles, comments, and suggestions are welcomed, and should be mailed to: MANPRINT Bulletin, ATTN: HQDA (DAPE-MR), Washington, DC 20310-0300. Telephone: AV 225-9213, COM (202) 695-9213.

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