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# SURVIAC Bulletin

## Survivability/Vulnerability Information Analysis Center

SURVIAC is a U.S. Department of Defense Information Analysis Center (IAC) sponsored by the Defense Information Systems Agency (DISA), Defense Technical Information Center (DTIC).

### The Joint Aircraft Survivability to MANPADS Joint Feasibility Study

It is nearly impossible these days to open a newspaper and not read something about missiles. Whether debating a national missile defense system in the US or describing Integrated Air Defense System (IADS) in Northern Iraq, missiles are making the news. Although the larger systems generally get top billing, reports on the smallest member of the guided missile family, the infrared (IR)-homing man-portable air defense system (MANPADS), are appearing with increasing frequency. Across the globe, MANPADS activities in Chechnya, Albania, Sudan, Angola, Colombia, and numerous other regions are becoming publicly broadcast events.

Weighing in at just about forty pounds, IR MANPADS can pack a hefty punch: Since their 1972 combat debut

in Southeast Asia, a significant number of aircraft losses have been attributed to these diminutive weapons<sup>1</sup>. Small, inexpensive, easy to use, and increasingly available for sale, MANPADS have become the weapon of choice for not only legitimate militaries, but for paramilitary and terrorist organizations as well. And thanks to a

*New conditions require, for solution, new and imaginative methods.  
Wars are never won in the past.*

*- General of the Army Douglas MacArthur, 1931*

continuous stream of new buyers and new sellers, this thirty-year old threat will continue to pervade US military operations in the near-term and for years to come.

Until recently, responsibility for devising MANPADS-related counters, whether by improving technology or developing new tactics, was delegated to the individual military Services. However, as the threat systems continue to evolve both in technological sophistication and global proliferation, jointly-chartered Department of Defense (DoD) organizations such as the Joint Technical Coordinating Group on Aircraft Survivability (JTTCG/AS) and the Joint Live Fire (JLF) program have begun to recognize the tremendous payoffs of joint counter-SAM strategies<sup>2</sup>.

Such successful joint cooperation in developing technology-based solutions has raised the question as to whether a similar cooperative effort can be applied to developing non-materiel solutions. That is, can joint tactics, techniques, and procedures (TTP) built



A-10 damaged when a MANPADS missile exploded nearby.

*JASMAN Continued on page 3.*

## Report Documentation Page

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## SURVIAC Bulletin Vol XVII Issue 1

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upon innovative employment of currently available technologies be developed to mitigate the MANPADS threat over the near-term? Some of our country's top tactics experts say yes! A formal assessment of this concept is currently underway by the Office of the Secretary of Defense (OSD) Joint Aircraft Survivability to MANPADS (JASMAN) Joint Feasibility Study (JFS). The objective of the JASMAN study is to investigate the necessity and technical feasibility of testing joint, non-acquisition counter-SAM solutions in a realistic joint operational environment under the auspices of OSD's Joint Test and Evaluation (JT&E) program.

Keeping with the operational flavor of the JT&E program, the JASMAN study team<sup>4</sup> is concentrating proposed counter-MANPADS efforts on addressing three warfighter-critical operational issues<sup>5</sup>:

**Issue 1:** How severe is the problem? How effective are currently employed TTPs and CONOPS in countering threat IR MANPADS during joint operational air missions conducted in the low to mid-altitude regime?

**Issue 2:** How effective are potential mitigation techniques? What changes in joint and Service TTPs and CONOPS improve effectiveness of joint operational air missions in the presence of threat IR MANPADS?

**Issue 3:** How can the process be improved? How can test methodologies (processes) be improved to better characterize effects of threat IR MANPADS on the effectiveness of joint operational air missions?

*The JASMAN JFS is part of OSD's Joint Test and Evaluation (JT&E) program<sup>3</sup>. Congress established the JT&E program in 1972 to provide a means for evaluating concepts and addressing needs and issues that occur in joint military environments. The JT&E program integrates the expertise of the Defense T&E community and the expertise of our warfighters to investigate and solve complex joint operational problems. The program applies rigorous test and evaluation methodologies to provide timely solutions to the joint military community. As specified in DoD Directive 5010.41, Office of the Undersecretary of Defense (Acquisition, Technology, and Logistics) has overall program responsibility. All joint test directors report to Mr. Richard Lockhart, the Deputy Director, Developmental Test and Evaluation (DD,DT&E). DD,DT&E provides critical liaison within OSD and promotes each JT&E program's legacy products to the warfighter.*

The challenge currently underway is to translate these issues into a JT&E test concept that will satisfy warfighter and flag officer requirements, while at the same time adhering to OSD's specified time and budget constraints. JASMAN is proposing a MANPADS-specific test process (Issue 3) which will be used to test and evaluate joint, counter-SAM TTPs and CONOPS. Both currently employed concepts (Issue 1) and operator-developed enhanced procedures (Issue 2) will be addressed in realistic tactical environments, including airfield and target area scenarios.

In developing this test concept, the JASMAN team is breaking new ground in the joint arena. Joint standards for deter-

*JASMAN continued on page 4.*

<sup>1</sup> The entire class of IR-homing surface-to-air missiles, which includes vehicle-mounted systems as well the man-portable varieties, as accounted for over half of worldwide aircraft losses to hostile fire. Contact SURVIAC for more information on combat statistics and after-action reports.

<sup>2</sup> See the Winter 2000 issue of Aircraft Survivability for a synopsis of current JTCG/AS and JLF activities.

<sup>3</sup> See the Joint Test and Evaluation website for more information: <http://www.jte.osd.mil>

<sup>4</sup> While the USAF 46th Test WIng is the lead agency on the study, a program of this magnitude would not be possible without the unique partnership that has evolved between all of the military Services; the Federal Aviation Administration; the Defense Intelligence Agency's Missile and Space Intelligence Center; the Central Intelligence Agency; and the JTCG/AS. Together these organizations provide a broad range of technical and operational expertise. Included on the team are experts in infrared countermeasures, aircraft vulnerability reduction, tactics development, operational testing, missile intelligence, and combat aviation.

*JASMAN continued from page 3.*

mining what makes TTPs and CONOPs “effective” (Issues 1 and 2) do not exist. In general, it is agreed that TTPs should enable the aircrew to “get the job done and survive”; however, a formalization of this idea in terms of measures and data requirements has not yet been established. In addition to these basic requirements of mission completion and survival, TTP effectiveness can potentially vary with employment environment, time of day, weather, etc. Developing joint procedures for testing and evaluating the effectiveness of counter-SAM TTPs and CONOPS is also new ground. While hardware and system validation processes have been in place for years, no similar process has been validated for MANPADS-specific tactics development. Ideally, the test process should be warfighter-friendly and detailed enough to meet requirements, but flexible enough to meet constraints. Availability of test and simulation resources, time and budget, and required fidelity are all factors that must be considered.

The key to resolving these issues and challenges is the JASMAN Joint Warfighter Advisory Group (JWAG). An outgrowth of a March 2000 JTCG/AS-sponsored IR SAM Counter-Tactics Meeting<sup>6</sup>, this body of operational experts from the Service tactics-development organizations is keenly qualified to address MANPADS issues from the operational point of view. As subject matter experts (SMEs) they are charged with developing and teaching the tactics that could ultimately mean the difference between life and death for themselves and their fellow aviators. Non-DoD aviators are included as well, including representatives from the Federal Aviation Administration and the Drug Enforcement Administration. Intelligence support is provided by the Defense Intelligence Agency’s Missile and Space Intelligence Center, who

is the DoD Office of Primary Responsibility for threat MANPADS intelligence.

The current JASMAN plan is focusing on joint, counter-SAM TTPs and CONOPS that are applicable across classes of aircraft: heavies and high-value air assets; fighter/attack platforms; and helicopters. Within and across each of these classes, a combination of digital modeling, hardware-in-the-loop simulation, and live testing will be used to analyze, test, and evaluate the effectiveness of both currently employed TTPs/CONOPS and warfighter-developed alternative procedures. The test process itself is also considered a “test article” so that upon conclusion of the test program a validated, operator-approved process can be used to evaluate additional platforms, threats, and future improvements to TTPs/CONOPS. Counter-SAM TTPs and CONOPS under study include maneuvers; innovative employment of equipment and personnel (including current aircraft self-protection measures); and airfield-related courses of action.

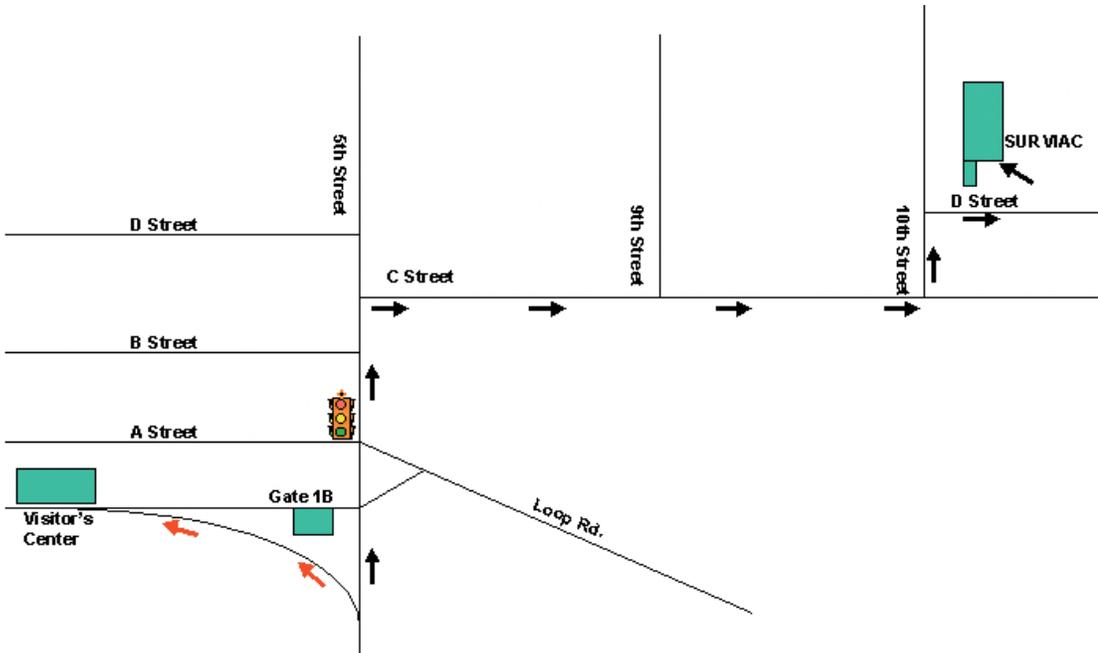
The JASMAN Joint Feasibility Study is ongoing, with a target completion date of Sep 01. A chartering decision (to determine whether to proceed into the test phase) will be made in August by OSD’s JT&E Senior Advisory Council, a board of senior (Flag and Senior Executive Service) leaders from OSD, the Joint Staff, Joint Forces Command, the Services, and Defense Field Activities. Additional information can soon be found at the JASMAN website: <http://www.jasman.wpafb.af.mil>, or by contacting the JASMAN Feasibility Study Director (Ralph Lauzze) at (937) 255-6823 x233 (DSN 785), E-mail: [ralph.lauzze@wpafb.af.mil](mailto:ralph.lauzze@wpafb.af.mil) or the JASMAN Technical Director (Kristina Langer) at (937) 255-6302 x224 (DSN 785), E-mail: [kristina.langer@wpafb.af.mil](mailto:kristina.langer@wpafb.af.mil).

<sup>5</sup> See the minutes of recent JWAG meetings for more details. Minutes are available for download at the JASMAN website: <http://www.jasman.wpafb.af.mil>.

<sup>6</sup> The March 2000 IR SAM Counter-Tactics Workshop was co-hosted by the USAF 46th Test Wing and SURVIAC. Minutes are available for download at the JASMAN website: <http://www.jasman.wpafb.af.mil>

# Home Sweet Home

In January of this year SURVIAC became part of the 46 Test Wing and relocated to Building 1661 (formerly 22B) at Wright-Patterson AFB, Ohio. After many long days of packing and unpacking (The movers said it was the worst move they've ever had to do!) we are once again back in the swing of things!



## Directions to SURVIAC:

All visitors must enter at Gate 1B and register at the Visitor's Center. Stay in left lane to go to the Visitor's Center. If you do not need to go to the Visitor's Center (i.e. you have a military I.D. card), stay in the right lane through the gate. This is 5th Street. Follow 5th Street to C Street - turn right. Turn left on 10th Street. Turn right at the next street which is D Street. SURVIAC entrance is located upstairs.



## ASC Creates Aging Aircraft System Program Office

By Sue Baker  
ASC Public Affairs Office

In 1947, when the U.S. Air Force was created, nobody gave much thought to the problem of aging aircraft. When something broke, you either fixed it with whatever you had "on hand" -- or in time, simply sent it to the aircraft "bone-yard" at Davis-Monthan AFB, Arizona.

Back in the early years of the Air Force, nobody gave much thought to extending the life of aircraft only intended to last 20 years. But they do now -- especially since most current Air Force systems are approaching or exceeding the age of the pilots who are flying them.

"Age management" has assumed a brand-new meaning at Aeronautical Systems Center (ASC), with formal "stand-up" of the Aging Aircraft System Program Office on January 25, 2001 led by Director Col. Joseph Shearer.

"From my perspective, solving cross-cutting aging aircraft issues is clearly the next, evolutionary step in acquisition reform," Colonel Shearer said. "In the past, we focused our acquisition reform attention on acquiring our systems 'faster, better, and cheaper'-- but we did it on a platform-by-platform basis. This next step focuses on taking advantage of cross-platform opportunities to reduce development, modernization and sustainment costs."

"There are three major 'thrust' areas in the Aging Aircraft SPO, which will have about 250 people," said Col. Michael Carpenter, chief Aging Aircraft Planning Division. "First, we need to focus our efforts, and become more proactive and predictive in terms of the 'ilities' (reliability, maintainability, etc.) that are caused by aging."

"Second, we need to encourage more sharing of technologies and solutions among the

air logistics centers, product centers and system program offices, for cooperative ventures that increase readiness, availability and lower the cost of ownership for weapons systems today," Colonel Carpenter said.

"The third thrust area is 'cross-cutters,' programs that span multiple platforms, such as the Large Aircraft Infrared Countermeasure (LAIRCM) program," the colonel added. "Used as a defensive system on the C-17, C-131, and C-141 aircraft, LAIRCM has the potential to affect their aging issues."

"Another example, the Common Low Observable Verification System (CLOVERS), is a system we use against a number of different stealth aircraft," Colonel Carpenter said. "And one more, the Joint Ejection Seat Program (JESP), which affects several current Air Force platforms."

An additional role for the new SPO is integration of new products across multiple platforms. "We're working with Electronic Systems Center at Hanscom Air Force Base, Mass., as an integration agent for all the aircraft platforms they manage that will have Link-16," Colonel Carpenter said. "This is a data-link system for communicating among different weapon systems."

But solving aging aircraft issues will not be easy for the new SPO. "Solving aging aircraft issues is like saying 'solve world hunger'," Colonel Carpenter said. "We have so many users with aging aircraft problems -- we really need to get our arms around all the things that are already being done, so we don't duplicate present efforts."

Coming up with a priority list for tackling aging aircraft issues is tough, but workable. "We look at specific platforms to see what their problems are, but we also look to see if those same problems are shared among

*"From my perspective, solving cross-cutting aging aircraft issues is clearly the next evolutionary step in acquisition reform"*

Col. Joseph Shearer,  
Director  
Aging Aircraft System  
Program Office

other platforms, and then go target those, as well. We're looking for the low-hanging fruit, those things that will give us the most bang for the buck," he said.

"The areas we're really concentrating on include structures and avionics," Colonel Carpenter said. "And we're expanding quickly into depot systems -- the processes and technologies used at the depots to produce our aircraft and commodities -- to see if we can do that more efficiently and effectively, to increase aircraft availability."

The new SPO also is taking advantage of previous and current projects involving other ASC units, such as the Propulsion Development System Office and the Training Systems Product Group, the colonel said. One example: the Engine Structural Integrity Program (SIP) effort, with its single manager located at Tinker AFB, Oklahoma.

The Air Force Research Laboratory (AFRL) also is a strong partner for the new SPO. "For several years, AFRL has been leading the research and development community's work to create newer technologies to improve availability and affordability of aging systems, with primary players Air Vehicles and Materials/Manufacturing Technology Directorates," Colonel Carpenter said. "In fact, we see the AFRL presence in our work expanding in the future."

Yet another tool for the new SPO is the Applied Technology Council (ATC), co-chaired by AFRL Commander Brig. Gen. Paul Nielsen, ASC Commander Lt. Gen. Robert Raggio, and AFMC Vice-Commander, Lt. Gen. Charles Coolidge, Jr.

"We're working with Air Force Materiel Command to strengthen our relationship with the existing aircraft depot system, through our work with the ATC, which began as an outgrowth of the 2000 National Aerospace Systems Technology Conference (NASTC)," Colonel Carpenter said. "We're

## MAUS IV

The Mobile Automated Scanner (MAUS) IV, developed by the Materials and Manufacturing Technology Directorate, Air Force Research Laboratory, Wright-Patterson AFB, Ohio, is used to detect aircraft corrosion, fatigue cracks, and aging problems in such current Air Force systems as this C-17 belonging to the 437th Airlift Wing (Air Mobility Command) at Charleston Air Force Base, South Carolina. MAUS IV helps military and civilian aircraft maintenance technicians perform accurate, non-destructive inspections and evaluations of large composite and metal components more easily in less time, by simplifying computer operator interface, improving system durability, and lowering inspection costs. The new Aging Aircraft System Program Office here will continue to use such advanced diagnostic tools to help Air Force (and other) customers safely extend the life of aging aircraft in the future. For more information on MAUS IV, look on the web at:

<http://www.afrl.af.mil/successes/1998/ss98149.html>

using this forum to connect the lab efforts into fieldable, depot system solutions, beginning with corrosion, non-destructive inspection, advanced top-coat, and composite repair areas."

AFRL's Mobile Automated Scanner (MAUS) IV is one example of a fielded solution. "Without taking the skins off the aircraft, MAUS can 'look' inside to see if there is corrosion, how extensive it is, and develop techniques so we can determine if it's safe to fly or has to be fixed right away," Colonel Carpenter said. "The advantages of MAUS, especially at the base level, include the ability to inspect aircraft more frequently, to identify and manage problems before they become catastrophic."

*Continued on page 8*

## People in Motion



**Susan Green**

of our products and interfaced with many of you on attending different SURVIAC meetings and workshops.

Linda has left to teach school. She is well known to our model users for the excellent support, training, and user meetings that she has conducted.



**Barry Vincent**

There's always plenty of activity and work to do at SURVIAC. Even so, we need to pause occasionally to take note of some truly significant transitions.

Ms. Susan Green and Ms. Linda Hamilton have recently departed from SURVIAC. Both have been long term employees dating back before SURVIAC, to CDIC.

Sue has retired after more than 20 years of service. She has been our office administrator and security officer.

Sue has handled distribution



**Linda Hamilton**

We want to express our deep appreciation for all they have done during their SURVIAC years. Please join us in wishing them well in their future endeavors.

We also want to welcome back Mr. Barry Vincent. Barry is coming back to SURVIAC and will provide model user support. Barry can be reached at (937) 255-4840 x283, e-mail: [vincent\\_barry@bah.com](mailto:vincent_barry@bah.com)

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*Aging Aircraft SPO continued from page 7*

In the future, the new SPO expects more and more customers with aging aircraft issues. "We expect to see more opportunities start to pop up, as we emphasize this critical area," Colonel Carpenter said. "We also expect to see more common system solutions coming out of our efforts -- maybe not tomorrow, but they'll be coming, in time. And, through improved knowledge management, we want to share those workable solutions with a wider audience in the future, so our customers don't have to waste time and money re-inventing the wheel."

"We're using good predictive tools to better advise our customers when they are

beyond the economic service-life of a weapon system, and when it makes sense -- lead time away -- to develop a new system, for one that's too expensive to maintain," Colonel Carpenter said. "It takes about a decade and a half to field a weapon system -- it's not something you can buy off the shelf -- so we've got to be able to look out a long way, to see when it's going to be economically unfeasible to retain an aging weapon system."

*For information on the SPO or solutions for aging aircraft problems, please contact Colonel Carpenter at: [michael.carpenter@wpafb.af.mil](mailto:michael.carpenter@wpafb.af.mil).*

# The MDR Process

**S**URVIAC's involvement in modeling support is thorough and involves active support for current models as well as introduction of new models. SURVIAC provides information resources and analytical services, in addition to providing the DoD community with comprehensive survivability and lethality modeling services including model updates, model distribution and expert technical support. One type of SURVIAC modeling support includes tracking Model Deficiency Reports (MDRs) for each model.

SURVIAC's model repository holdings are dynamic in which a given model is updated from time to time. Since neither SURVIAC nor the model developers can test every feature of every model version, the user community helps in the validation and verification process.

Maintaining MDRs for each model to incorporate corrections in the next version is an important part of this process. Feedback from the DoD community includes assessing the utility and adequacy of the documentation and determining if the code functions in accordance with specified requirements and capabilities. An MDR should also be submitted if a user identifies a deficiency with the model and/or documentation. If the deficiency can be duplicated, then a workable solution may be found.

Each MDR should include as much information as possible to duplicate the deficiency. This includes the user contact

information, computer type, operating system, model version, and detailed deficiency description. When possible, complete error messages; any affected input files; recommended corrections; or possible solutions should be included. When SURVIAC receives the MDRs, they are formatted and logged under the specific version of the model for which the deficiency was reported.

Prior to each model meeting, the collected set of MDRs is distributed to Configuration Control Board (CCB) members for review. When the CCB convenes, each outstanding MDR is discussed and the voting members of the CCB determine the status of the MDR. The categories for CCB decisions include: 1) MDR approved with corrective action for integration into the code; 2) MDR rejected with no action taken; 3) MDR pending due to more information required; and 4) MDR deferred to see if the problem persists in a subsequent version of the model.

MDRs should be submitted to SURVIAC. Please send the electronic format to [surviacmodels@bah.com](mailto:surviacmodels@bah.com) or fax copies to the attention of Mr. Paul Jeng (937) 431-2721. Electronic medium is the preferred method for submitting MDRs. Other questions should also be directed to [surviacmodels@bah.com](mailto:surviacmodels@bah.com). Each email received will be forwarded to one of SURVIAC's Model Managers. Other users of that specific model will be notified of the submitted MDR at the next model users group meeting.

## WANTED: Your Input!

Is there a subject you would like to see discussed in the SURVIAC Bulletin? Would you like to submit an article for publication in the SURVIAC Bulletin? We would like to hear from you! SURVIAC welcomes your suggestions and comments. Subscriber feedback and contributions is a

vital part of supporting the needs of the survivability community.

Please send your suggestions to Linda Ryan, SURVIAC, Com: (937) 255-4840 x208, DSN: 785-4840 x208, or E-mail: [liryan@bah.com](mailto:liryan@bah.com)

## FATEPEN Joins the List of SURVIAC Models

The Fast Air Target Encounter PENetration Program (FATEPEN) is a set of fast running algorithms which simulate the penetration of and damage to spaced target structures by compact and non-compact warhead fragments and long rods at speeds up to 5 km/sec. The model predicts penetrator mass loss, velocity loss, trajectory change, and tumbling throughout a target. The mass loss model includes an impact fracture model that, depending on impact conditions, transforms an incident intact warhead fragment into an expanding, multi-particle debris cloud which FATEPEN then tracks through the remaining target structure. FATEPEN also predicts multi-particle loading and damage to plate structures.

The FATEPEN model is based as much as possible on fundamental principles of mechanics together with assumptions regarding the principal loading and response mechanisms involved. The latter derive directly from experimental observation.

Empirical elements have been introduced either to obtain better agreement with available test data or to describe phenomena not readily amenable to first principle analytical modeling.

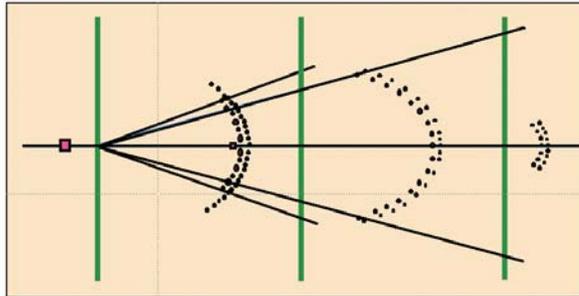
The penetration algorithms are comprised of deterministic, analytical/empirical engineering models and are contained in a separate Dynamic Link Library for easy portability to other calling programs. A Visual Basic, Graphical User Interface is used to define and/or select penetrators, targets,

and encounter conditions in the stand alone PC version of the code.

The FATEPEN algorithms have been partially validated by comparisons between model predictions and test results for a variety of projectile and target combinations.

The primary application of the code has been target vulnerability and weapon lethality assessments involving air targets and lightly-armored surface targets. FATEPEN has been transitioned to use by all three Services and is used as a submodel in a number of simulations, including the Advanced Joint Effectiveness Model (AJEM).

The government proponent for FATEPEN is now the Joint Technical



**FATEPEN Penetration Modeling**

Coordinating Group for Munitions Effectiveness (JTCC/ME). The model was developed over the past 20 years for the Naval Surface Warfare Center, Dahlgren Division (NSWC/DD) by Applied Research Associates, Inc., Rocky Mountain Division, Littleton, Colorado.

FATEPEN is written in FORTRAN-77, FORTRAN-90, and Visual Basic, and is designed to run on a personal computer running under the WINDOWS 95 environment or higher.

*For technical information on FATEPEN please contact Mr. Tom Wasmund, NSWC, Dahlgren Division, Com:(540) 653-8692, DSN: 249-8691, Email: wasmundt1@nswc.navy.mil.*

*To order FATEPEN, please contact: Ms. Geri Bowling, SURVIAC, Com: (937) 255-4840 x285 DSN: 785-4840 x285, E-mail: gbowling@bah.com.*

## SURVIAC Liaison Workshop 14-16 August 2001

The Survivability/Vulnerability Information Analysis Center (SURVIAC) cordially invites you to join our annual SURVIAC Liaison Workshop at our facility at Wright Patterson AFB, Ohio on 14-16 August 2001.

SURVIAC implemented this innovative liaison program to expand the survivability/vulnerability user base through the on site training of Government and Industry volunteers located remotely from the Wright Patterson AFB Ohio office. The purpose of the Liaison training program is two-fold. The objective is to increase the knowledge about SURVIAC and what resources we have to support other agency's/company's mission. The second objective is to inform us about your respective needs so that we can better support you in the future. The workshop is open to government and industry personnel.

Three days will be spent investigating databases and libraries, performing searches,

reviewing products and models, reviewing Technical Area Tasks, becoming familiar with key survivability and lethality agencies, as well as simply becoming familiar with the day-to-day operation of the SURVIAC office. Discussions will be held relative to ongoing efforts in the survivability/lethality communities and a briefing will be presented by the Defense Technical Information Center (DTIC) Information Analysis Center (IAC) Program Office. The needs of each liaison and how a more effective relationship through this program might be established. In addition to the instruction, participants will receive products and models of their choice, a \$2000.00 value. Attendees will come away with the realization that a vast amount of information is available both at SURVIAC and throughout the community.

For more information, please call Ms. Donna Egner at (937)255-4840 DSN 785-4840 or email [donna.egner@wpafb.af.mil](mailto:donna.egner@wpafb.af.mil).



### Component Vulnerability Analysis Archive Workshop To Be Held

The SURVIAC, in conjunction with the JTCG/AS and JTCG/ME, would like to announce the availability of a new Component Vulnerability Analysis Archive (CVAA). The CVAA is a searchable database of engineering methodologies, results of completed analyses, and support-

ing test data to determine the vulnerability of components to a wide variety of damage mechanisms. The CVAA contains vulnerability data on components from systems ranging from aircraft and lightly armored vehicles to hardened targets. Damage mechanisms include penetration, blast, fire, and shock among others. All data in the CVAA has been reviewed by a group of senior vulnerability analysts to ensure traceability to the original source of information and to clearly define limitations of data.

A workshop to present the CVAA is being planned as part of the procedure for introducing it into SURVIAC. The one-day workshop will consist of presentations on the CVAA and its usages as well as the opportunity for 'hands on' CVAA use. Attendees will receive the latest CVAA version on CD ROM as well as copies of all the briefings. The cost to attend the workshop is \$50. It will be held at the Booz·Allen Beaver Creek, Ohio facility on 27 September. Because of the 'hands on' portion of the workshop attendance is limited to 25 on a first come basis.

If you are interested in obtaining more information on the CVAA Workshop, or in attending, contact SURVIAC, Gerald Bennett at 937-255-3828 x 281, email [bennett\\_gerald@bah.com](mailto:bennett_gerald@bah.com).

# SURVIAC PRODUCT AVAILABILITY

SURVIAC is a U.S. Department of Defense Information Analysis Center (IAC) sponsored by the Defense Technical Information Center (DTIC)

Products

Product	Classification	Reproduction & Handling Fee
A Critical Review of Graphite Epoxy Laser Damage Studies	SECRET	\$ 50.00
A Summary of Aerospace Vehicle Computerized Geometric Descriptions for Vulnerability Analyses	Unclassified	\$100.00 (Free to Gov't)
Advanced Materials for Enhanced Survivability	SECRET	\$100.00
Aircraft Fuel System Fire and Explosion Suppression Design Guide	Unclassified	\$150.00/3 Volumes
'Aircraft Survivability' Video	Unclassified	\$ 50.00 or 30-Day Loan
Alternatives For Halon 1301 In Army Ground Vehicle Firefighting Systems	Unclassified	\$250.00
An Overview of Laser-Induced Eye Effects	SECRET	\$150.00
An Overview of Laser Technology and Applications	Unclassified	\$ 50.00
'Battle Damage Repair of Composite Structures' Video	Unclassified	\$ 75.00
Collection of Vulnerability Test Results for Typical Aircraft Systems and Components	CONFIDENTIAL	\$150.00
Comparative Close Air Support Vulnerability Assessment Study - Executive Summary	SECRET	None (Gov't. Only)
Compendium of References for Nonnuclear Aircraft Survivability (A Supplement to MIL-HDBK-336)	Unclassified	\$150.00
Component Vulnerability (Pd/h) Workshop Component Pd/h Handbook w/addendum	SECRET	\$200.00 (Free to Gov't)
Component Vulnerability Database Development - CD	SECRET	\$100.00 (Free to Gov't)
Countermeasures Handbook for Aircraft Survivability (3 Volumes)	SECRET	\$200.00 (Free to Gov't)
Critical Review and Technology Assessment (CRTA) for Soldier Survivability (SSv)	Unclassified	\$ 50.00
'Designing for Survivability' Video	Unclassified	30-Day Loan
Gas Explosion Suppression Agent Investigation	Unclassified	\$200.00
Gun and Missile Pedigree Threat Reports - CD	SECRET	\$150.00
Joint Live Fire/Live Fire Test Program Catalogue, Version 3.1	Unclassified	\$ 95.00
MANPADS Threat to Aircraft: A Vulnerability Perspective - Final Report	SECRET	\$200.00
Model User Group Meeting Minutes - CD	Unclassified	\$ 50.00
National MANPADS Workshop: A Vulnerability Perspective Proceedings 2 Volumes	SECRET	\$200.00
Penetration Characteristics of Advanced Engine Materials	Unclassified	\$100.00
Proceedings of the Eighth DOD Conference on DEW Vulnerability, Survivability and Effects - 2 Volumes	SECRET	\$125.00/Per Set
RADGUNS 1.8 Parametric Study	SECRET	\$100.00 (Free to Gov't)
Ship Survivability Overview	Unclassified	\$ 50.00
'SURVIAC - A Capabilities Overview' Video	Unclassified	30-Day Loan
Survivability Analysis Workshop Notebook - 2000	Unclassified	\$100.00 (Free to Gov't)
Survivability Systems Master Plan	Unclassified	\$ 50.00 (Free to Gov't)
Testing of Aircraft or Aircraft Surrogates with On-Board Munitions	Unclassified	\$100.00
"Threat Effects in Aircraft Combat Survivability" Video	Unclassified	\$150.00 or 60-Day Loan
Ullage Explosion Hazard State-of-the-Art Report (SOAR)	Unclassified	\$ 50.00
Unmanned Aerial Vehicles Survivability Compendium—Interim Report Database	Unclassified	\$200.00
U.S. Air Force Surface-To-Air Engagements During Operation Desert Storm	SECRET	\$100.00 (Free to Gov't)
Vulnerability Reduction Design Guide for Ground Systems in a Conventional Combat Environment	Unclassified	\$200.00

For further information on how to obtain these products and how to establish need-to-know certification, please contact SURVIAC at (937) 255-4840 or DSN 785-4840. Requests from non-U.S. agencies must be forwarded to their country's Embassy in Washington DC, Attn: Air Attache's Office.



# SURVIAC Model Availability

SURVIAC is a U.S. Department of Defense Information Analysis Center (IAC) sponsored by the Defense Technical Information Center (DTIC)

Model	Classification	Reproduction & Handling Fee	
		Model	Documentation
AIRADE 7.4—Airborne Radar Detection Model	Unclassified	\$500.00	\$ 36.00
ALARM 4.1—Advanced Low Altitude Radar Model	Unclassified	\$500.00	\$ 50.50 <sup>+</sup>
BLUEMAX IV—Variable Airspeed Flight Path Generator	Unclassified	\$500.00	\$ 15.00 <sup>+</sup>
BRAWLER 6.4—Air-To-Air Combat Simulation	SECRET	\$500.00	\$231.50 <sup>+</sup>
BRL-CAD—Ballistic Research Laboratory Computer-Aided Design Package*	Unclassified	\$500.00	N/A
COVART 4.1—Computation of Vulnerable Area and Repair Time	Unclassified	\$500.00	\$ 37.00
DIME—Digital Integrated Modeling Environment	Unclassified	\$500.00	\$ 63.00
ESAMS 2.8.3—Enhanced Surface-To-Air Missile Simulation	SECRET	\$500.00	\$295.50 <sup>+</sup>
FASTGEN 3.2—Fast Shotline Generator	Unclassified	\$500.00	\$ 52.00
FATEPEN—Fast Air Target Encounter Penetration Program	Unclassified	\$500.00	TBA
IVIEW 2000—Graphical User Interface for Output Simulation	Unclassified	\$100.00	+
JSEM - Joint Service Endgame Model	Unclassified	\$500.00	TBA*
LELAWS 3.0—Low Energy Laser Weapons Simulation	Unclassified	\$500.00	\$ 31.50
MIL-AASPEM — Man-in-the-Loop Air-To-Air System Performance Evaluation Model	Unclassified	\$500.00	\$ 80.00 <sup>+</sup>
RADGUNS 2.2—Radar-Directed Gun System Simulation	SECRET	\$500.00	\$ 59.50 <sup>+</sup>
TRAP 3.1a—Trajectory Analysis Program	Unclassified	\$500.00	\$256.00
TRACES 1.0—Terrain/Rotorcraft Air Combat Evaluation Simulation	Unclassified	\$500.00	\$127.00

\* For more information regarding BRL-CAD or JSEM documentation contact Mr. Bob Strausser at the SURVIAC Aberdeen Satellite, Office, (410) 273-7722.

+ Documentation included with code on CD version of Model at no charge



For further information on how to obtain these models and how to establish need-to-know certification, please contact SURVIAC at (937) 255-4840 or DSN 785-4840. Requests from non-U.S. agencies must be forwarded to their country's Embassy in Washington DC, Attn: Air Attache's Office.

Models

## JLF/LF TIS Application Upgrade!

The JLF/LF TIS (Joint Live Fire/Live Fire Test Information System) is being upgraded to include a new user interface, updated report printing, and easier installation on Win98, WinME, WinNT, and Win2000 systems.

JLF/LF TIS is a database application that contains information and details from JLF tests. The data is extracted from JLF test reports and organized into a database that allows searching and easy navigation.

The new user interface to the database is modeled after the familiar Windows Explorer application. The treeview on the left breaks down into all of the detailed test components on the right. This allows the user to easily see how the detailed information is related to the entire test. In addition, tab controls are utilized on both sides of the application for better organization.

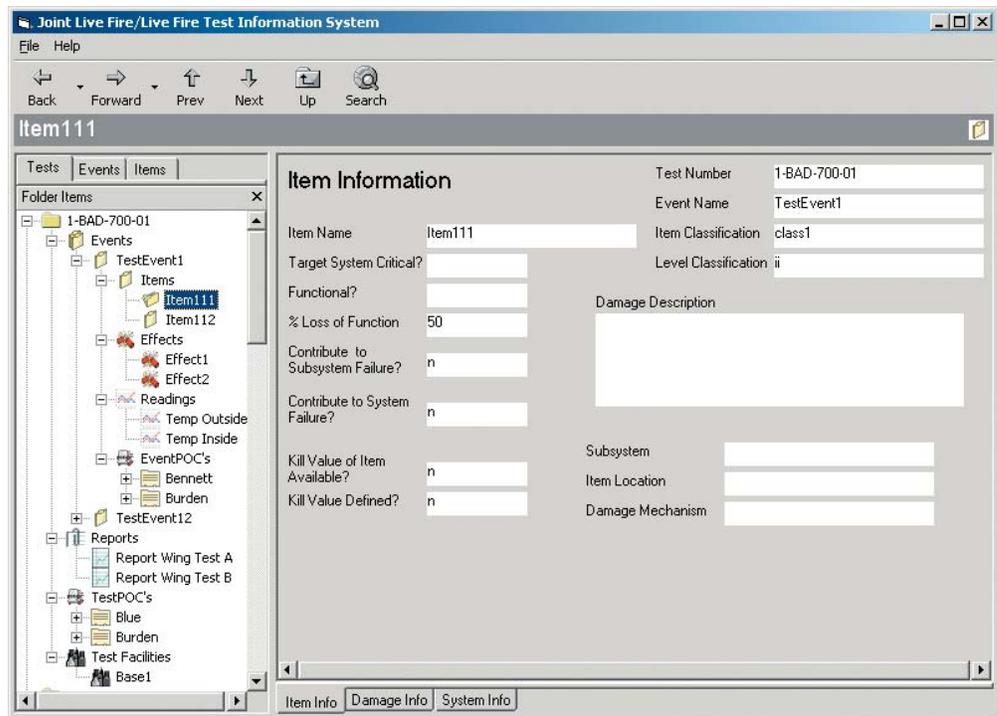


Figure 1. JLF/LF TIS new user interface.

The new reporting function in the application will allow the user to print details of the test in a formatted document. The reporting functions are programmed using Crystal Reports 8.0 and will provide professional results suitable for distribution.

The search functions are being updated to allow the user to search on all fields. In addition, there will be Common Search Scenarios available for quick searching and sorting.

Finally, the new application will easily install on Win95, Win98, WinME, WinNT, and Win2000 systems. The application is being developed in VB 6.0 using Infragistic's Data Explorer component. If you would like further information, please contact David Blue at Com: (937) 431-2737, E-mail: blue\_david@bah.com.

The new JLF/LF TIS application is about 50% complete, it is scheduled for completion in August 2001.

## September

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### **Space 2001 Conference & Exposition**

28-30 August 2001  
Albuquerque, New Mexico  
POC: AIAA, (800) 639-AIAA, (703) 264-7500, E-mail: custserv@aiaa.org, www.aiaa.org

### **DTRA's First Biennial Threat Reduction Conference**

4-7 September 2001  
Norfolk, Virginia  
POC: DTRA, (703) 767-0145, E-mail: dtraconferencecoordinator@dtra.mil

### **2001 Fall Simulation Interoperability Workshop**

9-14 September 2001  
Orlando, Florida  
POC: Duncan Miller, SISO, E-mail: dmiller@sisostds.org, www.sisostds.org

### **Unmanned Aerial Vehicles and Their Missions, Links, and Payloads Course**

17-21 September 2001  
Alexandria, Virginia  
POC: AOC Conference Dept., (703) 549-1600 or (888) OLD-CROW, www.aochq.org

### **Fire & Explosion CCB Meeting**

18-19 September 2001  
Dayton, Ohio  
POC: Jeff Wuich, (937) 255-4840, E-mail: wuich\_jeff@bah.com

### **Component Vulnerability Analysis Archive (CVAA) Workshop**

27 September 2001  
Booz-Allen & Hamilton Inc., Beaver Creek, Ohio  
POC: Gerald Bennett, (937) 255-3828 X281, E-mail: bennett\_gerald@bah.com

### **Combat Vehicles Conference**

24-26 September 2001  
Ft. Knox, Kentucky  
POC: NDIA, (703) 522-1820, E-mail: adekleine@ndia.org, www.ndia.org

## October

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### **39th Annual Air Targets, Ranges and UAVs Symposium**

2-4 October 2001  
Las Vegas, Nevada  
POC: NDIA, (703) 522-1820, E-mail: asaliski@ndia.org, www.ndia.org

### **US Naval Institute Warfare Exposition**

8-11 October 2001  
Virginia Beach, Virginia  
POC: USNI, (703) 631-6200

## November

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### **Aircraft Fire Protection/Mishap Investigation Course**

5-9 November 2001  
Dayton, Ohio  
POC: Robert Clodfelter, AFP Associates, (937) 435-8778, E-mail: robertposh@aol.com,  
<http://members.aol.com/afp1fire/www.htm>

### **BLUEMAX, ALARM, RADGUNS (BAR) Meeting**

6-8 November 2001  
Charlottesville, North Carolina  
POC: Paul Jeng, (937) 431-2712, E-mail: surviacmodels@bah.com@bah.com

### **Brawler and ESAMS Meeting**

27-29 November 2001  
Nellis AFB, Nevada  
POC: Paul Jeng, (937) 431-2712, E-mail: surviacmodels@bah.com@bah.com

Visit our website at <http://iac.dtic.mil/surviac>



Boy are our faces red! In the last issue of the SURVIAC Bulletin the names of some of our distinguished speakers at the Survivability Analysis Workshop were placed under the wrong pictures. The pictures above now have the correct names under them. We apologize for any inconvenience this may have caused and appreciate the understanding and humor exhibited by our speakers concerning this error!

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