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NSWC TR 88-138

INFORMATION RESOURCE SUPPORT ON SHOCK AND VIBRATION

BY HENRY C. PUSEY
ADVANCED TECHNOLOGY AND RESEARCH, INC.

FOR NAVAL SURFACE WARFARE CENTER
PROTECTION SYSTEMS DEPARTMENT

4 APRIL 1988

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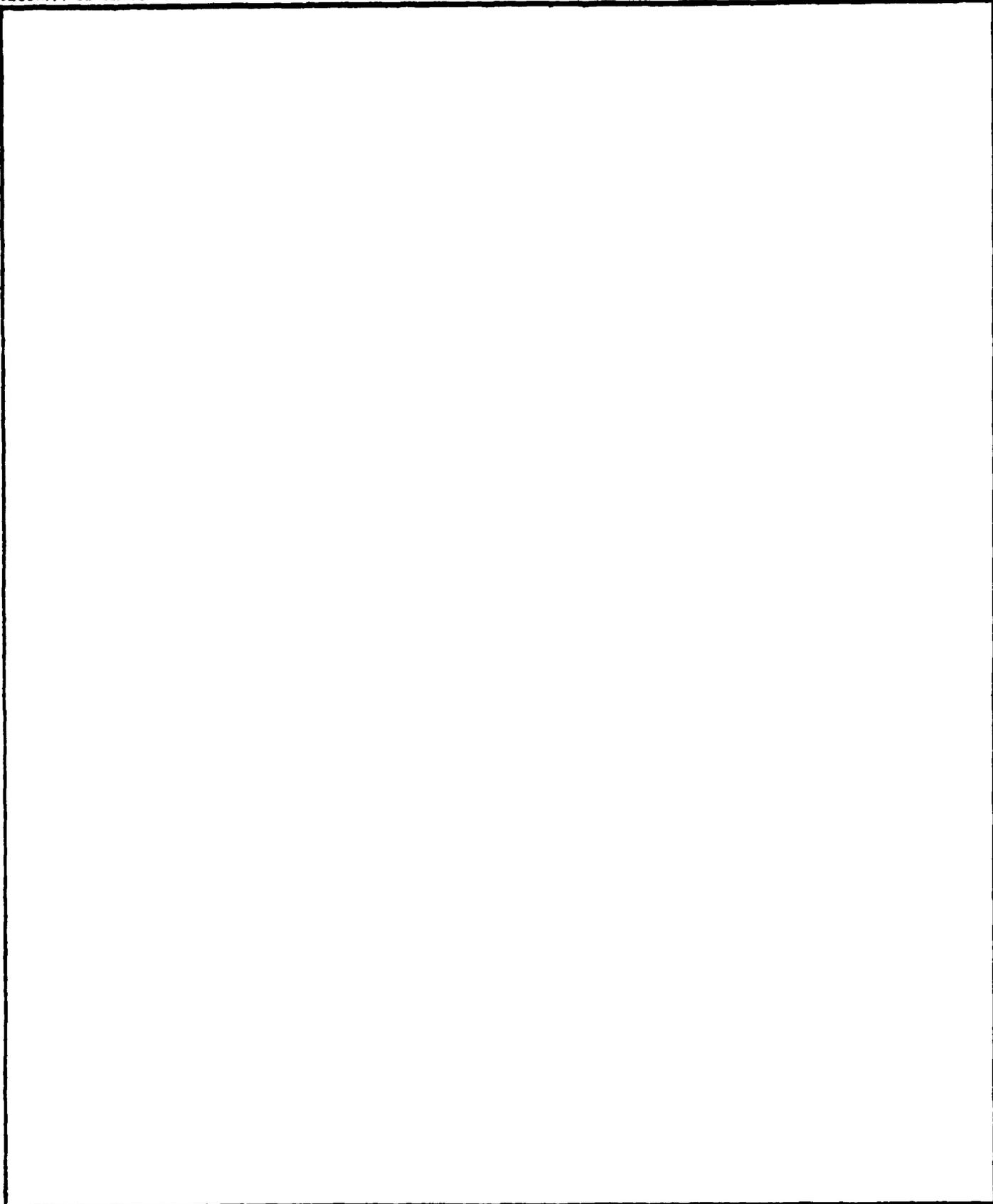
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FOREWORD

This task was supported by multiple government agencies within the Department of Defense and the National Aeronautics and Space Administration. It has been managed under the direction of an ad hoc interagency committee established to oversee the provision of shock and vibration information support services to these agencies, their contractors, and universities.

It is anticipated that the results of this study will be used to justify the establishment of a new Shock and Vibration Information Analysis Center under the cognizance of the Defense Technical Information Center.

Approved by:

R. T. RYLAND, JR.; Head
Protection Systems Department

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INTRODUCTION

Since the early 1960's, when the first real attempts were made to create an integrated technical information system for the Department of Defense (DoD), there have been numerous workshops and conferences held to examine ways of improving the effectiveness of the DoD Scientific and Technical Information (STINFO) Program. References 1 and 2 are examples of such conferences. Without exception, the results of these meetings have been positive with respect to the need for technical information services and supportive of ways to develop dynamic research and development (R&D) information systems and services that really work. Keynote speakers and DoD STINFO focal points have repeatedly testified that technical information is a national resource and is an essential component of the research, development, test, and evaluation (RDT&E) process. Furthermore, each conference has produced its own set of solid recommendations on ways to improve the technical information picture.

In spite of all this, formal technical information management throughout DoD has seen extreme variations between high and low interest and support for over 25 years. In a broad sense, some of these variations can be traced to changes in the political scene, and some relate to the growth of technologies, while others are just due to neglect. In specific cases, withdrawal of support for information services can result from a breakdown in communications and/or the lack of a strong and timely statement of need. When this happens, DoD management is often not provided with enough information to make an informed decision. In such a case, the Shock and Vibration Information Center (SVIC) was disestablished. The strong support for SVIC came after the action had been taken and provides the basis for this study.

An important technical information resource for shock and vibration technology has been eliminated. For reasons which will be discussed later, the DoD and National Aeronautics and Space Administration (NASA) communities in particular have demonstrated a clear need to continue vital shock and vibration information services. The purpose of this study is to define and prioritize the needed information services based on the requirements of the technical community and to recommend workable options for providing those services. However, before addressing the details of this study, it is instructive to look at the technical information problem from a broader perspective. In particular, consider the role of top management (DoD/NASA), the R&D management, and the technical information managers in assuring that information transfer is effectively accomplished, as mandated by Public Law 99-502 and Executive Order Number 12591.^{3,4}

With respect to technical information, top management in DoD or NASA has the role and the responsibility to approve or sanction technical information activities and to issue regulations on how these activities should function.

Although it may be unwritten, it is suggested that top management has the additional responsibility, wherever possible, to remove the roadblocks to smooth information flow. Sometimes this can be done by regulation, and other times by influence and persuasion. Smooth information flow may be inhibited by security restrictions that are difficult to interpret and are consequently misinterpreted and imposed unnecessarily. Furthermore, by interservice rivalry, professional jealousy, and sometimes sweeping budget constraints inhibit smooth, efficient flow of essential information. The list of such inhibitors may be quite long and, many times, doing something about them is out of the sphere of immediate R&D management. Finally, top management is responsible to assure that technical information flows effectively within the RDT&E process, and in both directions. The technology base that is generated by research and exploratory development programs supports the development of real systems, while the problems that develop in these systems provide feedback on technical areas which need further study.

R&D managers should recognize that technical information is an essential part of their overall program responsibilities. They should understand that, although information systems must be well managed because they involve people and money, technical information itself is not a resource to be managed as money, materials, facilities, or energy are managed. It is difficult, if not impossible, to assign a specific dollar value to technical information services, but one can show value in other ways. Technical information conserves other resources through better decisions. If R&D managers and investigators are fully "informed" about the latest technological developments, they are more likely to make wise choices. In the same way, the R&D manager can consider measuring the value of technical information in terms of the cost of not knowing. If the latest information is not provided in a timely and effective way, what would it cost in terms of lost research hours? What would it cost for the unnecessary duplication of work that had already been done? In any number of cases, the cost of not knowing may be anything from minor disruptions or delays to important missed opportunities. Once an R&D manager is convinced of the value of technical information, he is more likely to be willing to pay a small tax from his research budget to support information services.

The technical information manager is, of course, the one who provides the information services, but in order to be sure he does this effectively he must assume additional responsibilities. First of all he must thoroughly understand the structure and needs of the user community that he is serving. Whether he is serving managers or bench workers, he should have his service geared to provide what they need when they need it. To do this he must become familiar with their R&D goals since his own goal should be to enhance the success of their programs. Within the framework of the policies and regulations which control his actions, he must be flexible enough to respond to the changing requirements of the user community.

This broad picture of information management provides some insight with respect to various levels of responsibility in the overall process. The ideas presented are equally applicable to technical information management for a particular technology, such as shock and vibration.

BACKGROUND

Appendix A contains a brief history of the SVIC and a description of its products and services. SVIC was a DoD information analysis center (IAC) operated by the Navy. As a result of a recommendation by the Navy and concurrence by DoD, the SVIC was disestablished on 31 October 1986. This action was taken without consultation with major segments of the SVIC user community, including a number of Navy users. On learning of the imminent loss of a vital resource, various elements of DoD and NASA took strong exception to the action in the form of telephone calls, letters, and memoranda indicating serious negative, irreparable, and costly consequences of the disestablishment of this function. The concerns that were expressed led to two immediate actions.

1. A meeting of the interagency Technical Advisory Group (TAG) for SVIC was scheduled to be held at the 57th Shock and Vibration Symposium in New Orleans, Louisiana, on 14-16 October 1986.
2. A survey was conducted to sample the opinions of those attending the 57th Shock and Vibration Symposium with respect to the need to continue technical information services in the shock and vibration area. The results of this survey are given in Appendix B.

RESULTS OF THE TECHNICAL ADVISORY GROUP MEETING

Approximately 30 persons representing various elements of the shock and vibration technical community attended an open meeting of the TAG on 14 October 1986 in New Orleans, Louisiana. Discussions during the meeting centered exclusively upon the planned disestablishment of SVIC. A summary of the principal results of the meeting follows.

1. The TAG acknowledged the right of the Navy to discontinue lead support for SVIC but felt that this action should not have been linked to the SVIC's disestablishment. The user community should have been consulted and given an opportunity to defend their needs for SVIC services and to develop options for providing those services.
2. It was concluded that the loss of SVIC is occurring at a time when the need is becoming greater. Requirements for combat survivability are sharply increasing. Several emerging programs need broadly based and timely interchange of classified and limited access information in order to succeed.
3. Workable options for the continuation of vital shock and vibration information services must be developed. It was agreed that, with lead funding from NAVSEA 55X13 and contributions from other agencies, a follow-on study was to be conducted under a Naval Surface Warfare Center (NSWC) contract with Mr. William W. Wassmann as the Contracting Officer's Technical Representative (COTR).
4. As an interim measure pending the outcome of the study, the TAG concluded that the continuity of the shock and vibration symposia, as well as the Shock and Vibration Digest and Data Base, should not be interrupted.

5. An Ad Hoc Subcommittee of the TAG was appointed to pursue actions subsequent to the TAG meeting. Mr. William Wassmann of NSWC was named chairman. At the instructions of the TAG, the AD Hoc Subcommittee prepared a memorandum to the Deputy Under Secretary of Defense for Research and Engineering (Research and Advanced Technology) (OUSD-R&AT) requesting a stay of the SVIC disestablishment action pending the outcome of the follow-on study. Subcommittee members were also to assist Mr. Wassmann in monitoring the study, in organizing and conducting the 58th Shock and Vibration Symposium, and in other interim matters relating to the continuation of shock and vibration information services.

ACTIONS SUBSEQUENT TO THE TECHNICAL ADVISORY GROUP MEETING

The memorandum from the TAG to Dr. Ronald L. Kerber (OUSD-R&AT) was delivered with a supporting memorandum from Dr. Eugene Sevin (Deputy Under Secretary of Defense for Research and Engineering (Strategic and Theater Nuclear Forces)) (OUSD-S&TNF). Although Dr. Kerber did not reverse the disestablishment action, he acknowledged the TAG effort and, in a memorandum to the Office of Naval Research, asked the Navy to cooperate. In a memorandum to Dr. Kerber, the Chief of Naval Research gave assurances that the archival holdings of SVIC would be held intact pending the outcome of the TAG-supported study.

A study to develop guidelines and options for providing shock and vibration information services was authorized on 23 December 1986 as Task Order No. 0059 under NSWC Contract N60921-86-D-0024 with Advanced Technology and Research (ATR), Inc. This report gives the results of that study.

SCOPE OF THE TASK

As described in the Statement of Work, the task involves separate, but related, interim and long-term goals. The task statement was written in this way to assure that the TAG recommendations from the 57th Symposium TAG meeting would be implemented.

INTERIM OBJECTIVES

In part, the concern of the TAG was that the series of shock and vibration symposia not be interrupted while ways are sought to continue other important shock and vibration information services. Specifically, the TAG urged that procedures be developed and implemented for organizing and conducting the 58th Shock and Vibration Symposium on an interim/ad hoc basis in the autumn of 1987. This objective has been met. The 58th Symposium will be sponsored and hosted jointly by NASA's Marshall Space Flight Center and the U.S. Army Missile Command. Financial support for the administrative management of the symposium will be provided from a number of sources and implemented as a task under the NSWC contract with ATR, Inc. Details of the arrangements for the 58th Symposium are given in Appendix C.

Pending the issuance of a task order for supporting the management of the 58th Symposium, ATR, Inc. was authorized to provide interim support under this task. Such support has been provided on a continuing basis.

PURPOSE OF THE STUDY

The objectives of the study, as paraphrased from the Statement of Work, were to:

1. survey the information needs of the shock and vibration technical community,
2. identify/define and assign priorities to the shock and vibration technical information services that should be provided,
3. develop a minimum of three workable options for establishing a shock and vibration information activity capable of providing the required information services.

In conducting the study, maximum user (or potential user) input was to be sought both in defining the information requirements and in developing ways to satisfy those requirements.

Although all needed information services that are identified in the user survey were to be included, the study was to place particular emphasis on the following requirements.

Conduct and/or maintain:

1. technical symposia as platforms for the dissemination/interchange of technical information, both classified and unclassified;
2. periodicals and other methods of providing a current awareness service to users;
3. shock and vibration data bases;
4. support/sponsorship of technical training activities;
5. a cadre of technical experts.

In developing options for providing shock and vibration information services, details on all factors necessary to make the option work must be included. Such factors include, but are not limited to:

sponsor/location
management structure
level of authorization
technical oversight structure
method(s) of funding
interagency agreements required.

INPUT TO THE STUDY

Using the guidance provided by the TAG as a starting point, the process of gathering information and opinions from the technical community was begun. Before describing the actions taken in this effort, it is appropriate to discuss the concept of a technical community.

THE SHOCK AND VIBRATION TECHNICAL COMMUNITY

The term "technical community," when used in conjunction with a particular technological area, is usually taken to mean "that group of people who are doing research in or are concerned with solving problems in the technology involved." Thus, the materials community is concerned with all aspects of materials, while the shock and vibration community, in the broadest sense, is interested in problems related to dynamic loads and response. This, of course, is a simplified generic definition of an idea that is not really simple at all.

Within the framework of this study, the technical community consists of all persons involved with any aspect of shock and vibration as it relates to government programs, particularly those of DoD and NASA. Essentially all government laboratories, government contractors, not-for-profit institutes, and universities employ personnel who are concerned with either research or problem solving with respect to shock, vibration, or other dynamic loads. Whether they work on instrumentation, data analysis, criteria development, specifications, analysis, design, or testing, these are the people that will be the ultimate users of technical information services in the shock and vibration field.

Throughout the study, the goal has been to acquire input from all elements of the potential community of users of a government-sponsored shock and vibration information service. Accordingly, a serious attempt was made to obtain ideas from as many perspectives as possible. Among those contacted were representatives from the Army, Navy, Air Force, Defense Nuclear Agency (DNA), NASA, and the Department of Energy (DOE). There were also managers, criteria developers, designers, analysts, and test engineers. From the private sector, a variety of contractors, universities, and nonprofit institutes were represented.

The DoD/NASA shock and vibration technical community has interests and needs that are not much different than those of the generic community mentioned earlier. This group of people is indeed the ultimate users of shock and vibration technical information services, and it is their needs and requirements that must be satisfied. However, it is largely these same people who advance the state of the technology and contribute to the bank of knowledge that is dispensed to other users in the community. The smooth flow of information in this kind of cycle can be very productive. It is therefore important that the information activity controlling this flow be well organized and efficiently operated.

SOURCES OF INFORMATION

Information from the following sources form the basis for the conclusions reached in the study.

1. User Survey at the 57th Symposium: Appendix B gives the results of this survey.

2. Responses to Final SVIC Announcement: On 10 December 1986 a final announcement under SVIC letterhead was mailed to more than 3,500 addressees on the SVIC mailing list (see Appendix D). A questionnaire was not included, but suggestions and opinions were sought. Fifteen detailed responses were received. Seven were from foreign sources, six from industry, two from universities, and two from national laboratories.

3. 58th Symposium Survey Forms: This form was mailed with the Preliminary Announcement and was primarily intended to be used for symposium planning. The information is useful, however, in organizing and planning future symposia. There were 70 responses. A brief summary of results is given in Appendix E.

4. Workshop Survey: A survey of invited participants for a Conference/Workshop on Shock and Vibration Information Services (see item 5) was sent out. There were 54 responses out of 231 sent out. A brief summary of the results is given in Appendix F.

5. Conference/Workshop: As a key part of this effort, a special Conference/Workshop was organized and held in Dayton, Ohio, to address the issues of the study. Over 40 persons in six separate workshops worked on the problem. The conference agenda, guidelines, and working group reports are included in Appendix G.

6. Interviews: Interviews were conducted either in person or by telephone with representatives from the following organizations:

- a. Department of Defense
- b. Naval Air Systems Command
- c. Naval Sea Systems Command
- d. Naval Surface Warfare Center
- e. Naval Research Laboratory
- f. Naval Weapons Center
- g. U.S. Army Missile Command
- h. U.S. Army Laboratory Command
- i. U.S. Army Armament R&D Command
- j. Air Force Flight Dynamics Laboratory
- k. Air Force Materials Laboratory
- l. USAF Aerospace Medical Research Laboratory
- m. NASA Marshall Space Flight Center
- n. Defense Technical Information Center
- o. Survivability/Vulnerability Information Analysis Center
- p. Aerospace Structures Information and Analysis Center

Information obtained from these interviews is incorporated in the study results.

7. Reference Materials: Reports and other documents related to the issues of the study were obtained and studied.

TECHNICAL INFORMATION SERVICES

There is no doubt about the importance of, and the need for, a central activity to collect, process, and disseminate technical information in the shock and vibration field. Throughout the surveys and interviews, as well as the workshop, not a single voice questioned this need. At the same time, there was overwhelming testimony that, in some way, shock and vibration information services must be continued. With this in mind, some key aspects of this study are to:

1. identify the kinds of information services required by the users,
2. assign an order of importance to the services, and
3. develop some ideas on how these services could be provided most effectively.

SERVICES AND PRIORITIES

In assessing the information needs of the shock and vibration user community, it was decided that it would be useful to offer a "shopping list" of typical information services. Table 1, for example, is a list that was included with the invitation to the conference/workshop (see Appendix G). It was pointed out that this list was only a guide. Participants were not to limit their ideas in any way.

The three principal sources that were used to define technical information service requirements and establish priorities were the 57th Symposium Survey, the Workshop Survey, and the Working Group Reports. The results from these sources compare very closely with the opinions expressed during the interviews. Therefore, it is suggested that the results that follow are a reasonable representation of the opinions of the shock and vibration user community as a whole. The technical information services that should be provided, listed in order of priority, are described below. (Detailed descriptions of these services, with suggestions on how to deliver them most effectively, will be given later.)

1. Shock and Vibration Symposia and Proceedings: The combination of this symposia series and its accompanying proceedings is clearly the overwhelming choice for the "most needed" information service. Reasons that the continuation of this series of meetings is perceived as vital include:

a. These symposia were sponsored by the former SVIC from January 1947 through the time of its disestablishment in October 1986. The shock and vibration symposia were highly regarded and, in effect, have been institutionalized as the best forum for interchange of shock and vibration technology, particularly for information that is related to defense or space programs. With the 58th symposium scheduled for October 1987, it is the only presently available mechanism for the exchange of classified and limited access information in the shock and vibration field.

b. The symposia proceedings (formerly called the Shock and Vibration Bulletin) has been cited as the most comprehensive collection of information in its field, both classified and unclassified. There appears to be a consensus that it is desirable to continue this archival process.

TABLE 1. INFORMATION SERVICES THAT MAY TYPICALLY BE PROVIDED BY IACs AND SIMILAR INFORMATION ORGANIZATIONS

Indexes and Abstracts*: Provided for technical publications in the field(s) of interest.

Technical Inquiry Services*: Authoritative advice in response to technical questions.

Bibliographic Inquiry Services*: Search, analysis, and presentation of the latest and most relevant technical publications concerning the user's inquiry.

Scientific and Engineering Reference Works: Provide useful and authoritative information in the form of handbooks, data books, etc.

State-of-the-Art Reports (Monographs)*: Summaries of the status of technologies pertinent to current RDT&E programs.

Critical Reviews and Technology Assessments*: Scientific or engineering information on subjects of interest to the defense RDT&E community presented in a useful format.

Current Awareness*: Newsletters or other publications containing reviews and other information to keep the users apprised of the latest technical developments.

Special Studies*: Studies to solve specific problems that are narrow in scope or aimed at specific information requirements.

Technical Symposia/Conferences/Workshops*: Sponsor/provide administrative and technical support for symposia, etc.

Journals/Symposia Proceedings*: Publication and distribution of technical papers.

Support Joint Technical Committees for DoD: Provide technical and administrative support for JANNAF or the Joint Technical Coordinating Group (JTCCG) committees.

Technical Training: Provide short courses and other support for DoD training requirements.

Data Bases*: Provide direct/indirect access to bibliographic, environmental, and other specialized data bases.

Referral Service*: On request, identify technical experts in specific areas and/or ongoing work on specific problems.

*Provided at least in part by former SVIC.

c. A high percentage of the papers presented at the symposia and published in the proceedings are applications-oriented, either drawn from or directly applicable to systems development programs. Such papers are considered extremely useful, yet, even though they may be of high quality, their content is such that they are frequently unacceptable for publication in professional society journals. It is felt that the symposia are needed as a continuing forum for this information.

d. A number of high priority programs with new complex problems in structural dynamics are in critical technology areas. The information generated is usually classified or of limited access. It is essential to provide a forum for information exchange in these emerging programs.

2. The Shock and Vibration Digest: The monthly Digest was published and distributed by the former SVIC over a period of 18 years. This publication has been correctly referred to as a current awareness journal. It contains abstracts from the current literature, thereby providing the reader with nearly all contemporary references relating to shock and vibration published in the open literature. By using the cumulative collection of these abstracts, a comprehensive bibliographic data base has been developed. To present a progressive review of the literature, reviews are published every 3 years on specific segments of the technology. The Digest also contains book reviews, reviews of appropriate technical meetings, and a calendar of relevant conferences. In many respects it doubles as a newsletter. The user community views the Digest as a very useful information service.

3. Shock and Vibration Data Bases: Taken as a whole, a variety of suggestions related to data bases places this type of service high on the user request list. Considering current capabilities with respect to computer hardware and software, as well as on-line communications, almost any information activity may be preordained to provide some type of data base service. Potential shock and vibration services in this area will be discussed in more detail later in this report.

4. Response to User Requests: Most users feel that their technical information service should provide rapid response to a variety of queries relating to their technological area. The response to the request may be a simple referral to an expert or another information service; it may be to give the location of a test facility with particular capabilities; or it may be a comprehensive literature search resulting in an annotated bibliography. The heading chosen for this fourth priority item is synthesized from a number of potential user suggestions relating to information management and user access.

5. Technical Training: Even though the suggestions were mixed with respect to training, a majority of those contacted were of the opinion that an information activity should be involved in some way in educational activities. More specific ideas on the training role will be presented later.

6. Monographs/State-of-the-Art Reports (SOARs): From the responses received, it may be inferred that the average user expects an information activity to issue state-of-the-art monographs on selected subjects on a routine basis as a service to its technical community. SOARs are, in fact, included as a contract requirement for most contractor-operated DoD IACs.

7. Interaction With the User Community: A significant number of respondents recalled that staff members of the former SVIC personally visited activities in their constituency (average 30 to 40 per year) to discuss ongoing work, learn of pressing problems or new developments, and respond directly to specific requests or questions. Such interchanges are seen to be quite valuable, particularly if the results could be reported, as a service to the users, in the Shock and Vibration Digest or in a newsletter.

These seven information services encompass most of the suggestions received during the survey. Of course other ideas were presented, but these were usually too specific to be included in a general assessment of information needs. Most of them could, in one way or another, be included in a broader category of service. In the succeeding sections, the seven information services just described will be discussed once again. This time, the purpose is to offer suggestions to a hypothetical shock and vibration information activity with respect to providing these services.

THE SHOCK AND VIBRATION SYMPOSIA AND PROCEEDINGS

It is clear from the response during the survey that the shock and vibration symposia, as presented by SVIC, have been extremely well received over the years. This series of conferences is seen as a uniquely useful forum, particularly for the DoD/NASA shock and vibration technical community. At the same time, the participants identified several actions that could significantly improve the overall usefulness of these symposia. The discussion that follows is presented as a composite of user opinion on planning and conducting the symposia and publishing the proceedings.

Technical Content

One of the more useful features of these symposia is that the emphasis has always been in "practical" or applications-oriented technical papers. It is recognized that this has sometimes been at the sacrifice of technical quality. The desire is to continue to program a high percentage of papers on applied technology while adhering to quality standards. The concept of technical quality has been debated extensively. In the context used here, it is assumed that papers on applied analytical or experimental techniques, on problem solving for specific structures or equipment, or on case histories can be quality papers. All such papers should present new ideas, new twists on old ideas, or in some way contribute to progress in the field.

The technical content can be vastly enhanced by providing an optimum mix of contributed and invited papers. Whenever SVIC planned and conducted invited sessions they were usually received with favor. It is suggested that deliberate action to invite papers or sessions that respond to contemporary problem solving requirements could only add to the value of the symposium. However, such action should not result in the displacement of useful contributed papers.

The technical program should continue to include one or more sessions on short topics, as well as special, well organized panel discussions on high visibility, controversial topics. The short topic presentations should discuss new techniques or procedures, or provide brief reports on relevant work in

progress. The panel sessions should focus on a specific objective and have that objective well stated in the technical program. The presentation of special tutorials in conjunction with the symposium is also suggested as a useful enterprise. Such tutorials should require separate registration fees and should be programmed just prior to or just after the symposium. If the tutorial topics are well chosen, these sessions could provide a valuable service to the users.

Organizing the Technical Program

Later in this report some concepts for an information activity to manage these symposia will be presented. At this point, assume that any such activity will involve some kind of interagency technical oversight committee. This committee, in the view of the users, would have ultimate responsibility for organizing the technical program. However, the committee has offered a few suggestions to improve the symposia of the future by avoiding some problems of the past.

Aside from the general view that the quality and usefulness of the technical papers should be enhanced, there have been two general complaints about past symposia.

1. There have been an unacceptably high number of "no-shows" among the scheduled presenters, particularly at the last two or three symposia.
2. The proceedings (Shock and Vibration Bulletin) was often not provided until several months after the symposium.

Although there may have occasionally been other causes, the principal reason that authors did not present their papers was their failure to obtain a valid release for presentation and publication. The proceedings were late because it was planned that way. The manuscript deadline was deliberately established to allow for inclusion of the latest possible information, and the paper review process resulted in additional delays. The consensus is that the value of "up-to-the-minute" information and reviewed papers is somewhat questionable, particularly when it is at the expense of timely availability of the proceedings at the symposium. It is suggested that the users' needs would be better satisfied by some changes in the approach to the organization of the symposium.

First of all, planning for the symposium should begin earlier, with all deadlines modified accordingly and enforced rigidly. Second, the oversight committee should arrange to get the session chairmen, including those who may organize invited sessions, involved in the symposium process. The chairmen could assist in follow-up efforts to assure on-time delivery of manuscripts and paper releases, and in exacting promises that the authors will show up to present their papers.

General Suggestions

Looking beyond the problems of program content and symposium organization, the following ideas are viewed as opinions of the majority.

1. The symposia MUST continue to provide a forum for the presentation and publication of classified and limited access information. The classified proceedings should also be published in a timely manner, although they need not be available at the symposium. These proceedings should be, whenever possible, separated into volumes according to level of classification.
2. Insofar as possible, the symposia should be financially self-supporting. At a minimum, registration fees should be charged to cover nonrecurring costs.
3. The symposia should be managed by a shock and vibration information activity under the guidance of an interagency technical oversight committee. The conferences should continue to be held annually under a rotating host arrangement.
4. In connection with the symposia, but also as a part of the broad mission of the shock and vibration information activity, an archival journal of reviewed symposium papers should be published, perhaps quarterly.
5. A concerted and continuous effort should be made to improve the quality of paper presentations. Furnish guidelines for effective presentations and preparation of visual aids; arrange for follow-up critique. Consider establishing "best paper" and other awards. Consider different formats, such as poster board sessions, for more technical depth.
6. Work in cooperation with professional societies having related technical interests. Consider occasional joint meetings or possible interchange of technical sessions.
7. Provide for lower student registration fees to encourage student attendance and perhaps student papers.

THE SHOCK AND VIBRATION DIGEST

As an interim measure, the responsibility for the publication of the Shock and Vibration Digest has been assumed by the Vibration Institute as an Institute enterprise. Since the Institute formerly prepared the Digest for SVIC under a contract arrangement, the transition was easy but involves financial risk. Whether or not the Vibration Institute continues as publisher, the Shock and Vibration Digest will be an important service of a new shock and vibration information activity, should that activity be created. How this would be accomplished is a matter that would have to be worked out between the Institute and the information activity. Perhaps subscriptions could be purchased by the activity from the Institute for the benefit of its users. In addition, the Institute could, via some contract arrangement, continue preparing the bibliographic data base associated with the Digest production.

Even though the Shock and Vibration Digest is considered a first-rate publication in its present form there were suggestions for improvements. Many feel, for example, that the review and feature articles have been too theoretically oriented. Such articles should be continued but should be mixed with a comparative number of practical, applications-oriented papers. There should also be features in the Digest geared to inform, and perhaps educate, specific important segments of the community. Consider, for example, technical departments in the Digest dealing with ship shock, specifications, or vibration

control. This would expand the newsletter function of the Digest, which in the opinion of many users would tend to improve the overall usefulness, particularly for "working engineers." For the same reasons, the book review section should be expanded to list important books, even if a review is not available. Furthermore, short course listings should be expanded, although some care should be exercised to avoid misuse of Digest space for commercial purposes. As a matter of fact, if it should be judged appropriate to allow some sales promotion to be included, perhaps selective paid advertising in the Digest should be considered.

SHOCK AND VIBRATION DATA BASES

As stated earlier, it is a virtual certainty that an information activity for shock and vibration would be required to provide some kind of computerized data base service. However, consideration must be given to the nature and extent of these services, in light of both perceived user requirements and practical constraints on data base development, maintenance, and operation. Depending upon the source of the suggestion, the stated need can vary greatly. In some cases the issue can be highly emotional. A good example is the long-standing, but unsuccessful, effort to make environmental data from military vehicles readily accessible to designers.

Assuming an information activity on shock and vibration is beginning its operation, there are certain types of data bases (called Directories by some) that could realistically be incorporated into the activity's list of services. Among these are the following.

1. Bibliographic Data Base: accessed by keywords or descriptors
2. Standards and Specifications Information Base
3. Who's Who in Shock and Vibration: directory of experts
4. Referral Data Base (e.g., training sources, vendors, etc.)
5. Test Facility Data Base

Assuming funds can be supplied for start-up, the maintenance and operation of such data bases is not beyond the capability of an efficient information organization.

Environmental data bases are another matter. While no one can argue against the need to provide access to valid environmental data, there is a serious question as to whether a single organization could provide this service for a wide variety of military or space vehicles. Those who have experience with vehicular environmental data bases say that the maintenance problem alone would be practically insurmountable except for someone who has a day-to-day working understanding of the vehicle system. Accordingly, it is suggested that those responsible for the vehicles be encouraged to develop and maintain environmental data bases for those vehicles, and that the shock and vibration information activity act as a gatekeeper to help users gain access to those data bases.

In the start-up phase, it is important that the information activity seek expert help in developing its data base management system. The goals for data

base service should be clearly specified. Funds should be made available for a study contract to develop a system to accomplish these goals.

RESPONSE TO USER REQUESTS

The reason for the existence of an information organization is to provide service to its users. That service may be indirect, such as a symposium or an abstract journal, or it may be a direct response to a user request. If the response is prompt and complete, it reflects credit to the organization. Anything less will bring forth criticism.

As mentioned earlier, response may range from a simple response on the telephone to an extensive literature search and analysis. It may even require an in-depth special study on some aspect of shock and vibration technology. Any requests that are received, whether simple or complex, may relate to any aspect of that technology. No matter what the scope or what the subject of the request, there are a minimum of two requirements to assure that an information activity is capable of responding effectively.

1. At least some staff members must be professionals (experts) in the technology of concern.
2. The information management system for the activity must be designed for rapid access to its holdings, or to other sources if necessary.

It is also important to remember that the most useful information may not be in one's files. If the information activity is doing its job, it will know its users and the programs that they are working on. Sometimes, the best answer to a user's question may come from another user.

TECHNICAL TRAINING

There was a broad range of responses when potential users were asked about the role of a shock and vibration information activity with respect to technical training. However, the majority indicated that such an activity should be properly involved with educational activities. The following items place bounds on those activities.

1. It is not the business of an information center to be in competition with private organizations that develop and present short courses.
2. At a minimum, the information center should maintain a listing of all available short courses and seminars in its field of interest and make this information available to its users.
3. Because of its ready access to the latest technology, an information center may have a secondary role in the preparation of handbooks, technical manuals, videotapes, and other training materials.
4. An information center can properly plan for special tutorials in connection with its annual meeting. It should, however, arrange to provide this service using qualified individuals from the private sector whenever possible.

5. If it is a DoD-sponsored information center, it may properly provide classified training services that could normally only be provided by government personnel.

MONOGRAPHS/STATE-OF-THE ART REPORTS

One of the principal functions of an information center is to keep abreast of its users' needs with respect to "high interest" technology within its technical area. A good way to do this is to choose high profile segments of the technology and, with the approval of its technical oversight committee, prepare comprehensive monographs or SOARs to be published and provided as a service to the user community. The number of SOARs published depends somewhat on the requirements, but a fully operational information center on a highly visible technology would probably be expected to publish a minimum of two per year.

INTERACTION WITH THE USER COMMUNITY

As far as can be determined, this suggestion for service was inspired by policies and actions of the former SVIC. At the time such activity was obviously received very favorably. It is also easy to see why individual visits by SVIC staff members to users' facilities would be very valuable to those directly involved. The problem was that the benefit was indeed limited to those involved and to the TAG members who saw the trip reports. The suggestion for the new information activity is that direct interaction with the users be offered as a service, with benefits extended to all users by publication of the findings.

OPTIONS FOR PROVIDING SHOCK AND VIBRATION INFORMATION SERVICES

The statement of work for this task requires the development of a minimum of three options for providing technical information service on shock and vibration to meet DoD needs. Earlier in the report, the DoD/NASA technical information service requirements in this field have been defined based upon a composite of user opinions. The nature of these information services, combined with a broad range of user suggestions on approaches to the problem, suggests that any proposed options for providing shock and vibration technical information services will have the following features in common.

1. Since security-sensitive material will be involved, the proposed information center must be government sponsored. Funding for the center should be from a combination of basic government support (core funding) and user charges. Government core funding responsibility should be shared equally by interested interagency sponsors.

2. The nature of the services that must be provided dictates that the proposed information activity be an IAC as defined by DoD Regulation 3200.12-R-2 (Appendix H).

3. Any workable options must include a provision for an interagency technical oversight committee. The basis for the charter of that committee as well as the justification for the proposed information activity must be an interagency Memorandum of Understanding (MOU) signed by appropriate officials at comparable levels in each agency.

4. The proposed IAC must be operated by a contractor since billet restrictions and other constraints prohibit the operation of an in-house DoD IAC using civil service personnel.

Considering these common constraints, the following four options are offered as potentially workable solutions to the shock and vibration information problem.

Option 1: Establish an officially sanctioned DoD IAC. Since this report establishes a need, the first step would be to charter an interagency committee by an MOU. This committee could act as joint sponsors and present a justification to DoD to establish an IAC. After DoD approval, the Defense Logistics Agency (Defense Technical Information Center (DLA (DTIC))) would be tasked to contract for the IAC. In the present climate, funding for the first 5 years would need to come from the sponsors. DTIC would administer the contract; the COTR would be a member, probably the chairman, of the interagency committee.

Option 2: Select a DoD host/sponsor with a mission which strongly supports the need for technical information services on shock and vibration. The host/sponsor would award a contract and act as the COTR on behalf of interagency sponsors for the operation of an IAC on shock and vibration. Complete technical oversight would be by an interagency committee of the Joint Army-Navy-NASA-Air Force (JANNAF) structure chartered by an interagency agreement and implemented by appropriate directives. Initially, the contract would require a staff of five (one manager, two professionals, and two for administrative support) and a budget of \$800K. At least 50 percent of the budget should be provided from government core funding from the interagency sponsors. The remainder should be available in the form of user charges.

Option 3: Establish the Defense Advanced Research Projects Agency (DARPA) as sponsor. This is in keeping with the need for a DoD umbrella and the compatibility of the broad-based interests of both DARPA and the proposed shock and vibration IAC. Interagency committee would have to convince DARPA that this action is appropriate. DoD sanction could then be obtained. Since DARPA does not manage its own contracts, the COTR, in this case as well, would likely also be the Chairman of the interagency technical oversight committee. Core funding could be provided by DARPA or could be shared by other sponsoring agencies.

Option 4: Expand the charter of an existing information center to include required shock and vibration information services. In particular, the Air Force Flight Dynamics Laboratory has offered to consider the expansion of the Aerospace Structures Information and Analysis Center (ASIAC) to perform this function. As in the other options, funding burden would have to be shared and technical oversight would be provided by a chartered interagency committee.

LOOKING AT THE OPTIONS

When the TAG for the former SVIC was faced with replacing a lost information service on shock and vibration, they very likely thought that there were a wide variety of options for doing so. In a broad sense, this is true, but some of the approaches to the problem are, for various reasons, eliminated at the outset. For example, in the opinion of many users, the best choice of all would be to establish a new IAC to be operated in-house at a government laboratory by government personnel. As indicated earlier, restrictions on personnel ceiling levels, along with other considerations, make this option impractical. There are others who felt that some organization in the private sector could successfully provide the required information services with full cost recovery from the users. Even though this may be true, this option is also eliminated since a prime mission of the new IAC will be to handle security-sensitive information. Government sponsorship and control are therefore essential.

Consider now the four options for information services that were just suggested. Consider also that, for various reasons, any proposed options are constrained in certain ways. Based on these constraints, including the scope of technical information services, what are the real choices among these options?

1. An important choice is whether or not to request official DoD approval for the IAC. Since the IAC has an interagency mission, and since all principal elements of DoD are involved, it would seem prudent to seek DoD sanction. In this case, unless there are some changes in the ground rules, Options 2 and 4 are effectively eliminated. Of course, as evidenced by the success of ASIAC, it is possible to do the job without DoD approval.

2. A sponsor must be selected to take the lead in contract monitoring and other chores on behalf of the interagency sponsors. Direct sponsorship at the DoD level in the shock and vibration field is limited to DNA and DARPA. DNA is interested and supportive, but considers sponsorship inappropriate because of its limited nuclear mission. DARPA's interests have not yet been assessed, but even if it were an appropriate and willing sponsor, the contracting responsibilities would have to be assumed by an agency or laboratory in one of the military departments since DARPA has no direct contracting capability. Obviously, the organization that accepts this responsibility must have strong motivation based on mission and needs. The following are prime candidates to accept COTR responsibilities.

Army: U.S. Army LABCOM
U.S. Army MICOM

Navy: Naval Surface Warfare Center
David Taylor Research Center
Naval Weapons Center

Air Force: Air Force Flight Dynamics Laboratory
Air Force Materials Laboratory

It must be emphasized, however, that each of the three military services has a vested interest in shock and vibration technology. Thus, no matter what agency does the contracting, all must participate in the oversight process.

3. It has been established that there must be an interagency technical oversight committee to represent the interests of all. There is a choice, however, as to the structure of this committee and how it is authorized and chartered. Some options and procedures for forming an interagency committee will be discussed under IMPLEMENTATION.

4. The interagency committee, or joint sponsors, would have the choice of preparing a statement of work for the IAC to meet their combined needs and can decide, if they wish, to place special restrictions on the credentials of the contractor. It has been suggested, for example, that the contractor should be a professional organization which is "squeaky clean" with respect to conflict of interests and money management. Such restrictions would have to be defined more precisely.

5. A decision must be made on the allowable level of security classification of information to be handled by the IAC. For DoD IACs, the authorization is up to and including Secret material, although in special cases the handling of more sensitive material may be authorized for the benefit of specific users.

6. Probably the key choice relates to funding. The total budget can be estimated based upon the scope of required services and the number of people and kinds of equipment required to supply these services. The first decision is on how much of the budget must be core funding from the sponsoring agencies and how much will be provided by user charges. Second, the share of the core funding that is to be provided by each sponsoring agency must be established. Finally, and possibly most difficult, it must be determined how the required funds will be guaranteed year after year and adjusted to accommodate inflation and changes in DoD emphasis. There is a distinct advantage in supporting a percentage of operating costs from a core funding source. This enables cohesiveness and coordination of these otherwise independent and separate services. Each contributing agency is then dedicated and obligated to interact, participate, and cooperate to achieve mutually agreed upon goals.

IMPLEMENTATION

The options available for providing a shock and vibration information service have now been placed in perspective. It was suggested that fulfilling the mission and/or operational requirements places certain constraints on any option that may be chosen. Furthermore, the nature of the information service requirements as defined by this study also limits the real choices that can be made among the various options. With these facts in mind, the steps that should be taken to establish an IAC for shock and vibration will now be considered.

The implementation process that is proposed is structured to maximize the probability of success, particularly if the IAC is to be established as a DoD-sanctioned organization. However, even if a more limited option is chosen, most of the steps that are to be discussed will still have to be considered. In brief, the establishment of an IAC involves the following actions.

1. Develop and implement an MOU that establishes an Interagency Technical Committee on Shock and Vibration.

2. Select the option to be used for establishing an IAC.
3. Define the IAC mission.
4. Establish/define the relationship between the interagency committee and the IAC.
5. Agree upon procedures for funding the IAC.
6. Prepare and present the justification for creating an IAC.
7. Determine methods of operation, monitoring, and performance evaluation.

The rationale for these actions is presented in the detailed discussion of each step in the process.

INTERAGENCY TECHNICAL OVERSIGHT COMMITTEE

As a result of this study, there can be no doubt that the new IAC for shock and vibration will be required to provide technical information services to a number of agencies. At a minimum, the IAC will be expected to serve elements of the Army, Navy, Air Force, NASA, and their contractors. There is also a very strong indication that the DOE may wish to become a fifth sponsor. In any event, at some point the sponsoring agencies will need to establish an interagency committee for oversight to assure that the interests and needs of all are considered on a continuing basis. This committee probably should be formalized and chartered by an interagency agreement (Memorandum of Understanding) and authorized by appropriate documentation in each of the sponsoring agencies. A DoD Directive, for example, could provide the required authorization for all the military departments.

The Ad Hoc Subcommittee of the former TAG for SVIC is logically the action group to establish the interagency committee. This Ad Hoc Subcommittee presently has members from the Army, Navy, Air Force, NASA, and DNA. These subcommittee members have a vested interest and have been actively involved in efforts to establish a new information service. Of course, other sponsoring agencies, including DOE, will be represented on the interagency committee. The Ad Hoc Subcommittee must agree on the organization and structure of the proposed committee. Two existing interagency committees that were formed for similar purposes provide useful models for the subcommittee to consider in their deliberations. These are:

1. the JANNAF Interagency Propulsion Committee,
2. the Joint Service Guidance and Control Committee (JSGCC).

Both of these committees are associated with IACs and both provide technical oversight for the IACs. Both provide for an Executive Committee with subcommittees as required. The JSGCC requires the IAC Tactical Weapons Guidance and Control Information Analysis Center (GACIAC) to function as secretariat for the Committee. The JANNAF requires its IAC Chemical Propulsion Information Agency (CPIA) to organize and conduct an annual symposium. Both were established and chartered by an interagency agreement and were implemented by DoD Directives.

After agreeing on the structure of the proposed committee, the subcommittee should draft an agreement and charter to meet their requirements. A "strawman" document in Appendix I provides one example of how this can be done. The final document would likely be different and would include any other agencies that join in the sponsorship of the IAC. After the agreement has been written, each subcommittee member should champion the cause up the line in his own agency to obtain a signature at the appropriate level. If all participating agencies ratify the agreement (say, at the Assistant Secretary level) the interagency committee is officially chartered. Unified and acting in strength, the interagency committee can, if necessary, press its case to DoD (or other potential sponsors) for the establishment of an IAC. In any event, it will be in a good position to carry out its oversight responsibilities.

In some interagency agreements of this kind, a description of the IAC responsibilities was written into the agreement. The Ad Hoc Subcommittee will need to decide whether including the IAC in the agreement contributes to the achievement of their objectives.

It may be desirable, for example, that specific assignments of the IAC that relate to the interagency committee should be described. The group may decide that it will be useful for the IAC to be established as secretariat for the committee, as the JSGCC requires.

The time required to charter the interagency committee depends somewhat on the vigor with which the objective is pursued which will be governed by the urgency of the need for the charter. The implementation process should proceed in an orderly manner, with the Ad Hoc Subcommittee taking required actions until the interagency committee can assume formal responsibility. In the subsequent discussion, whichever group is taking the action will be referred to as the sponsors.

SELECTING THE OPTION

Of the four options presented in this report, two require that the new IAC operate under an official DoD umbrella; the other two do not. All involve a contract effort monitored by some DoD agency on behalf of all the sponsoring agencies. Considering the extensive DoD requirements, particularly with respect to the handling of security-sensitive information, it is logical that the contracting agency for the IAC should be some element of DoD. The decision with respect to the level of official sanction for the new IAC and its ultimate contract home must be left to the sponsors. Before final conclusions are drawn, the sponsors will need to consider several factors which impact on the options suggested. In some cases, they will need to obtain additional information in order to make an informed decision.

Option 1 calls for the establishment of an official DoD IAC, approved by the Under Secretary of Defense for Research and Engineering. As the results of this study demonstrate, shock and vibration problems must be dealt with in almost every major DoD program. Furthermore, the study results strongly support the need for in-depth information services in this technology. With such a preponderance of evidence to justify this need, approval by DoD is anticipated. The case in favor of a new IAC is considerably strengthened if request is presented by a chartered interagency committee. If the new DoD IAC is to be contractor-operated, the

contract administration would normally be handled by DTIC. A representative of the sponsoring DoD agencies would serve as the COTR. One of the current disadvantages of this option is that core funding from the DoD IAC program is not expected to be available for new IACs for the next several years. It would therefore be necessary for the sponsoring agencies in some way to guarantee this funding, at least for a 5-year period. After it is approved and funded, the IAC will be established and will operate in accordance with DoD 3200.12-R-2 (Appendix H).

Option 2 requires a DoD host/sponsor with a strong mission requirement for shock and vibration information services. Several potential sponsors which meet this requirement were listed earlier. Some of them have informally indicated a strong interest in assuming this responsibility, at least at the technical level. There are likely other DoD organizations not on the list that would exhibit equal enthusiasm. In any event, there must be some hard questions asked about each potential host sponsor as this option is considered. Among these questions are the following.

1. Is the demonstrated technical need and the desire to assume responsibility for an IAC fully supported by the top management of the agency?
2. Is the demonstrated technical need heavily associated with a budget line item? If that particular program was cancelled, would the technical need at that agency disappear?
3. Recognizing that core support for the IAC would be shared by all agency sponsors, is the host/sponsor willing to assume both the administrative and technical responsibilities for managing the IAC contract? At the same time, is the host agency willing to conform to the requirements of the Interagency Technical Oversight Committee?

Option 3 provides another potential route to DoD sponsorship. DARPA has broad-based interests that are always at the cutting edge of technology. Many of those interests involve shock and vibration technology. During this survey some of the strongest reasons given in support of the need for shock and vibration information services related to the requirement to handle security-sensitive information in new and emerging programs. DARPA is involved in most of the major programs mentioned, such as the National Aerospace Plane, high-performance engine development, large flexible space structures, and the Strategic Defense Initiative. Furthermore, there is a precedent for DARPA to support an IAC. The Agency has, for a number of years, sponsored the Tactical Technology Information Analysis Center (TACTEC). DARPA has not yet been approached with any proposal for their support of an IAC on shock and vibration. If the advocate sponsors should wish to pursue this option, they will need to discuss the possibilities with appropriate DARPA authorities.

Option 4 suggests that the charter of an existing IAC be expanded to provide the additional shock and vibration information services that are required. Although this suggestion was made from several sources in a generic sense, there was a specific offer from the Air Force Flight Dynamics Laboratory to expand its ASIAC. ASIAC is operated by a contractor using in-house facilities at Wright-Patterson Air Force Base. If the scope were expanded to handle shock and vibration information functions, the ASIAC staff would be enlarged and additional funds would be needed to cover the cost. Such funds would have to be shared among

the interagency sponsors. As the sponsors examine this option, questions such as the following must be considered.

1. Would the shock and vibration information activity lose its identity within the parent IAC?
2. What would be the relationship of the interagency committee and the "new" ASIAC? Would the Air Force host guarantee that the needs of all sponsoring agencies are met?
3. Should the "new" ASIAC consider changing its status as a non-DoD sanctioned organization? If so, can the Air Force legitimately contract directly for an approved DoD IAC?

DEFINING THE IAC MISSION

After the sponsors have made a choice from the available options for establishing an IAC, they will need to define its mission. In effect, the mission description should take the form of a "Statement of Work" that can be used in a Request for Quotation (RFQ) for a contractor-operated IAC. The written "Statement" should cover the complete scope of engineering services and requirements from the start-up phase to a fully-operational SVIC. As they prepare the document, the sponsors should specify the extent to which they wish the archival holdings of the former SVIC transferred and integrated into the operation of the new IAC.

The format, amount of detail, and specific areas covered in the description of the IAC mission must be decided by the sponsors. However it is suggested that, at a minimum, the document include descriptions of the following items.

1. Scope of Technical Coverage: Insofar as possible, bounds should be placed on the technical areas to be covered. The scope of coverage should correspond to the field of interest of the interagency committee which should be defined in its Charter.
2. Functions: The IAC's responsibilities with respect to information handling should be defined. Typical functional aspects that might be included are:
 - a. sources of technical information,
 - b. active and passive methods of identifying and collecting data,
 - c. review and analysis,
 - d. storage and retrieval,
 - e. problem solving,
 - f. computerized data base/user access, and
 - g. methods of imparting or disseminating information.
3. Products and Services: The sponsors' written description of products and services need not be limited to the findings of this study, but the seven prioritized technical information services discussed in this report should all be considered as prime candidates to be included.

4. Special Requirements: Any requirements of special concern to the sponsors should be included. Consider the following as candidates for this section.

- a. access to classified information,
- b. assessment of user needs,
- c. coordination functions,
- d. information systems and files,
- e. promotion (advertising), and
- f. user charge requirements.

5. Operational Plan: The sponsors may wish to specify an operational plan, but this is not recommended. Rather, it is suggested that the RFQ require each bidder to provide an operational plan in his proposal.

INTERAGENCY COMMITTEE/IAC RELATIONSHIP

The responsibilities of the oversight committee with respect to the IAC should probably be defined in the interagency agreement and charter. However, depending upon the option selected and how the contract is managed, specific functional relationships must be established among the interagency committee, the Contract Administrator, the COTR, and the operational IAC. Consider, for example, that in normal contract procedures, the COTR will have authority to authorize certain contractor activities and approve the results. In the case of the IAC contract, an Interagency Technical Oversight Committee has been established. It must be clearly understood under which conditions the COTR is bound by the recommendations of the Committee, and under which he is not. The relationship should be established such that the technical administration of the contract is not encumbered by burdensome committee approval requirements. At the same time, there must be a way of assuring that the technical information needs of all the interagency sponsors are satisfactorily met.

IAC FUNDING

It is strongly emphasized that a workable funding plan must be established to assure that the new IAC can operate effectively. From the results of this study, the potential users expect that the IAC will receive basic funding support from one or more of the agency sponsors. It seems reasonable that the burden of this funding should be shared among the agencies, perhaps weighted somewhat by the extent of technical information services required by each agency. The users also expect that the IAC would be required to collect user charges to supplement its basic funding allotment. For many IACs, it is generally accepted that 50 percent of the IAC budget should be derived from basic funding and 50 percent from user charges. The sponsors of the new IAC on shock and vibration will establish what the funding ratio should be. There may be other factors that suggest a departure from the 50/50 criterion.

When they have decided on a plan, the interagency sponsors should develop a separate agreement on funding. The agreement should specify:

1. the amount to be provided from each agency,

2. the source of funds from each agency, with assurances that the money will be in the budget year after year to provide continuing support for the IAC,
3. guidelines under which the IAC will collect user charges and how the user funds will be used in the IAC budget, and
4. criteria for adjusting or changing funding ratios or amounts.

JUSTIFICATION FOR ESTABLISHING THE IAC

The preparation of a justification for the proposed IAC is particularly important if the sponsors choose to seek official DoD approval and authorization. The need for an IAC to provide technical information services on shock and vibration is fully supported by the results of this study; there is ample material in this report to justify the establishment of such an IAC. An appropriate letter request from an interagency committee, enclosing a copy of this report, may be all that is required to gain approval. The history of IAC establishment indicates that the chances for approval are enhanced if the proposal is formally submitted by interagency sponsors. All agreements relating to the interagency committee, technical oversight responsibilities, funding, and so forth should be included with the justification package.

The sponsors should not overlook the usefulness of preliminary informal contacts with appropriate officials prior to the submittal of the formal request. In this way, approving authorities are made aware of what is coming and any special questions that they may have may be answered in advance.

SUMMARY

Scientists and engineers have a serious need for complete, accurate, and up-to-date technical information. This is particularly true for those involved in R&D programs for the DoD, NASA, and other government agencies; researchers in such programs are usually working at the forefront of technological development. Traditional information sources, such as technical libraries and broad-based bibliographic collections, fall short of fulfilling their information requirements. In part, this is because of the unprecedented rate of scientific advancement and the consequent rapid growth in the volume of R&D results. It has become virtually impossible for an investigator to read all the available published literature or to even maintain an awareness of the existence of this material. An information resource is required that can isolate relevant useful information from the large mass of available technical data, both published and unpublished. It is generally agreed that specialized information services with centralized coordination in well-defined disciplinary areas provide the best means of meeting this requirement.

This study concerns requirements for technical information services relating to shock and vibration technology. In a very real sense, this discipline is critically important in all R&D efforts involving vehicles, equipment, and/or structures. The technology base in this field is broad, with many of the advancements resulting from the necessity of solving difficult problems associated

with the development of various complex systems. It is extremely important that advancements in this field be shared among the total technical community to the maximum extent possible.

This study was motivated by the loss of the only DoD information center that served the shock and vibration technical community. It was sponsored by the Army, Navy, Air Force, DNA, and NASA and was performed by ATR, Inc. under a contract with NSWC. Complete details on the sequence of events leading to the study are provided in this report.

The purpose of the study was threefold:

1. assess the information needs of the shock and vibration technical community,
2. identify specific shock and vibration information services that should be provided to meet the requirements and assign priorities to these services, and
3. develop options for establishing an information activity capable of providing the required information services.

In effect, the study was to evaluate the impact of not having an information activity dedicated to shock and vibration technology. The results were to be based upon representative inputs from all segments of the potential user community. The views of the users were to be sought on the relative importance of different kinds of information services and on ways that these services could be provided.

As described in this report, a combination of surveys and interviews provide the basis for the results of this study. Probably the single most important activity, however, was a special conference/workshop dedicated solely and specifically to the questions addressed by the study. Participants in the workshop represented essentially all of the potential users of shock and vibration information. They were a dedicated group of engineers, scientists, and managers, genuinely concerned about the loss of a vital information service. At the same time, it was clear from their deliberations that they viewed the loss as an opportunity to redefine their needs and to have a vote on ways that those needs should be met. Complete information on the conference/workshop, including results, is provided in Appendix G.

It is emphasized that this study was sponsored by government agencies and, for the most part, addresses the technical information needs of government agencies and their contractors. For the defense related activities in particular, there is a vital requirement to provide a mechanism for interchange of security-sensitive technical information developed in the pursuit of high priority programs. In such a process, the information handling activity must be able to maintain strict control based upon classification level and "need-to-know." However, considering the wide range of distribution limitations on controlled information, interchange among a qualified group of users can often be effectively accomplished to the advantage of all. This is particularly true when the only limitations relate to export control.

The three key objectives for defense technology--as stressed by Dr. Ronald L. Kerber, Deputy Under Secretary of Defense for Research and Advanced

Technology⁵--are compatibility, survivability, and affordability. Survivability almost invariably requires hardening to severe dynamic loads, a common problem in the shock and vibration arena. Design data must be developed, design levels established, standards written, tests specified and conducted, and dynamic response measured and/or predicted. These are typical examples of specific problems embraced by shock and vibration technology. Effective sharing of information in these areas not only contributes to improved system survivability, but enhances affordability by minimizing costly duplication of effort.

Consistent with government sponsorship and the apparent need, participants in the surveys and the workshop were potential users who were involved in one way or another in government programs. On the basis of the inputs from these users, the results of the study overwhelmingly confirm the need for specialized information services in the shock and vibration disciplinary area. With not a single voice raised in dissent, the question was not whether there was a requirement, but how the requirements should be met. In this light, the results of the study may be summarized as follows:

1. A government-sponsored shock and vibration information activity should be established to provide services that are vitally needed by the technical community. The combined opinions of the users involved in this study indicate that the new activity should offer the information services described below; they are listed in the order of their importance.

a. The activity should sponsor an annual technical symposium and publish the proceedings, thereby providing a platform for the presentation and publication of both unclassified and classified material. The symposium should be capable of handling classified information up to the level of SECRET.

b. It should provide a monthly current awareness/abstract journal covering the latest shock and vibration technical information and activities. The Shock and Vibration Digest, now a publication of the Vibration Institute, fulfills this requirement.

c. Using the latest automated storage and retrieval techniques, the activity should provide, directly or indirectly, access to data bases containing relevant shock and vibration information.

d. Rapid and complete response to direct user requests for technical information should be provided. The activity should be capable of technically interpreting the requests and providing consultative services and advice on a wide range of problems related to shock and vibration.

e. As a part of its function, the activity should be the source of timely information on technical training resources that are available in the shock and vibration field. In areas where training is not available or when classified technical material is involved, it should sponsor or promote appropriate short courses or seminars.

f. SOARs or monographs on selected shock and vibration topics should be sponsored and published on a routine basis.

g. Technical staff members of the activity should interact with the user community to the maximum extent possible. Such interaction would involve visits to user organizations to exchange technical information, with appropriate reports on the findings to be made available to all those qualified to receive them.

2. Four options for organizing a shock and vibration information activity have been suggested in this report. All options involve a contractor-operated organization. The variations are as follows.

a. Establish an officially sanctioned DoD IAC. DTIC would administer the contract; the COTR would be from one of the sponsoring agencies.

b. Without formal DoD approval, select a host/sponsor to award and administer the contract on behalf of the interagency sponsors.

c. Seek a DoD agency such as DARPA to be the principal sponsor of the information activity with one of the other sponsoring agencies providing contract administration.

d. Expand the charter of an existing IAC so that it could provide the required shock and vibration information services.

3. The agencies that sponsored this study, as represented by the Ad Hoc Committee on Shock and Vibration, should proceed to establish an information organization to provide the required services. The nature of the services listed in paragraph (1) suggests that the organization be an IAC as defined by the DoD Regulation on IACs (Appendix H). The following procedure is suggested for implementing the establishment of an IAC.

a. Begin action to charter an Interagency Technical Committee on Shock and Vibration through a formally executed MOU.

b. Investigate the questions raised in the report about each proposed option in paragraph (2) and select the option to be used for establishing an IAC.

c. Define the IAC mission.

d. Define the relationship between the interagency committee and the IAC.

e. Agree upon procedures for funding the IAC.

f. Prepare and present the justification for establishing an IAC to DoD (or other) management officials.

g. Select a contractor through appropriate competitive procedures to operate the IAC.

COUNSEL FOR THE PROPOSED IAC

If and when a new IAC is established to handle shock and vibration information, the IAC management in cooperation with the interagency committee will define its mission and implement its operational methodology in the cool light of

realism. Hopefully, much of the guidance provided by this user study will be employed to that end. It is expected, however, that there will be deviations from the suggestions offered here, especially with respect to the kinds of information services, their priorities, and the way that they are provided. Although the ideas presented in the body of this report clearly represent the opinions of the majority of the participants in this study, there are those with different persuasions that are worthy of consideration. A discussion of some alternative suggestions follows, with the expectation that those who chart the course for the IAC will wish to consider all reasonable views relating to their technical information problems.

Suggestions on User Services

The annual shock and vibration symposia are the top priority service requested by the technical community. In addition to the suggestions offered earlier in this report, the following ideas relate to planning and conducting these symposia.

1. Consider occasionally collocating the shock and vibration symposia with professional society meetings having high interest themes. For example the biennial Vibration Conference of the American Society of Mechanical Engineers (ASME) and the American Society of Civil Engineers (ASCE) specialty conference on blast-resistant structures are meeting that fall in this category.
2. Organize strong sessions at the annual symposium on popular topics such as Modal Analysis and Testing, Rotor Dynamics, Pyrotechnic Shock, etc.
3. Arrange for the active involvement of professional societies with interests in shock and vibration. Plan for a special session, at least every 2 years, wherein the professional societies could summarize their activities, publications, and future plans relating to shock and vibration technology.
4. Consider having selected papers published in commercial journals. Although a paper may be presented at the shock and vibration symposia, its publication may be more appropriate in a specialized journal. Suitable reference to its publication could be provided in the shock and vibration proceedings. Dual publication is not suggested.
5. Consider the inauguration of a new journal on shock and vibration for the publication of archival-quality papers. It is also suggested that the monographs or SOARs might be published as special issues of this journal as well as independent books.

The Shock and Vibration Digest, the current awareness/abstract journal now published by the Vibration Institute, was rated highly as a needed information service. There are strong and valid arguments in favor of continuing the private publication of the Digest, but there are also known financial risks to the Vibration Institute. The potential dollar losses could force the institute to relinquish publication responsibility, a course of action that is not in the best interest of the users. It is strongly suggested that the new IAC work in cooperation with the Vibration Institute to assure the continuing publication of this valuable journal.

It is suggested in this report that careful assessment is required as the new IAC plans its activities relating to data base services. For example, the view is offered that data bases established and operated by the IAC should be limited to bibliographic and directory information. Taking this thought one step further, some have the conviction that the IAC's bibliographic data base should be made a part of a national data base service, such as DIALOG. For a portion of the data base, security considerations may prohibit such action. For the unclassified abstracts from the Shock and Vibration Digest, there are potentially advantageous reasons for examining this option. For example, the Vibration Institute may derive some income from the data base activity.

As suggested earlier, there is some controversy about the value of the IAC's interaction with the user community through planned visits by the IAC staff. There are those who feel that the idea has limited value and should be dropped. There are others who suggest that the important one-on-one exchanges, coupled with wider dissemination of relevant reports on these exchanges, are well worth the investment. A variation on this type of activity could also be considered. To maximize information interchange, perhaps the new IAC can plan and conduct regional seminars or workshops in lieu of numerous individual visits. With proper planning, this approach may well be very effective and less costly.

As the interagency committee moves to establish a shock and vibration IAC, it is not so important which of the ideas in this report are initially implemented. It is extremely important that the committee build enough flexibility into the IAC structure so that it can easily make changes in response to user needs.

RECOMMENDATION

The action suggested by the results of this study should be taken without delay. It is recommended that a goal be set to establish an IAC on shock and vibration and have the SVIC in operation by the beginning of FY89. Although there is ample justification in this report for implementing the recommendation, it is suggested that the following facts strengthen its validity.

1. With the help of interim sponsors, certain activities of the former SVIC are being continued without interruption pending the establishment of a new SVIC. These services include the Shock and Vibration Symposia, the Shock and Vibration Digest, and the Information Base. It is important that these functions be placed under the umbrella of a new SVIC as soon as possible.

2. By agreement, the archival holdings of the former SVIC are being safely stored by the Naval Research Laboratory pending the establishment of a new SVIC. These holdings cannot be retained indefinitely.

3. The magnitude of the investment in R&D and the pervasiveness of the use of shock and vibration technology makes the establishment of an effective IAC in this field a "good buy."

4. Producers of R&D cannot "go it alone." The sharing and interchange of results enhances the value of the R&D dollar.

5. The sharing and interchange of technical information is mandated by Public Law, Regulation, and OMB Orders.

REFERENCES

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3. Federal Technology Transfer Act of 1986, Public Law 99-502.
4. Facilitating Access to Science and Technology, Executive Order Number 12591, 10 Apr 1987.
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NSWC TR 88-138

APPENDIX A
SHOCK AND VIBRATION INFORMATION CENTER
(SVIC)

ORIGIN

The Center was established at the Naval Research Laboratory in 1946 under the leadership of Dr. Elias Klein to provide "a coordinated attack on Navy shock and vibration problems." The main effort began with a symposium held in January 1947. This series of meetings continued as the Shock and Vibration Symposia. By 1949 Army and Air Force representatives had joined the discussions, and in 1962 the National Aeronautics and Space Administration formally became the fourth sponsor. Under Drs. W. W. Mutch and R. O. Belsheim the program was expanded and SVIC became a DoD Information Analysis Center. Mr. Henry C. Pusey was Director of SVIC from November 1973 to April 1983. Dr. J. Gordan Showalter was the Acting Director at the time of the disestablishment.

MISSION AND SCOPE

The Shock and Vibration Information Center was one of the official Department of Defense Centers for the Analysis of Scientific and Technical Information. Its mission was threefold:

SVIC collected, evaluated, and stored information on current and past studies of mechanical shock and vibration technology. This included shock or vibration effects on structures, equipment or humans that may be generated by acoustic, mechanical, or other physical phenomena.

SVIC reviewed, analyzed and disseminated this information to the user.

SVIC encouraged the solution of shock and vibration problems.

Specific areas of shock and vibration information included:

Instrumentation & measurement techniques	Dynamic analysis
Prediction of dynamic environments	Structural analysis
Design of equipment & structures	Reliability
Test techniques	Mechanical Impedance
Dynamics of materials	Human response
Isolation and damping	

ORGANIZATION

The Center operated under authority of the Department of Defense. SVIC's average staff of five included the director, two technically skilled coordinators, and two secretaries. The combined experience of the technical staff covered many years on various aspects of shock and vibration. In addition, consultative and advisory services of Naval Research Laboratory scientists and engineers actively engaged in shock and vibration studies were available. A Technical Advisory Group composed of seventeen member--four each from the Army,

Navy, Air Force, and NASA, and one from the Defense Nuclear Agency-- provided technical guidance to the Center.

SERVICES AND PRODUCTS

To fulfill its mission, SVIC pursued several courses.

The Shock and Vibration Symposia

The Shock and Vibration Symposia that were held constituted one of the largest single sources of information in the technological area. Attendance varied from several hundred to a thousand, consisting mostly of highly productive scientists and engineers with a sprinkling of managers and technicians. Many of the papers and discussions presented at the symposia were unclassified. The distribution of some papers was limited and others were classified. Attendance at the classified session required establishment of an individual's clearance and need-to-know. A symposium usually lasted three days, permitting the presentation of about a hundred papers in two parallel sessions. The aims of these symposia were:

To bring together working scientists and engineers for formal presentations of their papers and for informal information exchanges.

To encourage the presentation of worthwhile studies and developments.

To define the "state-of-the-art."

To point out problem areas for future study.

The Shock and Vibration Bulletin

A Shock and Vibration Bulletin was published following each symposium. Bulletins 1 through 57 are the proceedings of the corresponding symposia, and include all papers programmed, edited discussions, and a few additional papers. Beginning with the 43rd Bulletin, all papers were critically refereed before being accepted for publication. This in part fulfilled the Center's mission to analyze, evaluate and screen information. Nearly 3700 papers have been published in this series. Most add to the total knowledge in the shock and vibration field; others define the state-of-the-art and point the direction for future efforts.

The Shock and Vibration Digest

In 1969 SVIC initiated publication of a monthly abstract and review journal, The SHOCK and VIBRATION DIGEST. The DIGEST contains abstracts of selected papers appearing in government documents and over 250 journals, literature reviews, news items, information on short courses and technical meetings, and a feature article which presents new technology or reviews the state-of-the-art in a limited technical area. The DIGEST also contains special literature reviews on specific segments of the technology. These reviews are planned to provide

complete coverage of the shock and vibration field over a 3-4 year cycle, offering the reader a means to be currently aware of new developments on a timely basis.

Shock and Vibration Monographs

In an era when working scientists and engineers can no longer keep up with the literature explosion, the Information Analysis Center was devised as an organization which has as part of its mission the evaluation, condensation and consolidation of the useful literature. SVIC performed this function in part by publishing state-of-the-art monographs written by experts on various aspects of shock and vibration technology. The object was to gather together a highly fragmented literature, extract significant material, standardize the symbolism and terminology, and provide an authoritative, condensed review, with bibliographies which can be used with little or no reference to the original papers. Twelve such monographs were published.

Direct Information Service

The Center handled requests for information via mail, telephone, and direct contact. An analysis of these queries showed that over 90 percent fell into seven general categories:

- What is the environment which controls a given design?
- How can equipment be protected?
- How can a given test be conducted?
- Where can a test facility or a piece of test equipment be found?
- What analytical techniques are available?
- How can specialized measurements be made?
- What are the dynamic properties of materials?

These requests were answered as expeditiously as possible--often immediately, if received by phone or direct contact. They usually resulted in pertinent references and referrals to senior investigators and engineers who have direct knowledge of the requested information.

Each year, personnel of the Center visited leading government, industrial, and educational laboratories and engineering departments. In the past decade, more than 300 different activities were visited during these direct contacts. Mutual exchanges of this kind provided considerable first-hand information about contemporary work in the field and served as a direct means of keeping the Center staff aware of new developments. Much of the information did not reach the publication stage for some time, while some may never be published. Nevertheless, it was available at the Center, and when appropriate, was passed on in many ways to users.

SPECIAL SERVICES

A program was initiated in 1978 for the preparation of special technological surveys. A comprehensive international survey of shock and vibration technology was published in the Spring of 1979.

APPENDIX B

ANALYSIS OF RESULTS OF A SURVEY OF USERS OF
THE SHOCK AND VIBRATION INFORMATION CENTER (SVIC)
SERVICES AT THE 57TH SHOCK AND VIBRATION SYMPOSIUM

BACKGROUND

On September 1, 1986, it was announced that the Shock and Vibration Information Center (SVIC) would be disestablished. The 57th Shock and Vibration Symposium, to be held in New Orleans, LA on October 14-16, 1986, was to be the last symposium under SVIC sponsorship. A number of prominent SVIC users, including members of the SVIC Technical Advisory Group (TAG), disagreed with the decisions that had been taken. An open meeting of the TAG was scheduled at the New Orleans symposium to discuss the planned SVIC disestablishment and to consider alternatives. Although time was short, it was considered desirable to assess the extent of support for continuation of SVIC services in advance of the open TAG meeting. For this reason, Mr. W.W. Wassmann of the Naval Surface Weapons Center arranged for the preparation of a questionnaire to sample the opinions of registrants at the 57th Shock and Vibration Symposium.

RATIONALE

It was recognized that participants at a DoD shock and vibration symposium would likely have some built-in bias in favor of SVIC. Even so, the results of a survey of this captive group were expected to be useful to the TAG in its deliberations, and perhaps even more useful as a starting point for a probable study of options for continuing SVIC-type information services.

By necessity, the questionnaire was designed and prepared quickly. The questions were divided into three parts. Part I asked for some general background on the respondents, for their opinions on the importance of technical information support, and assessed their familiarity with the SVIC products and services. Part II related specifically to the shock and vibration symposia, while Part III dealt with a broad range of shock and vibration information requirements. In Part III the participants were to give their opinions on the need for continuing past SVIC services and, if they wished, to offer suggestions on other information needs that should be met in the future.

DISCUSSION OF RESULTS

Of the 309 people attending the 57th shock and vibration symposium, 118 were civilian or military employees of the federal government and 191 were from the private sector. Each was given a questionnaire at registration. 49.8% (154) of the participants returned their completed questionnaires. It is believed that this is an unusually large response for this kind of survey, perhaps indicating that this group had a high level of interest in the future of SVIC. If the same reasoning is followed, government employees at the symposium were slightly more interested than the private sector representatives (55.1% of federal employees responded as opposed to 46.6% of those from industry and universities).

Table B-1 is a copy of the questionnaire distributed at the symposium. The numbers in the blanks on the questionnaire indicate the number of respondents that checked that item. The significance of these numbers and any inferences drawn are matters of interpretation. The last part of the previous paragraph discusses the results of the first question from the author's point of view. In a similar way, comments on the results from each of the other items on the questionnaire follow.

- (2) As might be expected, DoD programs were most prominently represented. Interest from NASA and other civilian programs is also significant. It is clear that a large number of participants work on more than one program.
- (3) Although sea and land systems rated more votes, shock and vibration problems clearly must be faced in all development programs. Most respondents appear to be concerned with two or more kinds of systems.
- (4) The respondents have a wide range of technical and managerial responsibilities. It is interesting that analytical and experimental interests were equally represented.
- (5) The need for technical information support for RDT&E programs was overwhelmingly endorsed.
- (6) Slightly over one half of the participants regularly use technical information services. In light of the response to question(5), perhaps a significant percentage of the community were not aware of the full range of services that were available to them.
- (7) Users of all SVIC services were well represented. Most popular were the S&V Digest and the S&V symposium, particularly as a platform for presenting and publishing technical papers.
- (8) Only 18.8% of those responding were attending their first symposium. 37% were old timers who had attended more than five symposia.
- (9) The value of the series of symposia was highly rated by an overwhelming majority. 56.5% considered symposium participation to be "extremely useful."
- (10) In retrospect, this question had been poorly phrased. Although several recognized the benefits of "informal interchange" and the "technical papers," most took the easy way and checked "all of these."
- (11) There is extremely strong support for continuing the symposia.

- (12) The government is favored as the ultimate manager of subsequent symposia over, for example, a professional society. Some bias was present for special groups, but not enough to negate the results. Consider the following:
- 57% of all respondents favored government management
 - 72% of federal employees favored government management
 - 50% of non-federal employees favored government management
- (13) In publishing the Shock and Vibration Bulletin, there was a strong preference for continuing peer review of the papers prior to publication.
- (14) A large majority favored continuation of present SVIC services. Strongest support was for the symposia, the Digest and direct information services (queries and literature search).
- (15) There is strong support for adding data base services involving the latest computer technologies. Furthermore, more than 50% saw training and education as a proper role for an information service organization.
- (16) See Table B-2.
- (17) A large majority believes that financial support for information services should be divided between the government and the users.
- (18) The inference is that people are willing to pay or recommend payment for information services. However, this question also was poorly designed. It should really be several questions. In addition, the significance of the answers depends strongly on who is answering the questions.

Table B-3 lists the written comments and suggestions that were submitted by the respondents.

SUMMARY AND CONCLUSIONS

Approximately one half of the attendees at the 57th Shock and Vibration Symposium responded to a survey of SVIC users (see Table B-1). The general flavor of the responses was an enthusiastic endorsement of the need to continue and expand shock and vibration information services. The answers to the questions (Table B-1) and the written comments submitted (Tables B-2 and B-3) both almost unanimously indicate that the loss of the symposia in particular and other SVIC services in general would be adverse to the interests of the technical community. Although there was no consensus on how these resources should be salvaged, there were a number of useful comments and suggestions. Some of these merit further investigation.

Almost all of the suggestions in Table B-2 are worthy of consideration. Four of these inspire further discussion.

- Suggestion 10(a) would have the "new SVIC" coordinate technical committee activities, nationally and internationally. Perhaps this means the organization should establish and control its own group of technical committees. Such committees could indeed provide valuable support to national and international programs.
- If 10(b) implies that the service should be to administer basic research programs, it would be beyond the scope of an information organization. On the other hand, to collect the results of these programs and to assure that these results are available to be applied in later phases of the RDT&E process would be extremely useful.
- Suggestion 13 addresses the issue of data base usefulness. There are several examples of poorly designed data bases that turned out to be white elephants. Careful planning can assure that the data base meets the needs of the users.
- Number 16 suggests that technical training is a proper function for an information organization. The mission of such an organization is to collect and hold the latest technology. Why not use this information to develop effective short courses and seminars?

Even though some of them are repetitive, the suggestions included in Table B-3 are worthy of inclusion in this report. These comments reflect the concerns and needs of individual users. Most of the remarks are useful, but self-explanatory and, as such, need no additional discussion here. Throughout the comments there is a tendency to favor the government, in particular DoD, for the management of the "new SVIC". Some of the reasons given relate to security issues. One respondent points out that government sponsorship opens doors to otherwise closed information. Still another suggests that, since the government is the ultimate customer, industry is more likely to support participation in a government sponsored activity.

In summary, it is felt that conducting the survey was well worth the effort. The results support the TAG decision to examine new options to continue SVIC-type services. The suggestions and comments that were offered provide a good starting point for studying these options.

TABLE B-1. QUESTIONNAIRE AND RESULTS

SURVEY OF USERS OF SVIC SERVICES

Note: You should have received this survey form as you registered for the symposium. You are urged to complete the questionnaire and return it to the registration desk as quickly as possible--- preferably by 1:00 PM on 14 October 1986. Preliminary results of this survey are needed for an important meeting to be held the evening of the 14th. The questionnaire may be submitted anonymously. Check all answers that apply.

PART I: GENERAL

1. I am employed by the (65 Federal Government, 89 private sector). = 154
2. My work relates to the following program(s) (137 DOD, 40 NASA, 33 other). = 210
3. I am concerned with the following system(s) (69 air, 91 sea, 73 land, 64 space). = 297
4. I have responsibilities in the following area(s) (67 management, 30 acquisition, 61 design, 118 analysis, 118 test and evaluation, 14 other). = 408
5. Technical information support is (105 essential, 44 very important, 1 unimportant) for RDT&E programs. (+4 no answer) = 154
6. I require technical information services (79 regularly, 63 occasionally, 10 rarely). (+2 no answer) = 154
7. I have used the following SVIC services.

<u>148</u> attended symposia	<u>60</u> made direct inquiries
<u>78</u> subscribed to S&V Digest	<u>35</u> requested literature searches
<u>68</u> purchased publications	<u>87</u> published technical papers (6 no answer)

PART II: SHOCK AND VIBRATION SYMPOSIA

8. I have attended (67 2 to 5, 31 5 to 10, 26 more than 10, 29 only 1) of the 57 shock and vibration symposia. (+1 no ans.) = 154
9. I consider attendance at the shock and vibration symposia to be (87 extremely useful, 65 useful, 1 not useful). (+1 no ans.) = 154

TABLE B-1. (CONT.)

10. The S&V symposia are valuable for the
(33 technical papers, 41 informal interchange
3 platform for controlled information, 105 all of these).
(+2 no answers) = 184
11. The series of shock and vibration symposia (150 should,
3 should not) continue to be held. (+1 no answer) = 154
12. Subsequent shock and vibration symposia should be
(74 managed by the government, 48 managed by a professional
society, 11 other). (+24 no answers) = 157
13. The symposia proceedings (Shock and Vibration Bulletin) is now a
refereed proceedings (except for the 57th). Should peer review of
papers continue? (146 yes 4 no) (+4 no answers = 154

PART III: NEED FOR SHOCK AND VIBRATION INFORMATION SERVICES

14. The following is a list of services that have been provided by
SVIC. Check those which, in your opinion, should be continued
in some way, if possible.

<u>147</u> S&V Symposia	<u>72</u> Direct inquiry service
<u>122</u> S&V Bulletins	<u>80</u> Literature Search and Analysis
<u>73</u> S&V Monographs	<u>108</u> Shock and Vibration Digest
	(+1 no answer)

15. The following are examples of services that have not been provided by SVIC. Check those which, if made available, would be a useful addition to shock and vibration information services.

65 on-line access to bibliographic information base

96 shock & vibration environmental data base(s) with on-line access

78 educational and training services (+27 no answers)

16. List below any additional shock and vibration information services that should be made available.

16 responses

17. In my opinion, information services in support of RDT&E programs should be funded by (34 the government, 7 the users, 103 a combination of these two). (+10 no answers) = 154

18. I would recommend that my management (117 should, 12 should not) (+25 no answers) = 154
provide funds to (43 sponsor, 84 pay user fees for) technical information services. (+27 no answers) = 154

Written comments and suggestions. Use reverse side if needed.

27 responses

TABLE B-2. SUGGESTED SHOCK AND VIBRATION INFORMATION SERVICES (QUESTION 16)

1. Provide a common data base relating to equipment suitability in various dynamic environments(include failure rates, etc.). Data base being compiled for the ESSEH(Environmental Stress Screening of Electronic Hardware) could be used as a model.
2. Provide a microcomputer based AI/EXPERT SYSTEM support software re: S/V.
3. Provide a listing of public domain software in the area of vibration.
4. Coordination of SVIC publications and other S&V presentations at symposia(Assumed to mean that the proceedings should be provided at the symposia).
5. Establish regional offices - one on the West Coast and one in the midwest area.
6. MIL-S-901 shock qualification data should be made available by accessing the Navy's Shock Data Base.
7. Provide more exposure of available standards on shock and vibration.
8. Provide a referral service for shock and vibration personnel (Names, expertise, phone numbers, mailing address, etc.)
9. Provide an updated survey of commercial shock and vibration instrumentation.
- 10(a) Coordinate national and international technical committee activities.

(b) Coordinate/sponsor basic research in shock and vibration(e.g., pyroshock effects on materials and instrumentation).
11. Publish/disseminate output and compilations of Pyro Shock Committee.
12. Provide listing of test facilities.
13. An online data base would be a very valuable asset to new design work if the data could be classified by class of vehicle, equipment installation(especially some classification of surrounding structure), and environmental input.
14. Provide a data base that can be used in analysis for specific applications.
15. Provide workshops in conjunction with the symposia.
16. Provide training at the professional level.

TABLE B-3. COMMENTS AND SUGGESTIONS

1. "The most important function served by SVIC, in my opinion, is publishing the Shock & Vibration Bulletin. This provides the widest dissemination mechanism, that I know of, for shock & vibration information. I was giving a presentation in the United Kingdom, and learned that representatives of West Germany and France were familiar with earlier work that had been published in the Shock & Vibration Bulletins. No other information/dissemination sources(NTIS, DTIC, Range Commander's Council, International Symposium on Ballistics, Institute of Environmental Sciences, US Army Science Conference) that I have used provide the wide dissemination that the Shock & Vibration Bulletin has. Because of this fact, the Shock & Vibration Bulletin attracts the highest quality papers.

The second important function of SVIC is to act as a technical referral/information exchange center for highly specialized information. Using SVIC services, one can instantly become "up-to-date," avoid repeating past mistakes, and learn the names & phone numbers of other investigators. In my own experience, SVIC has provided me with background information and contacts in a different agency(Navy), that were not found through DTIC searches or other literature searching. It is important to note that, at the time when I needed the information the most(the research/background investigation phase), my project was least able to pay for investigative services. Important decisions as to the direction of future work had to be made before substantial funding was available.

Finally, my work has produced important results that are classified. I had been counting on SVIC to serve as a referral point for cleared people with a need-to-know, so that they could benefit from this information."

2. "As a foreign visitor(UK Ministry of Defence) the symposia represent a valuable window on the US scene. I find that some of the presented papers are extremely useful, although there are some that are of a low standard. With the apparent continuing trend to international standards, some form of interchange is desirable. My concern is that, if the S&V symposia were not to continue in some form, the aerospace side may merge into, say, the AIAA structural dynamics. That would make the aerospace aspects self-contained, but could be detrimental to many systems that are used(or transported) by many means.

Reading the questionnaire again, most of the questions relate to qualification, and data. The symposium has apparently expanded to include more fundamental structural dynamics. My own opinion is that a more compact meeting on the environmental aspects, organized by either government or a professional institution, (and not a company) is the best way forward.

TABLE B-3. (CONT.)

The previous comments represent my personal views. They are not intended in any way to report the views of the British Government."

3. "(1) Need more vigorous advertisement of the S&V Symposium.
(2) Navy should not be the "Big Daddy"; this should be a DoD function. DoD should appoint coordinators in each service, request NASA, too.
(3) The symposium and related functions should not rely on DoD Hdqtrs for financial support. DoD should DIRECT Army, Air Force, Navy Hdqtrs to pay flat fee (and ask NASA, too). Recover the rest from symposium registration and private industry user fees."
4. "I call SVIC at least 3 times a year for names & phone numbers of people and training institutes who can help me."
5. "I do not represent a typical user. My program has a strong in-house S&V program aimed at design and validation of high reliability, long lived, remotely operated equipment with design lifetimes without internal access typically 15 to 30+ years. Special in-house techniques are used that are typically far too complex to warrant use on most Navy equipment. Prime contractors use symposia, Bulletins to keep abreast of outside state of the art. Almost no information flows from our program to SVIC because of special security & distribution restrictions imposed on program by statute."
6. "The symposia is a must. It has to be continued."
7. "I know of no other group or society that could represent the shock and vibration field as well as it has been done by the Shock and Vibration Information Center."
8. "I think that a main problem in the SVIC is that the technical community may not be aware of the services you provide. I have been to three S&V symposia, and I was not aware of the literature search & direct inquiry services."
9. "Please keep the center in operation."
10. "The S&V Information Center serves a function being fulfilled by no other organization."
11. "This is too important a service/function to both government, and industry, to be terminated. I personally have benefitted greatly when at TRACOR, Inc., and in doing work for DOD with the help of SVIC services."
12. "SVIC services have been a valuable benefit to me and my company

TABLE B-3. (CONT.)

in the 25 years that I have been in this field. I feel a valuable service would be lost if the SVIC is discontinued. The following services are particularly valuable, listed in order of usefulness. (1) S&V Digest, (2) S&V Bulletins, (3) S&V Symposia, (4) Direct Inquiry, (5) S&V Monographs."

13. "It would appear that the empirical work is presented at the S&V symposia and the theoretical at the Acoustic Society meetings. I would suggest improved communication between the two parts of the community."
14. "The Shock & Vibration Information Center, or some similar organization, should be continued particularly to perform coordination or information exchange through the Bulletin, Digest and the Symposia. It is important to keep abreast of the rapid pace and change in technology development. In the Shock & Vibration field this is the only forum which brings together various government and contractor agencies to talk on a common ground - whether it be air, land or sea. Often related areas can spur developments or applications in another area of interest.

I recommend some kind of joint organization(SVIC, for example) to be supported by Army, Navy, Air Force, DNA and by subscriptions to the private sector.

I have gained much in the past 18 years of exposure to the Bulletin, Digest & Symposia and will recommend to Electric Boat Division/General Dynamics management that we continue support for SVIC or some similar organization. Hope to see you keep up the good work. Hearing speakers such as Gene Sevin and Mel Baron has enormous value to participants."

15. "I feel the SVIC has provided a vital service in both government & private organizations. Other meetings such as ASME/AIAA are tending more to very theoretical papers, which while they have a valuable place in information exchange, are not totally fulfilling the needs.

I suggest that consideration be given to setting up a SVIC board composed of representatives from government & private defense contractors to govern an organization devoted to continuing the SVIC effort. This kind of board may solicit the support of private industry more readily. Whether my employer, McDonnell Douglas Astro Co., St. Louis, would participate or not I can't say. I do feel that if member(s) of the various components of McDonnell Douglas Corp were solicited to have a say in the organization, support may be available. I think the classified sessions are very valuable and must continue.

16. "As already noted in my answer to question 12, this forum must be kept as an informational exchange of test data, trends and other items going on in the shock and vibration community. If

TABLE B-3. (CONT.)

the symposia is managed or run by a professional society - it may become like some of their publications - very theoretical and somewhat exotic. If this occurs, the symposia will lose its great value to promote an information exchange between the members of the shock and vibration community. This exchange is vital if we are to continue to expand our knowledge and information in shock and vibration."

17. "I've to date used all available shock and vibration information related to my job, especially that related to classified military applications. Discontinuing the S&V symposia is, in my judgment, a classical example of penny wise and ton foolish!"
18. "This being only my second S&V symposium, I can't provide a whole lot of input. Also, my work is associated with preparations for the upcoming shock test of CVN 71(Theodore Roosevelt) next year. I have obtained most of my information from previous ship shock tests through the Navy, without having to use SVIC. It still appears to me that the government benefits of the symposium(and other SVIC information) are a good use of a few tax dollars in that it is the only way to promote technical exchange of information(on such sensitive subjects) to this community. Personally, I seem to benefit from some of the plenary sessions(which open my eyes to an overview of military operations) as much as the technical papers."
19. "Symposia provide an important vehicle for classified papers!"
20. "Make it(the whole symposium) a classified session."
21. "S&V is an important interchange. Keep it Going!"
22. "I find the meetings a good source of potential new employees."
23. "SVIC should be strengthened and expanded, rather than dis-established. Perhaps SVIC could be sponsored by NBS or NTIS, or some other agency with more general interest than NRL."
24. "I believe in less government involvement in most areas. But I think only the government(perhaps in conjunction with professional societies) can effectively promote and encourage the relatively free dissemination and exchange of technical information which is essential to continuing progress in RDT&E!"
25. "I feel government participation is important. It opens doors to contract data that would otherwise be closed. After all, the government is usually the principal customer on all this work. Federal employees can make acceptable inquiries free of competitive concerns. My experience has shown a past reluctance of industry to pass on highly profitable ideas developed with federal funds until "pushed" a little. There is also concern as to the costs of such reports, once the official contract reports have been issued.

TABLE B-3. (CONT.)

Further, an invitation to present a paper from NRL will help make internal funds available. Most industrial management is glad to show cooperation with the ultimate customer."

26. "I would like to actively support the organization, management and conduct of subsequent S&V symposia. Boeing Aerospace Co is currently emphasizing more importance on attendance at government sponsored symposia than on technical society symposia, because it is a more effective vehicle for accessing the "wants & needs" of government agencies."
27. "This series must be continued."

NSWC TR 88-138

APPENDIX C

TRIP REPORT TO HUNTSVILLE, ALABAMA

SUBJECT: Visit to Redstone Arsenal, Huntsville, AL on 21-24 January 1987 by Henry C. Pusey

Purpose of Visit: To discuss ad hoc sponsorship of the 58th Shock and Vibration Symposium in October 1987

Persons Contacted: Marshall Space Flight Center(NASA)

Robert S. Ryan, Chief, Structural Analysis Division (205)544-1482

Ronald E. Jewell, Deputy Chief, Structural Analysis Division (205)544-0436

Jess H. Jones, MSFC SVIC TAG Member, Structural Analysis Division (205)544-1543

Dr. George McDonough, Chief, Structures and Dynamics Laboratory (205)544-1412

U.S. Army Missile Command

James Daniel, MICOM SVIC TAG Member, Dynamic Test Division, T&E Directorate (205)876-3961

Dr. James J. Richardson, Deputy to the Commanding General for Development Engineering and Acquisition (205)876-8171

Background: As a part of an NSWC task(Delivery order #0059, Contract No. N60921-86-D-0024) on "Information Resource Support for the Ship Hardening Program," specific actions that would be required to organize and conduct a 58th Shock and Vibration Symposium were to be identified. Since the results of a survey conducted at the 57th Symposium strongly support the continuation of the S&V symposia under DoD/NASA sponsorship, the first task was to identify a willing sponsor within that framework. Prior to the disestablishment of SVIC, the NASA Marshall Space Flight Center(MSFC) had agreed to host the 58th Symposium. It therefore seemed appropriate to offer MSFC the opportunity to sponsor the 58th Symposium on an ad hoc basis. This proposition was presented to MSFC personnel. Furthermore, since sponsorship of the symposium without SVIC would require substantial commitment of resources, it was suggested that MSFC might like to share sponsorship of the 58th Symposium with the U.S. Army Missile Command(MICOM).

Results: Discussions during the visit resulted in the following.

1. MSFC and MICOM would like very much to co-sponsor the 58th Shock and Vibration Symposium in Huntsville. The preferred dates are October 20, 21 and 22, 1987.

2. As co-sponsors, MSFC and MICOM will assume the following responsibilities in connection with organizing/conducting the 58th Shock and Vibration Symposium.
 - (a) They will provide a secure meeting facility for the classified technical sessions.
 - (b) They will assume responsibility for both personnel and physical security, as well as any other security requirements.
 - (c) They will provide bus transportation between the hotel and classified auditorium as required.
 - (d) They will provide the required personnel to support on-site registration.
 - (e) They will provide audio-visual support for both classified and unclassified sessions.
 - (f) They will assume responsibility for printing and mailing all announcements, forms, programs, etc.
 - (g) They will print and distribute unclassified, limited and classified proceedings.
 - (h) MSFC/MICOM will sign all official agreements (hotels, etc.) as well as all official correspondence in connection with the symposium.
3. MSFC and MICOM request that the TAG Ad Hoc Committee, now chaired by Bill Wassmann, assist the sponsors by assuming responsibility for the following with respect to the 58th Symposium.
 - (a) Accept overall responsibility for direct management of all aspects of symposium. These responsibilities include
 - (1) preparing all required material(announcements, programs, forms, etc.) in camera-ready form for printing and distribution by the sponsors.
 - (2) assuring that all milestones in connection with the symposium are met.
 - (3) receiving all offered paper summaries, paper releases and manuscripts; keeping the necessary records.
 - (4) coordination of program committee effort.

- (5) preparing final program.
 - (6) attending to all symposium correspondence, either for the sponsors' signature or directly.
 - (7) organization and preparation of proceedings (Bulletin) in camera-ready form.
 - (8) badge preparation and overall management of on-site registration.
 - (9) coordination of all local arrangements with hotels, busses, etc.
 - (10) other duties as they arise.
4. MSFC and MICOM suggest that they would likely assume their responsibilities without cost recovery (no registration fee). The TAG Ad Hoc Committee should determine whether or not they wish to recover the cost of symposium management.
 5. During the visit to Huntsville, all potentially usable hotels were contacted. As a result, the Huntsville Hilton is tentatively holding its convention space for the preferred dates (20-22 October 1987). The Hilton, Marriott, and Skycenter hotels are all sending proposals in connection with the symposium.

Conclusion: Although the sponsorship responsibilities have not been approved at the highest levels, Dr. McDonough (MSFC) and Dr. Richardson (MICOM) have blessed the idea enthusiastically. Approval is therefore a virtual certainty. The TAG Ad Hoc Committee must decide whether they will accept responsibility for managing the "mechanics" of the symposium. Assuming the decision is positive, a plan must be developed to do this. With the limitations on available in-house personnel, the symposium would have to be managed by contract. Some of the questions that must be answered are

1. Will several agencies contribute to the cost of symposium management?
2. If so, will they wish to recover those funds through registration fees?
3. What contracting vehicle will be used?

NSWC TR 88-138

APPENDIX D

FINAL SHOCK AND VIBRATION INFORMATION
CENTER (SVIC) ANNOUNCEMENT



SHOCK AND VIBRATION INFORMATION CENTER

Naval Research Laboratory, Code 5804
Washington, D.C. 20375

Tel. 202 767 2220

10 December 1986

FINAL ANNOUNCEMENT

On 31 October 1986, the Shock and Vibration Information Center (SVIC) was disestablished by authority of a memorandum from the Under Secretary of Defense for Research and Engineering dated 23 July 1986. In the memorandum, the need for continuity and for the preservation of SVIC archival material was recognized. In recent weeks, certain other events have occurred which are of special interest to the SVIC technical community.

1. A meeting of the interagency Technical Advisory Group (TAG) for SVIC was held on 14 October 1986 at the 57th Shock and Vibration Symposium. The TAG concluded that a broad based need exists for SVIC-type information services in critical and emerging programs. The TAG conclusions and recommendations were forwarded to the Department of Defense (DoD).
2. As a result of deliberations of the TAG and its communication to DoD,
 - a. it is highly probable that the 58th Shock and Vibration Symposium will be held in October 1987 on an ad hoc basis. A firm announcement, including details of preliminary arrangements, will be made early in 1987.
 - b. beginning in 1987, the Vibration Institute will publish the Shock and Vibration Digest. Current Digest subscribers will receive renewal notices from the Institute.
 - c. all other SVIC services are now suspended as previously directed. However, during the next six months a special study is being conducted to define the information needs of the shock and vibration technical community and to develop options to meet those needs. The study is being supervised by an ad hoc subcommittee of the TAG chaired by Mr. W. W. Wassmann of the Naval Surface Weapons Center. It will be conducted by Advanced Technology and Research, Inc. under an NSWC contract. Mr. Henry C. Pusey, former Director of SVIC, is the project manager.

3. Many of you will be contacted during the next six months in connection with the study on shock and vibration information services. This will be your chance to provide an input in this important area. Ultimate actions by DoD will depend both on early response and the long range support of the user community. As a first step, interested persons are urged to submit their ideas on the following items.
 - (a) Suggested topics for the 58th Shock and Vibration Symposium.
 - (b) Your ideas on information services that are especially important.
 - (c) If special workshops are conducted in connection with this study, would you like to participate?

Comments and suggestions may be sent to:

Mr. Henry C. Pusey
4193 Sudley Road
Haymarket, VA 22069
Tel: (703)754-2234

4. SVIC has been pleased to provide nearly 40 years of service from the Naval Research Laboratory. However, this is the FINAL SVIC announcement and operations at NRL are now suspended. It is therefore requested that any official correspondence in connection with this announcement be addressed to:

Mr. W. W. Wassmann
Naval Surface Weapons Center
Environments Branch
White Oak, Silver Spring, MD 20910
Tel: (301)394-2120

NSWC TR 88-138

APPENDIX E

PRELIMINARY ANNOUNCEMENT--
58TH SHOCK AND VIBRATION SYMPOSIUM

PRELIMINARY ANNOUNCEMENT

THE 58TH SHOCK AND VIBRATION SYMPOSIUM
WILL BE HELD IN HUNTSVILLE, ALABAMA

Dates: October 13, 14 and 15, 1987

Place: Hilton Hotel (and Redstone Arsenal)

CO-SPONSORS: GEORGE C. MARSHALL SPACE FLIGHT CENTER (MSFC)

and

U. S. ARMY MISSILE COMMAND (MICOM)

CO-SPONSOR Points of Contact: Mr. Jess H. Jones
Structural Analysis Division
NASA Marshall Space Flight Center
Huntsville, AL 35812
Tel: (205)544-1543

Mr. James W. Daniel
T&E Directorate (AMSMI-RD-TE-C)
U.S. Army Missile Command
Redstone Arsenal, AL 35898
Tel: (205)876-3961

IMPORTANT DEADLINES: Summaries of Proposed Papers Due - 1 June 1987
Manuscripts and Paper Releases Due - 1 Sept 1987

The 58th Shock and Vibration Symposium is a continuation of the series of symposia sponsored by the former Shock and Vibration Information Center (SVIC). This symposium is being organized and conducted in response to a demand by the technical community as evidenced by the results of a survey at the last symposium and a number of specific requests that have since been received. As an interim measure, pending the outcome of a study of future options for providing shock and vibration information services, MSFC and MICOM are pleased to act as both sponsors and hosts.

A FINAL ANNOUNCEMENT AND CALL FOR PAPERS will be issued in April. In the meantime addressees are asked to take special note of the above deadlines. These dates are not subject to change. Interested persons are also asked to assist the Sponsors and the Program Committee by completing and returning the enclosed form to the address indicated on the form. Copies of this announcement and the form should be passed along to others in this technical area who may not be on our mailing list. Those indicating an intent to submit papers will receive specific instructions at an early date. Detailed instructions for paper submittal will, of course, be included with the Final Announcement.

In addition to papers approved for public release, the 58th Shock and Vibration Symposium provides a platform for presentation and publication of papers with limitations on distribution and for classified papers up to SECRET. All accepted papers must be accompanied by a VALID release for presentation and publication. These releases must be received by the deadline shown, or the paper will not be listed on the Final Program.

As co-sponsors, MSFC and MICOM pledge to make the 58th Shock and Vibration Symposium an effective vehicle for the interchange of information and ideas. We want to emphasize that the interim nature of present efforts to continue shock and vibration information exchange will have no adverse impact upon the quality of the 58th Symposium. In fact, the contrary is true; the 58th is being planned from the ground up to be the best ever! See you there!

JESS H. JONES
MSFC

JAMES W. DANIEL
MICOM

The Program Committee for the 58th Shock and Vibration Symposium requests that interested persons complete and return this form as soon as possible. Mail to:

Mr. W.W. Wassmann
Environments Branch
Naval Surface Weapons Center
White Oak
Silver Spring, MD 20910

I suggest the following as topics for discussion:

I plan to submit a paper. Please send instructions.
My topic will be

The paper will be

unclassified-unlimited
 CONFIDENTIAL

unclassified-limited
 SECRET

At previous S&V symposia, one technical session was usually reserved for "short discussion" (10 minute) papers for oral presentation only. Such papers should receive (___more, ___less, ___about the same) emphasis at the 58th Symposium.

I would like to hear invited papers on the following topics.

At some past symposia, panel sessions on controversial technical topics have been organized.

I (___do, ___do not) recommend programming technical panel sessions at the 58th Symposium.

I am (___in favor of, ___opposed to) evening panel sessions.

I (___would, ___would not) like to participate as a panelist.

I suggest the following topics for panel discussions.

I am currently on your mailing list. My address below is correct.

Please add me to your mailing list.

Name: _____ Phone: _____

Organization: _____

Address: _____

City _____ State _____ Zip _____

I have the following specific suggestions concerning the 58th Shock and Vibration Symposium. (Use the space below.)

RESPONSES TO PRELIMINARY ANNOUNCEMENT
FOR 58TH SYMPOSIUM

ON

1. Suggested Topics for Discussion
2. Papers Expected to be Submitted
3. Suggestions on Invited Papers
4. Suggestions for Panel Discussions
5. General Suggestions

58th SYMPOSIUM - SUGGESTED TOPICS

High Temperature Stress-strain Measurements of High Speed Machinery
Forced Response Nature of Rotating Machinery Components
Vibration Data Bases
Adapting Commercial Equipment to Military Use
Pyrotechnic Shock Testing - MIPS, etc.
Adjusting Finite Element Models to Match Test Data
Design and Test of Satellite Subsystems with respect to Shock and
Vibration Environments
Packaging, transportation, product fragility
Dynamic Measurement
Earthquakes, Air Blast and Ground Shock
Computer predictions of damage to instruments and other sensitive
components mounted inside an armored vehicle due to a high intensity
shock, such as caused by a round penetrating or a round expending
close to the hull
Review of progress to continue shock and vibration information
services. (Do during opening session?)
Test Method Development for SDI (Lethality Experiments) (2)
Analytical Techniques for SDI Structure and Material Responses (2)
SDI Overview (2)
Recent Test Technique Development General (2)
New Heavy Lift Launch Vehicle - Anticipated Environments
Aerospace Plane Environments
Acoustics & Vibration Response for Transatmospheric Vehicles
Research in Hypersonic Flow
Experienced Measured and Unmeasured Environments on the Shuttle SRB
During Recovery
Low Level Shock - Impact as a Design Technology
Shock Effect on Low Frequency Sound Isolated Equipment

Suggested Topics(Continued)

System Damping Effects on Shock Induced Stress

Random Vibration Data Analysis

Fault Detection Signature Analysis(Machinery Health Monitoring)

Shock & Vibration Testing i.e. 167-1 & 901C Actual Test Programs

SPATE(Stress Pattern Analysis by Thermal Emission)

Holography

Modal Analysis

Underwater Shock Analysis

Modal Analysis

Underwater Acoustics(Structural)

Multiple input random vibration on large test items

Origin of shuttle generated random vibration loads, and their effects on spacecraft structure loading in the 40 to 50Hz frequency band width. i.e. the possible superimposition on the spacecraft quasi-static acceleration loads

Active Vibration Control

Noise Control of Marine Machinery

Damping Treatment

Navy/Underwater related Shock Topics

58TH SYMPOSIUM EXPECTED PAPERS

Forced Vibration Characteristics of Impulse Blading/Circular Plates)

Application of Exaggeration Factors to Laboratory Schedules

Aerodynamics Effects on Structural Panels(Solar Arrays) (L) (1)

Pyrotechnic Shock Testing (L) (2)

Measurement of Vibration Reinforcement Effects Due to Trident I
Missile Launches from SSBN 726 Class Submarines (C)

Airblast Induced Shock Environment of Shipboard Equipment (C)(L)

Structural Optimization with Multiple Natural Frequency Constraints

Rapid Techniques for Preliminary Shock and Vibration Analysis Prior
to Use of Computer FEA Models

Coefficient of Restitution of Packaging Cushioning Materials

The Potential of Technical Implementation of Classical Mechanics in
Shock and Vibration Measurements

Explosive Simulation of Loading on a High Velocity Earth Penetrator

Limiting Performance Design of Shock Loaded Structures

Evaluation of an Approximate Method for Predicting the Permanent
Deformation of a Beam in Water Subject to a Shock Wave

The Expected "Safe" Life of Structures in Seismically Active Regions

Nonlinear, Self-Excited Vibration (C)

Vibration and Damping Analysis of Conical Shells of Composite
Material

Comparison of Finite Element Frequency Analysis of a Cylinder with a
Rayleigh-Ritz Analysis of Donnell Cylinder Equations

CG53 Shock Trial (C) (1S)

CVN71 Shock Trial (C) (2S)

FFG59 Shock Trial (C) (3S)

Navy Shock Training Initiatives (C) (4S)

Vibration Control

Vibration of Submerged Stiffened Shells

Expected Papers(Continued)

Target Strength of Stiffened Hulls (C)(2)

The Robotic Spray Application of a Primary Explosive

Combined Response Impulse Testing Using Light Initiated High Explosive(SDI Lethality Test Technique Development) (L)

Transient Response of Laminated Composite Plates Using a Three-- Dimensional Hybrid-Stress Finite Element Formulation

Momentum Wheel Dynamic Absorber Design (1)

Long Stroke(12") Vibrator Installation (2S)

A Mathematical Model for Turbulence Induced Plate Vibrations at High Frequencies and its Application to Ship Hull Vibration Problem (India)

58TH SYMPOSIUM - TOPICS FOR PANELS

Vibration Information for Designers - MIL-STD-810D

Analytical/Experimental Treatment of Non-Linear Systems
(Shuttle/Payload)

Structural Analysis Optimization

Mechanical Design

Analysis and Test of Satellite Subsystems

General Broad Range Controversial Topics

Measurement and the Use of Measured Data

Hardness Assurance, Maintenance and Surveillance

MIL-STD-901D

Shock and Vibration Information: Where to From Here?

Shock Test Instrumentation: What's New?

Test Development

Transducer Development

Response Analysis Development

Vibration Control of Composite Structural Elements by Using Add-on
Damping Materials

MIL-STD-810D - Current Status - Problems in Use - Areas of Possible
Revision

The Pros and Cons of High Speed Balancing

The Basis & Rationale for Reliability Development Growth Testing
(RDGT)

A Candid Discussion of FEM/Modal Test Correlations

Foundation Design for Shock, Noise and Vibration

Underwater Shock Analysis

Underwater Structural Acoustics

Modal Analysis

Use of MIL-STD-901D

Topics for Panels(Continued)

Analysis and Conversion of Field Vibration Data into Laboratory Qualification Tests - To Bring Out Any New Ideas that Might Exist Beyond the MIL-STD-810D Guidance

Establishing Dynamic Loads

Active Vibration Control

Noise Control of Marine Machinery

Damping Treatments

58TH SYMPOSIUM - TOPICS FOR INVITED PAPERS

Expendable Turbine/Compressor Components-Analysis and Manufacturing

Analytical Models for Vibrations of Practical Turbomachinery Disks with Blades

Calculating Displacement from a Random Schedule

Adjusting Finite Element Models to Match Modal Tests

Damping

Modal Testing

Survey of Hydrocode Applications to Air and Underwater Shock Problems

FEA Analysis of Shock Response and Fatigue Life of Satellite Subsystems

Fragility, Packaging and Transportation

Artificial Intelligence

Theory of Measurement

Special Purpose Data Processing(Data processing other than FFT and other statistical package, etc.)

Any New Test Techniques

SDI Developmental Testing

Damping

Composite Material Structural Dynamics

Shock Effects - Computer Analysis

Minesweeper Shock Design and Testing

Submarine Shock Trial Initiatives

Development of NFR90(NATO Frigate) Shock Criteria

Robotics

Remote Systems

New Test Technology Requirements for the Future

Acoustic and Vibration Response for Transatmospheric Vehicles

Research in Hypersonic Flow

Topics for Invited Papers(Continued)

SRB Environments

Acoustic and Vibration Instrumentation

Shock Analysis and Testing

High Speed Balancing Techniques

Design Analyses for Predicting Response to Pyro Shock Response Spectra

Instrumentation for Shock Testing(Accelerometers, Velocity Meter)

Design of Foundation for Main Propulsion Diesel in T-AGS39 Class Ships

Shock and Vibration Isolation

Underwater Shock Analysis

Underwater Structural Acoustics

Modal Analysis

Random Vibration on Large Tests Items

Methods of Determining Loads for Secondary Spacecraft Structure in the 40 to 50Hz Frequency Band

Methods for Predicting Random Vibration Responses to the Spacecraft Acoustic Environment(i.e., Design Loads for Spacecraft Components 100-200Hz Range

Isolation of Critical Piece Parts to Pyrotechnic Shock and Vibration

Active Vibration Control

Noise Control of Marine Machinery

Damping Treatments

58TH SYMPOSIUM SUGGESTIONS

Papers should focus on current or recent problems/solutions. Be oriented toward the practical vs the theoretical.

Can be arranged in collaboration with Society of Experimental Mechanics(formerly SESA) on some special topics during Sept-Oct once every 2 years.

Papers can be published in some International Journals like Instn. of Mech. Engrs(UK), VID(W.Germany), J. of Sound & Vibration, ASME, Exptal. Mechanics, etc. on agreement.

Try to discourage detailed mathematical derivations. They tend to get bogged down and with limited time for each paper result in the author/presentor rushing or just plain not getting to "the punch line". Also try and ensure time for questions and answers after each presentation.

The biggest complaint that I have and a number of my colleagues have is that the time between the conference to the time we receive the proceedings(approx.1 year) is too great. This significantly diminishes the impact this conference has on our engineering work. Unless this situation changes, our engineering community will have a harder and harder time to justify attending this conference.

Emphasize applications oriented papers and papers with valid environmental data.

Advise those who intend to submit a paper for this symposium to start writing it immediately. Do not wait for the Program Committee to notify them that their paper is accepted. They should also start the release process as soon as possible to ensure the paper can be released in time to meet the 1 Sept 1987 deadline. In my experience with handling the paper release process for many past symposia, the paper release process is lengthy, particularly if the paper is meant for public release, in some cases it could take 2-3 calendar months to release a paper for public disclosure.

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APPENDIX F

SHOCK AND VIBRATION INFORMATION
SERVICES WORKSHOP SURVEY

SURVEY OF INVITED PARTICIPANTS
SHOCK AND VIBRATION INFORMATION SERVICES WORKSHOP

Name _____ Title _____ Tel.#() _____
Organization _____
Address _____

Description of Job Responsibilities: _____

A. Will you participate in the Conference/Workshop? 1. 34 Yes 2. 20 No

B. Did you use SVIC information services? 1. 51 Yes 2. 2 No

If yes, what services did you consider important; and why?

List six(6) technical information services in order of importance that, in your opinion, should be provided by an information activity on shock and vibration.

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

Please give your views on the most effective procedures for organizing technical symposia.

Describe the kind of technical paper at a shock and vibration symposium that would be most useful to you.

C. Do you think that the proceedings of a technical conference should be available at the conference? 1. 40 Yes 2. 10 No

D. Are you a subscriber/reader of the Shock & Vibration Digest? 1. 43 Yes 2. 10 No

If yes, please suggest improvements that will make the Digest more useful.

E. Have you had experience in the development/use of computerized information/data bases? 1. 27 Yes 2. 26 No

Please give your ideas on the effective use of automated storage/retrieval systems by a shock and vibration information activity.

- F. Should technical information organizations provide services in technical training? 1. 32 Yes 2. 18 No

If yes, what should be their role? _____

- G. Should the new shock and vibration information activity be government sponsored? 1. 44 Yes 2. 1 No

If yes, what agency is the most likely sponsor? _____

- H. Assuming government sponsorship, should the activity be ^(1.)20 contractor operated _(2.)20 in-house operated?

- J. Should the activity be funded by 6 the government 2 the users 44 a combination of these? _(1.) _(2.) _(3.)

What is the position of your organization on the requirement/method of payment for information services? _____

Using a separate sheet of paper or the back of this form, please give your ideas on how to replace/augment the information services formerly provided by SVIC.

PLEASE MAIL THIS FORM TO:
(RETURN AS SOON AS POSSIBLE,
BUT NO LATER THAN APRIL 10,
1987)

HENRY C. PUSEY
4193 SUDLEY ROAD
HAYMARKET, VA 22069
Tel: (703)754-2234

RESPONSES TO WORKSHOP SURVEY
ON

1. S & V Digest Improvements
2. Data Bases
3. Role of SVIX with Respect to Training
4. Funding

SUGGESTED DIGEST IMPROVEMENTS

Too much concentration on theoretical (publish or perish) for much practical benefit. (Dynamics of Plates and Shells?)

Detailed recommendations previously provided to Hank Pusey. Main thrust of recommendations is to orient the Digest more to the "working level" engineer and to include columns by primary users.

A small section entitled Shock and Vibration Digest Communications at the rear of the journal for rapid publication of short papers and work-in-progress as well as discussions will improve the Digest significantly.

Some type of Limited Distribution/Classified Abstract Bulletin would be useful; this cannot be done because the Digest is published privately.

Excellent in format and content as produced.

More current awareness information (e.g., trip reports)

Satisfactory as is. A computerized index published annually would be helpful.

Issuing Table of Contents by subject, keywords, authors, etc.

The Digest should be a private undertaking if it can survive in that form - fine. We have little interest in it. Its good functions could probably be incorporated into computerized info system.

Present format is good.

More emphasis on summary papers rather than detailed analytical papers.

SUGGESTIONS ON DATA BASES

Create a computer bibliography/subject data base.

Available by phone/modem(membership, fee, or support is assumed) - keyword search, browse, scan, summary and full text available.

Have user on-line accession and retrieval services.

Transfer between data bases would be worthwhile.

Dual natured system - (1) well collated info that can be accessed by anyone "belonging to system" - (2) info not fully evaluated but would be of great use to narrow community - this info should be provided by information organization with proper caveats.

To be most useful, it should be readily available and accessed from the user's office.

We have been trying to get some DoD/DOE organization to do this for at least 15 years. A great deal of measured data has been taken on military vehicles but this data is systematically not available to the designer; testers of avionic equipment. This is a National disgrace.

It has to be well advertised and easy to use.

I have other people take care of this for me.

Either (1) Have single access point run by activity personnel
(2) Make data available to all DTIC terminals.

Vehicle Vibration Env Data Base, Personnel Data Base and Updated Index(Sub Matter) of Proceedings going back as far as possible.

It would be nice not only to get papers on specific topics but also some idea of who is doing what in the area.

Junk current system. Utilize an existing PC computer database system.

Obvious that we must automate this capability. Good automation translates into higher efficiency, which is obviously important to future success.

Objective is to quickly provide user with information in the form of document titles, sources, technical approach, etc., on the special topic of the request. Probably should use a carefully defined set of keywords in the index, to allow non specialized person to perform search; user fee dependent on extent of search and form and quantity of product.

The most useful feature would be the ability to access the information directly from his own terminal for the user.

Suggestions on Data Bases(Continued)

Computer terminal entry/access at regional locations connected to a common data base would be efficient. Dial-in with a modem is most convenient.

Should include practitioners as well as publications. Should be available to "anyone" on a pay per use basis.

Subjects/topics should be indexed on a main frame. Actual data, i.e., data bank should be on the main frame as well as identified sources of data -- person, organization. Access should be provided for sponsoring/contributing agencies/organizations with approval for hard copy printing.

The user to have direct access at a computer terminal. Request by list of "keywords". Obtain list of references.

Good description of available data - supporting info for example end-to-end frequency response of acquisition system/data reduction parameters/description of inst system/mounting details, etc.

In order for an S&V information activity to be efficient and effective it is necessary to have an automated storage/retrieval system. It is of equal importance, however, to have knowledgeable people who can discuss items in the data base for clarification and other reasons on a one-to-one basis.

We feel that the shock and vibration information activity does not require its own separate data base. The information activity should provide referral services to experts and data bases in particular technical areas.

They should be available on IBM compatible diskettes.

TECHNICAL TRAINING COMMENTS

As government agency, not only tax-free but tax supported, they should NOT compete with private sector organization activities.

Include listing of sources, contacts, etc.

Not sure. The idea has potential.

Conduct short courses. Publish technical manuals.

Evaluating course content. Perhaps training could be combined with symposia. If this organization could get the charlatons off the street they would be doing a great service.

If a DoD/DOE managed service - their role should include training of contracting engineers/managers in defining scientifically rational S&V test criteria.

Increase the technical training between generally available Technician Courses and Theoretical College Courses.

Direct individual to best source of training to fit their needs. Probably not conduct the training themselves.

They should make known the availability of training, but should not direct the training.

Sponsor seminars.

Coordinator.

Secondary! SVIS should not rely on training tasks for primary support. Ideally, SVIS training should be free to customers and primarily furnished by written material, video-tapes, etc.

As an example, a short course in Naval DDAM would be useful to the Naval community. Other fields could also be developed into courses. Proceeds could help fund the center.

Offering of technical up-to-date training and courses in shock and vibration interaction with structures subjected to blast, impact and thermal loading.

Make up the course material in cooperation with the various instructors, design the course and administer the course.

Short, intense course would familiarize attendees with fundamentals of topics; provide references for individual follow up at a later time.

Probably whatever the market will bear.

Coordinate identification of training needs and of suitable candidates as trainers. Organize training sessions.

Technical Training Comments(Continued)

Coordinate identification of training needs and of suitable candidates as trainers. Organize training sessions.

Keep a schedule on availability. Have a list of former attendees for references.

Provide technical info's(&source) on pressing technical problems especially those that affect the national security of the U.S.(classified or otherwise). To re-direct all pertinent inquiries to right party.

Originator and instructor(or arrange for instructor from other sources).

Organization of resources for providing help to the technical community. Not detailed technical training.

Provide high quality live/recorded seminar/lectures on topics - for example, a course on A/C or missile or spacecraft dynamic env. prediction methods or accel. life testing, etc.

Provide technical courses as required or provide information regarding a source or sources for the training requested. Courses to be tailored to customers specific needs.

Provide instructions for accessing and searching data bases.

Organize persons, programs, and places in the process of sponsoring training.

COMMENTS ON FUNDING.

Non recurring set up and start up must be government funded. Perhaps subsistence-level budget should be furnished by sponsor or sponsors. Services should be provided on pay-as-used basis.(A la NTIS) Memberships or retainers might provide a fixed service level(as sponsors of old SVIC received certain services).

Research funding.

Can be done thru overhead funding depends on managerial approval and amount of cost.

Annual subscription thru purchase order.

Should be government supplied - free to all.

There is no method for us to fund this activity in our present accounting system. Hence it probably would not be funded.

Supportive but to what extent would be determined by how the service is set up.

Will pay if required.

I suspect it would be nearly impossible to get any FMC funding for this function..

Limited support on annual basis may be possible if government sponsored.

NAVSEA can be expected to pay a "fair share". The requirement is not in doubt; how to pay remains to be resolved but no major problem expected.

Univ. of Akron is not in a position to pay for these services.

Handled at BRL through STINFO & BRL Technical Library to the specific agency or info center.

Services should , to the largest extent possible, be based on fee systems designed to self support the services.

We are willing to support the services at approx. the level we have in the past(~5K/year).

Non one wants to pay for info, but if the quality and convenience is high, payment by purchase order is possible.

Pay per service.

ITT is in a position to fund any in-house services that is provided indirectly or directly by SVIC.

Comments on Funding(Continued)

McDonnell Douglas is currently a corporate subscriber to SVIC and would be willing to continue on the same basis as previously.

Not certain, but think it may be funded either on a particular research effort or on overhead.

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APPENDIX G

SHOCK AND VIBRATION INFORMATION SERVICES
CONFERENCE AND WORKSHOP

AGENDA
 Conference and Workshop
 April 21-23, 1987
 Bergamo Conference Center, Dayton, OH

TUESDAY, APRIL 21st

- 6:00 P.M. - Registration
 8:00 P.M. - Working Group Organizational Meetings

WEDNESDAY, APRIL 22nd

- 8:30 A.M. - Welcome and Opening Remarks - William W. Wassmann, General Chairman
 8:45 - Keynote Address - John F. Gehrig, Office of the Undersecretary of Defense Acquisition (Test and Evaluation)

Perspectives on Shock and Vibration Information Needs

- 9:15 A.M. - Army: Larry C. Mixon, MICOM
 9:30 - Navy: William W. Wassmann, NSWC
 9:45 - Air Force: Jerome Pearson, AFWAL/FIBG
- 10:00 BREAK
- 10:15 - DNA: Lt. Catherine-Mary Carlin, USN
 10:30 - NASA: Harry Himelblau, JPL
 10:45 - Industry: Leland Smith, Hughes Aircraft
 11:00 - University: Prof. Walt Pilkey, Univ. of VA
 11:15 - Open Panel Discussion
- 12:00 Noon LUNCH
- 1:00 P.M. - Options for Technical Information Services
Henry C. Pusey, Advanced Technology & Research, Inc.
 1:45 - Statement of Conference Purpose; Workshop Guidelines
 2:00 - Deployment of Working Groups
- 5:00 ADJOURN for Dinner
- 7:30 - Evening Working Group Meetings (Optional)

THURSDAY, APRIL 23rd

- 8:30 A.M. - Working Group Meetings
- 12:00 Noon LUNCH (Preparation of Working Group Reports)
- 2:00 P.M. - Oral Working Group Reports - Rapporteurs
 3:40 - Open Panel Discussion - Workshop Steering Committee
 4:40 - Closing Remarks
 5:00 ADJOURN

CONFERENCE AND WORKSHOP

ON

SHOCK AND VIBRATION INFORMATION SERVICES

INTRODUCTION

The Shock and Vibration Information Center (SVIC) was disestablished on October 31, 1986. In the opinion of many, a serious need for SVIC-type services continues to exist in critical DoD programs. As a consequence, an interagency-funded study to examine options for replacing, and perhaps augmenting the lost shock and vibration information services is now being conducted under a contract with Naval Surface Weapons Center (NSWC). Information relating to the SVIC disestablishment and to subsequent actions leading to the study is included with the enclosed Background Material.

Elements of the Study

The objectives of the NSWC study may be summarized as follows.

1. Pending the outcome of the study, assure that the Shock and Vibration Symposia and the Shock and Vibration Digest and Data Base compilation continue without interruption.
2. Identify the principal users of shock and vibration technical information. Survey the users to
 - a. identify the information service requirements in order of priority.
 - b. obtain opinions on options for ways to provide information services.
 - c. determine extent of user ability/willingness to provide required financial support for information services.
3. Develop and recommend workable options for providing information services vital to the shock and vibration community.

Objective number 1 has been accomplished. The 58th Shock and Vibration Symposium, co-sponsored by NASA's Marshall Space Flight Center and the U.S. Army Missile Command, will be held in Huntsville, AL on October 13-15, 1987. The Shock and Vibration Digest is being issued in 1987 as a publication of the Vibration Institute. Objectives 2 and 3 will involve in part a series of selected interviews. However, it is expected that the results of this conference and workshop will be the principal basis for the recommendations to be submitted to DoD.

PURPOSE

The purpose of this conference/workshop is to bring together selected managers and leading technical workers in the shock and vibration field from Industry, Academia and Government to deliberate on the key issues. In specially structured parallel workshops, the participants will consider information services in the light of current requirements and recommend options for providing services that are required. At the conclusion of the workshop, the following goals should have been accomplished.

1. Identify and assign priorities to technical information services required by the technical community.
2. Examine all potential options for providing the required services and identify the advantages and disadvantages of each.
3. Provide detailed recommendations on the structure and operation of an information service organization to meet the established needs. At a minimum, in developing a recommended approach, consideration should be given to the following.
 - a. Sponsoring activity(ies) and location
 - b. Security; handling of classified/limited information
 - c. Management(Contractor/DoD, etc.)
 - d. Recommended information services
 - e. Organizational structure/Type of Advisory Board
 - f. Method(s) of funding
 - g. Charters/Sanction required
 - h. Relationship to other information service organizations (coordination)
 - i. Policy and regulatory guidelines

Issues

The first two goals of the workshop relate to information services, their priorities and, in some cases, the procedures used to provide them. An annotated list of typical information services is included in the Background Material. Of course, discussions in the workshops are not necessarily limited to this list.

For certain categories of information services, planning and procedures used by the information activity bear directly on their usefulness. The most effective approaches may vary considerably, depending on the nature of the user community. It is appropriate to list a few such services and call attention to some questions about them that should be considered during the workshop.

1. The Shock and Vibration Symposia

This series of symposia has been well received for about forty years and is still considered to be extremely useful (see results of SVIC survey included in the Background Materials).

Suggestions have been made on ways to make the symposia even more useful. As representatives of the user community, each working group should consider the following questions.

- a. Consider the distribution of technical papers presented at the last few symposia. Does the technical emphasis need to be shifted, the quality upgraded, or the scope broadened (say, with expanded academic and professional society interactions)?
- b. Over the years, the S&V symposia have been planned insofar as possible to meet the current pressing technical needs of the user community as assessed by members of the SVIC staff and the interagency program committee. Papers were mostly contributed in response to the "Call", with several invited speakers to meet special needs. There have been various program innovations such as "short" papers, special "panels", and invited Plenary addresses. The technical program committee has always exercised final approval on the program organization. Should this approach be changed? For example, should the technical program committee be expanded to include a broader cross section of the S&V community?
- c. For various reasons, the S&V Bulletin(proceedings) has been issued from several weeks to several months after symposia. There are strong suggestions that at least the unclassified proceedings should be distributed at the symposium. Would it be useful to have the proceedings at the meeting? If so, how should the symposium planning be arranged to accomplish this?

2. The Shock and Vibration Digest

This monthly publication has become a well-known and useful secondary journal, but there are suggestions that it can be made more useful. Each participant will be given a recent issue of the Digest. Examine the contents and suggest changes or additions that will make it more useful to the user community.

3. Data bases/On-line retrieval

The SVIC bibliographic data base was semi-computerized and was a useful tool for the SVIC staff. Even so, there were limitations and it was not directly available to the user community. Considering present hardware and software capabilities, it is suggested that the working groups examine the role of a shock and vibration information activity with respect to the data base services(bibliographic and otherwise). The following areas are among those suggested for discussion.

- a. User on-line accession
- b. Networking
- c. Specialized environmental Data bases

- d. Bibliographic data bases
 - e. Test facility compilations
 - f. Who's Who directories
 - g. General referral services
 - h. Other
4. Technical Training

Some IACs, other than SVIC, are involved in sponsoring or presenting short courses and/or in the preparation of training materials. How can an information organization best serve the shock and vibration community in this area ?

5. Technical Visits

For many years the SVIC staff made technical visits to user organizations to exchange ideas and information. It was a very popular and useful activity for all concerned. Should a new organization consider this idea? How can it be made most effective?

The third goal requires the development of realistic options for providing the information services required by the technical community. Items 3(a) through 3(i) on page 2 of this attachment are among the factors that should be considered in working this problem. The working groups will likely identify others as recommended solutions are developed. In general terms, the solutions may involve, but are not limited to, the following options.

1. An information service organization (ISO) operated as an "in-house" government activity.
2. A government-sponsored, contractor-operated ISO.
3. Divide the required shock and vibration information services. For example, consider the S&V symposia, the S&V Digest and other required services as separate items to be provided by different organizations, both public and private.
4. Operation of the ISO as a private sector enterprise.

It is suggested that two of the more important issues with respect to the development of workable options relate to sponsorship and funding. Whether or not the ISO is operated "in-house" or under contract, the sponsor must provide continuing support to assure that the needs of the interagency users are met. The sponsor organization should also be a prime user so that it has a vested interest in the success of the information activity.

The second key issue is funding. Over the years, the SVIC never had a problem in getting users to testify to the need for information services. Yet, many of these users either could not or would not find a way to provide the dollar resources required to fund those services. Consider whether the ISO should be totally government funded, totally

supported by user charges, or somewhere in between. Assuming the ISO performs well, how can we have reasonable assurance that the funds to support the activity will continue to flow? Are there "creative" ways to fund uniformation services out of existing RDT&E programs? If so, are the RDT&E managers receptive to these ideas?

RATIONALE

Participation in the conference is by invitation. Invitees have been carefully selected so that all segments of the technical community are represented.

The conference and workshop will be an interactive, shirt-sleeve, goals-oriented meeting. The main business will be conducted through small working groups, all addressing the same question at the same time. Near the close of the conference, each working group will present its results orally and in writing.

To create a dialogue that fuses many perspectives, the invitation list has been structured to provide each working group with at least one person concerned with shock/vibration representing the following organizations.

Army
Navy
Air Force
DNA, DARPA, etc.
NASA
Industry
Universities

An attempt is also being made to assure that the participants are reasonably mixed according to function(manager, researcher, etc.) and/or job responsibility(test engineer, analyst, etc.).

As indicated earlier, several working groups will meet separately, but simultaneously, to work on solutions to the same set of problems. The validity of this technique has been demonstrated at other comparable workshops. Usually, several workable solutions are developed independently. If two or more separate sets of recommendations are very similar, the validity of that general approach is strengthened. If all the solutions are different, it is possible to combine the best features of each to arrive at a final set of recommendations. Furthermore, in a technical area as diverse as shock and vibration, a single working group could not possibly represent the interests of all. The use of this workshop technique permits the maximum possible technical community input at a single event.

PROCEDURES AND GUIDELINES

1. As indicated on the enclosed tentative agenda, the Conference and Workshop is scheduled for two full days. There may be some shifts in scheduling depending upon the number of positive responses to the invitations. The total number of working groups assigned will determine the amount of time required for the oral reports and final discussion.
2. Note that registration and working group assignment is scheduled for the evening before the formal opening of the conference. Space will be provided that evening for working groups to meet, organize and get acquainted.
3. All participants will be pre-assigned to assure that each working group is structured to represent a uniform distribution of interests.
4. The members of each working group will choose its own Chairman and Rapporteur. The Chairman will moderate the deliberations and keep the discussion on track. The Rapporteur will keep notes, prepare the working group's written report, and present the oral report on the group's findings.
5. Some reference material related to the workshop is included with this invitation packet. Additional references that may be helpful to the participants will be available at the conference site. If it can be arranged, all participants will be given copies of all working group reports prior to leaving the conference. Otherwise, they will receive the reports promptly by mail. All participants will also receive a copy of the final report on the interagency study as soon as it is available.

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WORKING GROUP REPORTS
CONFERENCE/WORKSHOP
ON
SHOCK AND VIBRATION INFORMATION SERVICES

Dayton, Ohio
21-23 April 1987

WORKING GROUP #1

MEMBERS;

Harry Himelblau (Chairman)
Rocky Arnold (Rapporteur)
James Daniel
Robert Fuss
John Gubser
John Henderson
Jerry Sullivan

Priorities for S&V Services

1. Symposia and Proceedings.
2. Specialized Data Bases to be combined with Inquiries, literature searches and referral services for training and short courses. Remove(at least for near-term), on-line service and the environmental data base.
3. Digest. Add newsletter and SOARS to Digest.
4. Monographs.
5. All other services.

Recommendations and Guidelines for S&V Services

S&V Symposia

1. Symposia should be financially self-supporting.
2. Continue to accept papers based on abstracts.
3. Require that session chairmen be involved in TAG activities, paper selection, and follow-up(phone calls) to insure presence of presenters.
4. Retain short topics to encourage presentation of most recent information.
5. At the conference, presenters will provide SVIC with either a draft copy of the paper and/or vu-graphs. SVIC will provide attendees a copy of the presentation upon request and at a nominal fee.
6. Draft papers should be made available to SVIC by the presenters for review and potential publication in the Bulletin.
7. Provide session at conference that is unclassified but does not allow foreign participation(limited distribution session).
8. Give a "Best Paper" Award based on audience review/evaluation.
9. Publish guidelines for presenters and follow-up with a critique(evaluation form).

S&V Digest

1. Add the newsletter
2. Add the SOARS
3. Review SOARS by qualified experts to insure completeness

4. Reject idea of classified/limited versions
5. Accept theoretical work but encourage practical papers
6. Exclude trip reports

Technical Visits/Current Awareness Reports

1. Combine with Data/Information bases
2. Environmental data bases and on-line access should be long-range goals

Technical Training

1. Low priority except retain referral service

Recommendations on Structure and Operation of New SVIC

Potential Sponsors

DTNSRDC, NASA-Langley, AFFDL, NSWC
(DoD Organizations preferred)

Potential Existing IACs(SVIC retains its identity)

ASIAC, SURVIAC, NTIAC in that order

Funding Sources

Five supporting agencies: Air Force, Army, Navy, DNA, NASA
Industrial membership
User Fees
Start-up costs for Data Bases borne by sponsors

Complaints about "Old" SVIC

Lack of industry representation on TAG
Poor data base literature searches
Lack of travel/contact by SVIC to users
Lack of quality in papers submitted

Respectfully submitted,

Rocky Richard Arnold

WORKING GROUP #2

MEMBERS:

John Robinson (Rapporteur)
Paul Conti
Vernon Neubert
Anthony Paladino
Jerome Pearson
Edward Szymkowiak

I. Identify and Assign Priorities of Required S&V Information Services
Note change in wording from Assignment Listing. (Explain later)

1. S&V Symposia, Proceedings and Bulletin
2. S&V Digest/Data/Information Retrieval (Equal)
3. Technical Visits/Current Awareness Reports
4. Training Guidance
5. Monographs/State-of-the-Art Reports

II. Develop Recommendations/Guidelines for the Following Information Services in Particular

A. Shock and Vibration Symposia, Proceedings and Bulletin

1. Symposium - It is recommended that a symposium be held annually, sponsored by the Shock and Vibration Information Service (SVIS) and co-hosted on a rotating basis by a number of agencies (Army, Navy, Air Force, NASA, etc.), particularly during the interim period, until the SVIS is in full operation. Since one of the most important parts of such a symposium must be appropriate sessions of a classified nature, there must be suitable controlled space at a facility within reasonable distance of the unclassified sessions. A core group consisting of SVIS personnel would be required for managing the business aspects of an annual symposium. Program preparation aspects would be handled by a Technical Advisory Group (TAG) consisting of members from each of the agencies. The TAG would formulate the technical program committee which would review abstracts, select and develop program session titles and content, invite speakers for plenary sessions, and edit papers into final form in a published bulletin, or select experts to review and edit.
2. Proceedings - In order to maintain a balance between presentation of fresh material and a high quality publication, suitable for archival purposes, the following procedure is recommended:
In order to prepare a document for release at the symposium, it is suggested that each author prepare camera-ready copy of expanded abstract and a cleared-for-release version of the presentation art work with sufficient text to be useful. These would be duplicated and bound prior to the meeting, and would be a capsule version of the presentations. Short

discussion topics or work in process should continue to be an important part of the symposium. In addition to the proceedings, papers submitted for publication would be reviewed and edited by a referee process to insure a high quality in published form. Since this process is time-consuming, the Bulletin would be published as a multipart document following the symposium, but within a reasonable time.

3. Fees - Registration fees must be set at a sufficient level to cover the non-recurring expenses of any particular symposium. A special waiver policy should be applied for students to encourage their participation.

B. Shock and Vibration Digest

An S&V Digest under the sponsorship of an SVIS should follow essentially the present form. Abstracts obviously should be continued. Careful review of the other content should be undertaken, however, and changes considered. For example, Calendar Events of commercial organizations should be considered as commercials. Digest abstracts should be entered into the SVIS literature directory to facilitate document location.

C. Information Retrieval Services

It is recommended that a series of Directories defined as follows be part of the SVIS charter:

1. Literature References, accessed by a keyword system
2. Standards and Specifications Directory
3. Test Facility Directory
4. Directory of Experts willing to supply technical assistance
5. Referral for Training purposes
6. Index of location of available Environmental Data banks
7. Index of Information Services available at other responsible organizations

Whether these Directories should be accessed directly by the user or only by SVIS staff depends in part on the physical location of the SVIS and other considerations.

It is suggested that these Directories be resident in Data Base form in a computer system within the SVIS premises. For Items 6 and 7, the SVIS would have a gatekeeper function, and would direct the user to the appropriate organization. For example, the environmental data banks would exist at the agency which acquired, analyzed, and stored the information. Provision of that information to a user would best be by the agency itself, in order to provide data in the format desired.

It is recommended that at least three types of user service be provided:

1. Usage by sponsor of \$10,000 or more/year would be unlimited

2. Subscribers of \$1000/year (figure to be defined) would receive a Bulletin, a Digest, and a limited number of services as defined by SVIS.
3. For those users requiring infrequent services, each use would be assigned a fee comparable to the actual cost.
4. For Environmental Data information, a referral to the Data Bank owner by SVIS would probably be a minimal fee, while data provided by the Data Bank owner would cost a varying amount depending on the extent and the policies of the particular organization.

D. Technical Visits/Current Awareness Reports

These are required in order to provide information to some of the proposed Directories, and to keep the sponsoring agencies aware of new developments in the shock and vibration community. The results of these visits should be published in the Digest in order to keep the community informed.

E. Training Guidance

SVIS should define the need for training in specific areas associated with Shock and Vibration phenomena, as determined from visits, enquiries, etc. SVIS then would recommend to the TAG that appropriate courses be developed; the TAG would then pursue said development with commercial training sources. If appropriate courses already exist, SVIS would refer enquiries on the subject to the appropriate training organization.

F. Monographs

The monograph series is considered valuable to the technical community and should be continued.

III. Develop Detailed Recommendations on the Structure and Operation of an Information Service Organization to Meet the Established Needs

- A. Considerations: The SVIC-offered services crossed boundaries between many government agencies. The SVIC served as a national point of contact and a clearinghouse for ALL information in the Shock and Vibration fields, and performed a much needed function. The SVIC also provided unique opportunities to share problems and compare solutions. Loss of these services is already having a large impact on the technical viability of the shock and vibration community. With the demise of SVIC, the Navy no longer has an IAC.

B. Proposal for Action:

1. It is proposed that the charter of the ASIAC at Wright-Patterson Air Force Base be expanded to include activities and services as defined at this workshop. The proposals by Working Group #2 for major services of SVIS are identi-

fied on the preceding pages as I. The ASIAC staff would have to be expanded to cover the additional services of SVIS, and the ASIAC funding would have to be increased accordingly.

2. Aspects Which Require Consideration or Investigation

- a. The ASIAC is not a DoD-sanctioned IAC
- b. Dissemination of defense technology reports must be allowed
- c. Dissemination of DNA information must be very carefully controlled
- d. The periodic renewal (RFP) for contractor operation of the ASIAC has already been released, so the influence of this expansion on contract modification must be investigated
- e. Operation aspects of the S&V Digest within or in conjunction with an IAC must be defined.

C. Establishment Proposal

It is proposed that the following approach be considered

1. The current TAG would be requested to develop an MOU.
2. As components, the required MOU would include
 - a. expansion of the ASIAC services to include the SVIS services proposed.
 - b. establishment of a joint TAG including representation of each participating agency.
 - c. create a plan on funding sources.
 - d. investigate change in status of the ASIAC as a non-DoD sanctioned organization.

D. Conclusions

1. Expansion of an existing IAC would provide the least disruption of services provided in the past by the SVIC.
2. Use of an existing organization is more cost effective than establishment of a new IAC.
3. This particular IAC has already tentatively offered incorporation of SVIS services within its organization.

4. The funding should be provided from the existing annual contributions of the participating agencies, subscriber fees (industry, etc.), symposia fees, and the infrequent user fees, resulting in essentially a self-supporting service.

Submitted by,

John Robinson

WORKING GROUP #3

MEMBERS:

David Smallwood (Chairman)
Rudolph Volin (Rapporteur)
Thomas Baca
Ambrose DeLeon
David I.G. Jones
Phillip Nash
C. Spyrakos

Task 1 - Identify and set priorities for required Shock and Vibration Information Services (in order of priority)

1. Shock and Vibration Symposia and Bulletin (7-0)
2. Shock and Vibration Digest (6-1)
3. Data Base and Information Services (6-1)

Task 2 - Develop recommendations/guidelines for the following information services

1. Shock and Vibration Symposia

- a. The symposia should be jointly sponsored or hosted by government or DoD agencies nearby the meeting locale. The host would be responsible for all facets of conducting the symposium from initial planning through publishing the proceedings.
- b. Short topic sessions should continue to be held, but more important, classified sessions should be emphasized since the Shock and Vibration Symposia are currently the only forums for the discussion or dissemination of controlled technical information on shock and vibration.
- c. Bound volume of unclassified/unlimited, or unreviewed, proceedings should be made available AT THE CONFERENCE! Bound volume of proceedings should contain author index and it should be arranged according to session. Papers must be properly released to be published in bound proceedings. Papers to be published in an archival journal e.g., the Shock and Vibration Bulletin, would be critically reviewed, and only the top 50-60% of the reviewed papers should be published in archival form. The review for archival publication would have to be performed after the Shock and Vibration Symposium.
- d. The Shock and Vibration Symposia should continue to be held annually.

- e. Classified papers should not be bound in a volume; they should be individually numbered and individually distributed on a need-to-know basis, and on request.
- f. Joint sponsorship of sessions, or interchange sessions, with other technical societies of kindred interest, or shock and vibration committees of technical societies of kindred interest should be considered. Examples are the IES, SEM, AIAA, Technical Committee on Vibration and Sound in the ASME, Design Engineering Division. The list is not all inclusive, there may be others.

2. Shock and Vibration Digest

- a. Format seems to be satisfactory, however, many literature reviews or feature articles are theoretically oriented. Efforts should be made to obtain more applications-oriented feature articles or literature reviews. A suggestion card should be included in each issue.
- c. The Vibration Institute is currently publishing the Shock and Vibration Digest on their own as an interim measure. They should be allowed to continue to do this if they wish, or if they think they can continue to publish the Shock and Vibration Digest without losing money. A fall-back plan should be in place should the Vibration Institute decide not to publish the Shock and Vibration Digest; either a "no cost" contract or another type are suggested. Any financial support would be contingent on some type of shock and vibration information activity being in place.

3. Electronic Data Base/Information Service

- a. An automatic electronic data base is suggested as a long-term goal, once a Shock and Vibration information activity is in place and stable funding is secured. A short term goal might be to establish a cross-index of sources of data.
- b. Contents of data base would be, but not necessarily limited to, environmental data which are sorely needed to set design loads or environmental test requirements. One of the sessions of the 58th Shock and Vibration Symposium should be organized to discuss types of data to be included in an electronic data base. Examples of data might include psd's of cargo floor vibration of an aircraft or missile launch ejection shock.

- c. Validity of data is a problem that must be handled by a data "pedigree", e.g., a trace back to the original plot to determine how it was processed, the instruments that were used to make the measurements, and how it was reduced. This would also be a long-term goal.
- d. In what format should data be stored? psd, three octave spectra, shock spectra, etc. Standards need to be established for storing data.
- e. As pointed out in many news articles or in the movie "War Games", computer hacker intrusion into dial-up data bases can be a serious problem and not readily amenable to a solution which absolutely bar computer hackers from intruding. This is why a "dial-up" capability for a DoD data base, even though unclassified, is a, "NO-NO!"

4. Technical Training

A shock and vibration information activity should sponsor workshops similar to the Digital Control Workshop of 1975. It should identify training needs, i.e., who needs the training and what subjects are needed. It should also identify sources of training and refer those who need the technical training to those sources. The shock and vibration information activity should not present the training courses; this should be done by experts in the field who are highly knowledgeable.

5. Technical Visits/Current Awareness

Technical visits have been the least useful service to many, in that the reports have not been readily available. However, such reports could be summarized and sanitized in a non-attributable format and published in the Shock and Vibration Digest.

Task 3 - Develop detailed recommendations on the structure and operation of an information organization

1. Low Option/Immediately Achievable

- a. A JANNAF-type committee should be formed with participation from former SVIC TAG members and with participation by representatives of the Department of Energy National Laboratories. This committee should be officially sanctioned by the Department of Defense. A secretariat must be established to handle the administrative and financial details. The JANNAF committee would immediately be tasked to continue the Shock and Vibration symposia and to continue the publication of the Shock and Vibration Digest. Both of these activities would be self-supporting.

- b. Current assets of the former Shock and Vibration Information Center should be stored for 5 years. A procedure should be publicized for obtaining for past copies of Shock and Vibration Digests and Bulletins from DTIC or NTIS as appropriate.
- c. This low option is compatible with Dr. Kerber's memorandum to Admiral Mooney of 7 November 1986.

2. Long Range Plan/Data Base Information services

- a. With the current emphasis on test tailoring, and the large amount of environmental data in existence an automated data base is needed to allow rapid access to data for designers and environmental engineering specialists. Initially an index of currently available sources of data should be developed. The initial phase should be one of the JANNAF-type committees early tasks after it is established. The JANNAF-type committee will have to determine the data needs of the community, and the format of the stored data.
- b. Initially 3 people, \$500K funding and access to a medium scientific computer would be needed. The data base operation will be housed at a DoD establishment with a strong program in dynamics and environmental testing.
- c. The consulting services, formerly offered by SVIC, should be restored at the time the data base is established.
- d. A proposal for the data base would well outline what will be done with the data, why the data base is needed and an estimate of the cost. Seed money to establish the data base should be solicited from the JANNAF-type committee sponsors and potential data base users.

Submitted

Rudolph H. Volin

WORKING GROUP #4

MEMBERS:

Leland Smith (Rapporteur)
Lt. C.M. Carlin
Capt. G. Chestnut
Michael Giltrud
Brian Lieb
Scott Milne

Outline of Recommendations

I. Priority

1. Symposium
2. Digest
- *3. Data Bases and Inquiries, Literature Search, Referral Services
(Note: It is noted that Items 1, 2, 3 above were clear choices.
The remainder were more difficult.)
4. Newsletter
5. Field Visits
- *6. Technical Training/Short Courses/Referral Seminars & Workshops
- *7. Monographs/SOARS & Technical Handbooks/Manuals

*Group 4 combined these services into one item because we felt they should be considered parts of the same service.

"Special Studies" was purposely omitted as inappropriate to the group's concept of an information agency.

II. Recommendations and Guidelines

1. The Symposium

Means of improving the quality of the presentation of papers should be considered. (It is noted that the written papers are good.) The group suggests that session chairmen take a more responsible role such as discussing presentations with the authors by phone prior to the symposia, and by keeping the presentations from running over.

The no-show problem should be addressed. Prior contact may help also.

It is suggested that tutorials given by appropriate community members be added to the symposium. It is felt this would attract new people and could help pay the bill by charging an appropriate fee.

Consider new formats such as poster board paper presentations. This can help with the quality problem:

1. More appropriate for more technical depth.

2. Authors uncomfortable with "traditional" format might be comfortable with poster board.

Encourage student participation by providing a forum for student papers and reduced student registration fee.

Review the policy against vendor exhibit area. Is this still necessary? Was it ever? Everything else being equal we feel this would be a plus.

As a reminder the new agency will have to deal with assigning the large staffing and security mechanism traditionally handled by the host agency.

2. Data Bases

The information service can effectively manage:

- Who's Who
- Test Facilities
- Bibliography

Test data is too large to cost effectively manage. Gateway service should be provided as follows:

- Identify existing data bases.
- Provide requirements for accessing them.

Identify other areas based on user demand for direct or gateway service.

Standards and Specs data base not required.

3. Digest

Short course listing should be more all-inclusive. Provide referrals for the courses as a neutral alternative to reviewing them critically. In the large picture the format of the current journal is good and should be retained.

4. Technical Training

There is no shock and vibration curriculum in the universities and thus there is a need to provide leadership in the existing short course and "on the job training" approach. Use the symposium as an opportunity to poll attendees and identify problem areas where training is unavailable, unsatisfactory, or hard to find. The information services agency should not be a provider of training except for symposium tutorials as noted in 1).

5. Technical Visits

The information agency people need the visits to remain viable. The base line funding must include this. To provide a more tangible payback summaries of the visits can be included in the newsletters if they come to pass, or alternatively in the Digest.

III. Recommended SVIS Structure

1. Sponsors/Location

DoD is recommended as sponsor. A DoD instruction should be issued to locate the SVIS at DARPA in keeping with the compatibility of the broad based nature of both SVIS and DARPA. Recommendation for this sponsorship and location should be sought from the various other DoD agencies, as well as from DARPA.

2. Security

Security should be handled by the SVIS location if at all possible. Otherwise it should be permanently assigned.

3. Management DARPA:

Within their organization a technical monitor would be assigned to monitor contract. The SVIS would report to the monitor. (See attached organizational chart.)

4. Organization/Technical Oversight

Head, Assistant, Secretary/Security Manager
(Depending on Charter)

Manage technical publications and courses
Publish newsletter
Review Digest

5. Funding

DOD, NASA, DOE, DOT, and Users

6. Charter/Approval Level

Provide services in the area of Shock and Vibration (Coordinate Symposia, Information Services, etc.)

7. Coordination with other information activities

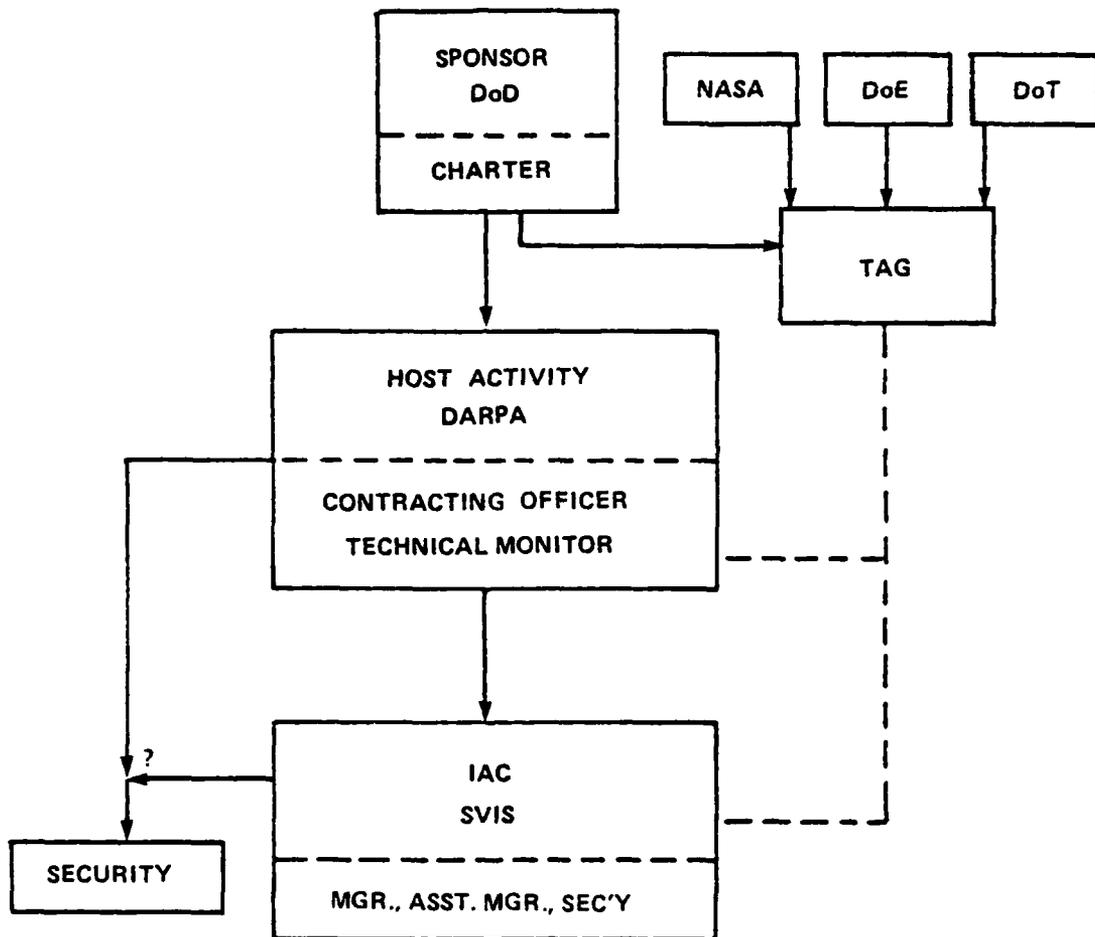
Where possible

8. Policy and Regulation

DoD

Submitted by

Leland G. Smith



WG-4 : PROPOSED ORGANIZATIONAL CHART

WORKING GROUP #5

MEMBERS:

William Wassmann (Chairman)
 Rudolph Scavuzzo (Rapporteur)
 J. Edward Alexander
 Edward Lakin
 Kenneth Nuss
 Walt Pilkey

1.0 Priorities

Each member of the working group voted on the priorities of SVIS services. The voting was 3 points for top priority to 0 points for the lowest. With six members, the highest possible score was 18.

Symposia	18
Bulletin	18
Digest	15
Visits/Reports	5
Data Bases	12
Training	6
Monographs	9

The top three in this list are felt to be essential.

2.0 Funding

An organization with DoD level of control that has basic funding provided by DoD or the branches of services, NASA and DNA should be established. This funding that should be about 60% of the budget should be identified and reliable. The remaining funding should be obtained from services provided and by corporate membership.

Most of the services of SVIS should be subcontracted so that manpower limits imposed on DoD would not affect the operation. Overhead would be reduced by having the contractor collect funds. The contractor would report to a COTR who would spend about half-time on SVIS activities.

Working Group #5 strongly recommends that an IAC be established for Shock and Vibration. The functions of SVIC definitely should not be divided among existing IACs.

Working Group #5 strongly recommends that SVIS be established for the 1983 fiscal year.

The contractor chosen to run SVIS should not have any conflict of interest. Thus, companies that sell shock and vibration engineering, noise and testing services should be excluded from operating the SVIS.

3.0 Recommendations and Guidelines

3.1 S&V Symposium and Bulletin

Classified sessions are required. SVIC has been the only technical meeting where classified technical papers on shock and vibration can be reviewed, presented, discussed and documented. This activity for the critical areas of shock, vibration and noise must be continued.

It was suggested in the organization for symposia that a Technical Oversight Committee be appointed by the director or TPOC. The committee would appoint a program committee each year. This program committee would be responsible for organizing technical sessions in specific areas, soliciting and evaluating papers or abstracts for the symposia. The committee would also invite papers in specific areas.

It is recommended that papers in pamphlet form be available at the annual symposia. A Bulletin that contains all papers presented and discussions at the meeting should be published. A collection of archival papers should also be published after a review.

3.2 Shock and Vibration Digest and Technical Abstract Data Base

A vote was taken on the contents of the Digest. Results are listed below. (18 points Top and 0 Bottom).

Abstracts	18
Feature Articles	7
Literature Review	15
Newsbrief	11
*Calendar	14
**Book Reviews	14
Current Practices	7
(Test Procedures, etc.)	
New Technology	6
Case Histories	8

*Recommend that information be as complete as possible.

**All relevant books should be abstracted and as many as possible should be reviewed.

Limited advertisement, in good taste, should be considered. A listing of corporate sponsors should also be considered. A data base for on-line retrieval of S&V Digest abstracts should be maintained. Including this data base in a system such as that developed by Lockheed should be considered. In the review of two Digests, the literature reviews and feature articles were similar in nature. One each month is felt to be adequate.

3.3 Information Bases other than Digest

SVIS should develop a "yellow pages" or Index for shock, vibration and noise services. Specific items that should be covered are (1) Test facilities listing capabilities, equipment, instrumentation, etc., and (2) Engineering services with specific areas of expertise listed. SVIS personnel should visit each facility/company and complete questionnaires. Both government facilities and private industry are to be included. An index of environmental test facilities was developed in 1967 or 1968 by SVIC. This book could be used as guide.

It is expected that this guide would be published in book form that is updated every 2 to 3 years. An electronic data base is not recommended.

3.4 Monographs

Suggestions concerning monographs are as follows:

- (1) Use commercial publishers
- (2) New monographs should only be considered if a sponsor is available
- (3) Do not use SVIS operational funds to support monographs
- (4) SVIS could give technical support and attempt to arrange funding for good ideas

3.5 Training

SVIS should support training courses in selected areas of need. Instructors should be hired for these courses. SVIC should obtain income to support their activities from their training courses. SVIS should not go into competition in areas where there are good quality courses.

3.6 Technical Visits and Reports

These visits are considered low priority items but should be conducted when feasible. In addition to a published trip or visit report, data obtained should be used to establish the information data base for the Shock and Vibration Register or Index discussed in 3.3 above.

Submitted by,

Rudolph J. Scavuzzo

WORKING GROUP 6

MEMBERS:

Ronald Eshleman (Rapporteur)
Thomas Basta
Gerald Kahre
Kirk Marchand
Richard Pappa

Task 1 - Identify and Assign Priorities to Required S&V Information Services

Working Group #5 has identified the following desirable services, ranked in order of preference, for a SVIS organization.

1. Shock & Vibration Symposium with associated S&V Bulletin
2. Information Management
 - Shock and Vibration Digest
 - specialized data and information bases
 - inquiries
 - literature search
 - referral service
 - technical visits and trip reports
3. Monographs
4. Special Studies

Task 2 - Develop Recommendations/Guidelines for the Following Information Services in Particular

1. SHOCK AND VIBRATION SYMPOSIA

The Shock and Vibration Symposium should continue to focus on applied shock and vibration technology - unclassified and classified. Sessions involving applied analytical and experimental techniques, applications to specific materials and hardware, and case histories should be scheduled along with featured lectures to emphasize the theme of a particular symposium. It is recommended that the organization and nature of future symposia be similar to past symposia except for the introduction of training. It is recommended that SVIS engage in a training function only as an adjunct to the symposia.

Specialized training sessions on such topics as modal testing, shock analysis, modeling, isolation and damping hardening, and testing techniques should be conducted by experts in their field in sessions conducted in parallel to the regular paper sessions. The training functions should be included in the regular registration fee for the Symposium.

It is recommended that the papers for the Bulletin be required to be submitted prior to or at the time of the Symposium. The goal is to have the Bulletin available for distribution at the Symposium. The Bulletin should be published without formal review within three months of the Symposium in order to ensure its timely availability. Real time type material should be presented in poster or short topic type sessions.

2. INFORMATION MANAGEMENT

Working Group #6 recommends that the information management area be a major function of SVIS. This includes the procurement distillation, and dissemination of technical information, data, and current practice. Information should be obtained from technical reports, publications, and technical visits for organization and distillation into data and information bases. This information should be disseminated on a regular as well as intermittent basis. Current awareness publications like the DIGEST should be published on a regular basis and responses to inquiries should be made as required. A near term goal should be to establish an automated/electronic data base accessible by the constituency. An approach to accomplishing this would be to issue a 9 to 12 month study to an organization knowledgeable in data base systems with automated cataloging and retrieval features to either recommend and format a system. After review and approval of the system by SVIS, such a system could then be implemented.

It is the recommendation of this group that the DIGEST be maintained in its present format and content with the exception that more practical material be incorporated into the feature and review articles. It is recommended that a column involving a question and answer type format be considered. In addition to the current information, an attempt should be made to include a synopsis of significant contractor reports submitted to government agencies. The government agencies would have be solicited for such contractor reports in the areas of shock and vibration.

Technical Visits/Trip Reports

Annual visits should be made to appropriate industry contractors and government agencies including government centers and laboratories, national laboratories, and private non-profit government support agencies, to keep abreast of technology development and applications. In addition to this information being input to a data base as appropriate, trip reports should be prepared for distribution on a quarterly basis to all supporting contractors and agencies in addition to TAG members.

3. MONOGRAPHS

Publication of monographs by publishing companies should be encouraged by SVIS. Topics, outlines, and suggested authors could be

furnished to the publisher; and, if possible SVIS sponsorship be applied to the publication. SVIS should not be directly involved in the publication of monographs.

4. SPECIAL SERVICES/STUDIES

SVIS should engage in appropriate special studies and tasks for government agencies and qualified contractors as staff interests and resources allow. Typical studies would be development of an automated data base system, periodic review of laboratory facilities - contractors and government agencies, etc.

Task 3 - Structure and Operation

- a. Optimum approach would be to organize/operate as an IAC not requiring DoD approval/sanction. The funding should come from the users - government agencies and industry. Potential overseeing agencies could be:

DARPA	NSRDC
DNA	AFWAL/FDL
MSFC/Redstone Arsenal	

- b. Another option could be an IAC form similar to (a) but managed by a national laboratory or private agency supporting the government as a non-profit organization. Two potential organizations are:

Sandia Laboratories

The Aerospace Corporation

- c. Should the scope of the SVIS be reduced to sponsoring/organizing symposia and publication of the Bulletins and Digest, the structure could be that that of inter-agency committees on a cooperative rotating basis. Funding could be obtained solely on registration fees and subscriptions.

Submitted by,

Ronald L. Eshleman

NSWC TR 88-138

APPENDIX H

DOD 3200.12-R-2, CENTERS FOR ANALYSIS OF
SCIENTIFIC AND TECHNICAL INFORMATION REGULATION



DEPARTMENT OF DEFENSE

**CENTERS FOR
ANALYSIS OF SCIENTIFIC
AND
TECHNICAL INFORMATION
REGULATION**

JANUARY 1985

**OFFICE OF THE UNDER SECRETARY OF DEFENSE
FOR RESEARCH AND ENGINEERING**

17 JAN 1985

FOREWORD

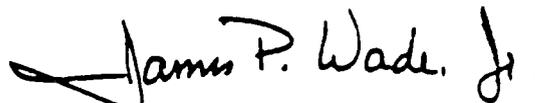
This Regulation is issued under the authority of DoD Directive 3200.12, "Defense Scientific and Technical Information Program," February 15, 1983. It replaces and cancels DoD Instruction 5100.45, "Centers for Analysis of Scientific and Technical Information," July 28, 1964. This Regulation applies to only those centers whose primary purpose is to provide analytical and evaluative support to defense research, development, and acquisition programs and whose basic operating funds are appropriated for research, development, test, and evaluation.

The provisions of this Regulation apply to the Office of the Secretary of Defense, the Military Departments, and the Defense Agencies (hereafter referred to as "DoD Components"). This Regulation prescribes procedures to be followed by all DoD Components in establishing, operating, and administering centers for Analysis of Scientific and Technical Information (hereinafter referred to as Information Analysis Centers) within the framework of the DoD Scientific and Technical Information Program.

This Regulation is effective immediately and is mandatory for use by all DoD Components. Heads of DoD Components may issue supplementary instructions only when necessary to provide for administration of this Regulation within their respective Components. Send recommended changes to the Regulation through channels to:

Director, Research and Laboratory Management
Office of the Deputy Under Secretary of Defense (Research and
Advanced Technology)
The Pentagon, Room 3E114
Washington, D.C. 20301-3081

DoD Components may obtain copies of this Regulation through their own publication channels. Other Federal agencies and the public may obtain copies from the Director, U.S. Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.



James P. Wade, Jr.
Acting
Under Secretary for
Research and Engineering

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REFERENCES

- (a) DoD Regulation 5200.1-R, "Information Security Program Regulation," August 1982
- (b) DoD Regulation 5220.22-R, "Industrial Security Regulation," February 1984
- (c) DoD Directive 3200.12, "DoD Scientific and Technical Information Program," February 15, 1983
- (d) DoD Directive 5200.12, "Policy on the Conduct of Meetings Involving Access to Classified Information," September 24, 1984
- (e) DoD Directive 5230.24, "Distribution Statements on Technical Documents," November 20, 1984
- (f) DoD Directive 5200.21, "Dissemination of DoD Technical Information," September 27, 1979
- (g) DoD Directive 5000.19, "Policies for the Management and Control of Information Requirements," March 12, 1976
- (h) DoD Directive 5000.11, "Data Elements and Data Codes Standardization Program," December 7, 1964

DEFINITIONS

1. Analysis. A qualitative or quantitative information evaluation requiring technical knowledge and judgement.
2. Centers for Analysis of Scientific and Technical Information. A formal organization with a primary mission to acquire, digest, analyze, evaluate, synthesize, store, publish, and provide advisory and other user services concerning available worldwide scientific and technical information and engineering data in a clearly defined, specialized field or subject area of significant DoD interest or concern. Information Analysis Centers (IACs) are distinguished from technical information centers and libraries whose functions primarily are concerned with providing reference or access to the documents themselves rather than the information contained in the documents.
3. Data. Any representation such as characters or analog quantities to which meaning may be assigned. Data may be expressed in digital, graphic, electronic, or symbolic form.
4. Scientific and Technical Information (STI). Communicable knowledge or information resulting from or pertaining to conducting and managing Research, Development, Test and Evaluation (RDT&E) efforts. STI is used by administrators, managers, scientists, and engineers engaged in scientific and technological efforts and is the basic intellectual resource for and result of such effort. Throughout this Regulation the term information shall mean specifically STI and may not be construed to mean scientific and technical intelligence.
5. Sponsoring DoD Component. The DoD agency that provides basic operating funds and administrative direction for a given IAC.
6. Technical Advisory Group. A group of technical experts chosen to advise and monitor the activities of a given IAC.
7. Technical Monitor. The Government technology specialist or project engineer providing continuous technical direction and oversight for the IAC.

CHAPTER 1

THE DoD PROGRAM FOR INFORMATION ANALYSIS CENTERS

A. POLICY

1. In recognition of the important and integral part that information analysis and evaluation activities play in the research and development process, the Department of Defense shall endorse institutionalization of these activities in the form of information analysis centers (IACs) when sufficient requirements or benefits are established.

2. DoD IACs shall be established primarily to support the Department of Defense. They may serve the private sector to the extent practicable within DoD security guidelines and DoD policy regarding the handling of information on military critical technologies. Applicable DoD security guidelines include DoD Regulations 5200.1-R (reference (a)) and 5220.22-R (reference (b)).

3. IACs will not receive, process, or disseminate scientific and technical intelligence.

4. Each IAC shall maintain a staff of technical experts in its field of specialization. The center shall be attached to or have a working relationship with a private sector or DoD organization engaged in technical work related to its mission and may seek assistance from qualified experts employed by that organization.

5. Each IAC shall be administered by a single sponsoring DoD Component to be designated by the Under Secretary of Defense for Research and Engineering (USDR&E) in accordance with DoD Directive 3200.12 (reference (c)).

6. Classified information shall be receipted, controlled, disposed of, and protected from unauthorized disclosure in accordance with the provisions of DoD Regulation 5200.1-R (reference (a)) and DoD Regulation 5220.22R reference (b)).

7. Publication and release of technical information shall be in accordance with DoD regulations including DoD 5200.1-R (reference (a)). Documents containing classified information shall be issued in accordance with DoD release and security directives contained in reference (a) and (b) after they have been reviewed and approved by responsible technical and security authorities.

8. IACs shall be aware of and shall observe all current export control lists and licensing procedures as established by the Department of State, United States Munitions List; The Department of Commerce, Commodity Control List; and the Department of Energy, Atomic Energy Act. IACs shall ensure that all personnel understand fully these lists and procedures, and centers shall be prepared to act whenever necessary to ensure that these lists and procedures are respected.

9. In the case of contractor operated IACs, the Technical Monitor shall provide technical guidance to the IAC, with the assistance of an ad hoc technical advisory group appointed by the Technical Monitor. In-house IACs

shall have their activities monitored by an ad hoc technical advisory group recommended by the manager of the IAC and approved by the focal point of the sponsoring DoD Component for the IAC concerned.

10. DoD IACs shall establish mechanisms for cooperation and cross-fertilization of ideas on management philosophy, policy, promotion, operating procedures, and other areas of mutual interest. Meetings of all DoD IAC managers, technical monitors, and sponsors shall be held for the purpose of information exchange in these areas.

B. RESPONSIBILITIES

1. The Under Secretary of Defense for Research and Engineering (USDR&E) shall:

a. Maintain overall management control of the DoD STI Program in accordance with DoD Directive 3200.12 (reference (c)).

b. Approve or disapprove all proposals by the heads of DoD Components involving the establishment of new IACs, major changes in an IAC's scope or subject area, or disestablishment of an IAC.

c. Appoint a technology specialist to each DoD IAC as Technical Monitor.

2. The Director, Research and Laboratory Management OUSDR&E (Research and Advanced Technology (R&AT)) or his designee shall:

a. Centrally monitor the DoD IAC program and establish mechanisms to promote standardization among the programs to the DoD Components regarding procurement practices and interagency operations, the development of standard performance measurement, and reporting criteria.

b. Appoint an ad hoc review board to review each IAC at least biennially.

3. The Sponsoring DoD Component shall:

a. Provide continuous administrative and operational management for the IAC assigned. Designated in-house DoD IACs are assigned to the proposing Defense Agency or Military Service as approved by the USDR&E.

b. Prepare and defend programs and budgets consistent with annual budget cycles and USDR&E requirements for each assigned IAC.

c. Establish USDR&E-approved IACs through procurement of contract services or direct in-house establishment, as appropriate.

d. Review performance of the IACs in coordination with the Technical Monitor and the Director, Research and Laboratory Management, OUSDR&E (R&AT) to assess continuing need and approve program changes as necessary to improve performance.

4. The Technical Monitor shall:

- a. Provide continuous technical direction and oversight for the IAC assigned.
- b. Assess technical subject requirements and adequacy of literature coverage by the IAC for the DoD users.
- c. Evaluate and approve IAC proposals for products and services from the technical standpoint.
- d. Be a Government employee and not a member of the IAC staff. Synonymous titles are Technical Manager, Government Project Engineer, and Contracting Officer's Technical Representative (COTR).
- e. Provide the technical requirements input for the Statement of Work for contractor-operated IACs.

CHAPTER 2

ESTABLISHMENT AND DISESTABLISHMENT OF DOD
INFORMATION ANALYSIS CENTERSA. ESTABLISHMENT OF IACs

1. Proposals from DoD Components for establishment of an IAC shall be processed through the same channels that are used to approve and authorize any other RDT&E program.

2. Approval shall be based on, but not limited to, the following criteria:

- a. Documented evidence of a requirement to fill a void in an emerging DoD technology thrust area.
- b. Clear definition of subject fields to be covered and demonstration that other IACs or sources do not duplicate the proposed IAC.
- c. Cost and effectiveness and evaluation of alternate ways of accomplishing the objectives of the IAC.
- d. Adequate financial support and plans for continuing support to achieve the announced objectives of the IAC.
- e. Active support of the IAC by persons engaged in the type of technical work to be covered by the IAC's information products.
- f. Evidence of capability to enforce proper security procedures and controls on technology transfer.

3. Subject Coverage. Subject areas covered by an IAC may be determined from one or both of the following categories:

- a. Discipline-Oriented Coverage. This information pertains to all, or a clearly defined part of, a recognized scientific or engineering discipline, which has its own literature or professional traditions.
- b. Mission-Oriented Coverage. This information pertains to a military undertaking of special interest to the Department of Defense or to a specific large weapon or its support system or a group of such systems, and therefore, an area that requires an interdisciplinary approach.

4. Size and Location

a. No specific limitations are imposed concerning the size of an IAC as long as the functions described in Definitions (page iv) can be accomplished.

b. IACs may be located at:

1. DoD installations, laboratories, and activities.
2. Contractor installations (educational institutions, industrial firms, and not-for-profit institutions).
5. Security. IACs will satisfy all physical and document security requirements, as set forth in applicable and referenced DoD directives, for the protection of classified information stored or held therein.

B. DISESTABLISHMENT OF IACs

1. A combination of factors may form the basis for a decision to recommend disestablishment of an IAC. Following a complete review, the USDR&E will make the decision concerning disestablishment of an IAC. The following are typical of questions that may be considered in pondering such a decision.

- a. Is the IAC still functioning in a major DoD technology thrust area?
- b. Is the IAC demonstrably useful to the Department of Defense?
- c. Is the IAC fulfilling a DoD need that is not duplicated by other public, private, or government organizations?
- d. What is the value of products or services to users with respect to current DoD programs?
- e. Are funds available?
- f. Is the IAC maintaining proper security controls and controls over transfer of technology to foreign individuals and organizations?

2. After the USDR&E has decided to disestablish an IAC, the following shall be accomplished:

- a. The sponsoring DoD Component shall announce a termination date at least 90 days before the termination date and shall require the managing supervisor of the IAC to provide a written inventory of the IAC's holdings.
- b. The sponsoring department or agency shall decide the disposition of the IAC's holdings with the assistance of the managing supervisor of the IAC and the approval of USDR&E.

CHAPTER 3

OPERATION OF DOD INFORMATION ANALYSIS CENTERS

A. POLICY

1. Basic IAC operations, as defined by the sponsoring DoD Component, shall be supported by DoD funds.

2. IACs shall assist in advancing standardization of the technology in the IAC's special field of expertise.

3. IACs shall make optimal use of cost-effective new and advanced technologies, such as computers, telecommunications, and word processing, in operation of their centers.

4. IACs shall acquire, store, and disseminate subject area technical information from appropriate sources, domestic and foreign, including support of approved information exchange programs with countries that have agreements with the United States. However, IACs will not duplicate the existing DoD foreign open-source scientific and technical intelligence literature exploitation program or automated data base.

5. If applicable, IACs shall participate in programs designed for the transfer of technology in assigned areas of technical responsibility. Equally, they shall ensure that such participation does not lead inadvertently to unauthorized transfer of technology.

6. IAC personnel are authorized and encourage to plan, provide technical support for, and participate in major technical conferences, meetings, or symposia in their area of technical specialization. Sponsorship and attendance at meetings will be in accordance with applicable DoD regulations such as DoD Directive 5200.12 (reference (d)) including provisions on security and on transfer of technology. IAC personnel shall maintain contact with senior investigators and develop working relationships with technical, professional, and trade associations and related technical groups to exchange information. Travel funds shall be conserved by using meetings and conferences as an opportunity for making known the products and services of the IAC and maintaining contact with senior investigators in the specialized field of the IAC.

7. IACs shall prepare, announce, and provide primary distribution of critical reviews, state-of-the-art reports, handbooks, data compilations, lists of technical experts, and other significant publications pertaining to their assigned areas of technical specialization. IACs shall respond to inquiries from qualified users bearing in mind applicable security controls and restrictions on transfer of technology to foreign individuals and organizations.

8. With the exception of scientific and technical intelligence, classified or special category material may be received by an IAC provided that the information is pertinent to the mission of the IAC and appropriate security measures have been established.

9. Primary distribution of documents formally issued by an IAC, other than direct correspondence in response to inquiries and the annual reports of the IACs, will include the Defense Technical Information Center (DTIC).

10. IACs will not provide secondary distribution for any documents other than their own. Any IAC engaged in secondary distribution of DoD generated reports shall transfer the distribution activity to the DTIC.

11. The DTIC will provide microfiche copies of technical reports originated by the IACs to DoD and its contractors registered for services with the DTIC at the standard microfiche price.

12. Services provided by the IACs will be on a cost-recovery basis in accordance with guidelines provided by the sponsoring DoD Component.

B. RESPONSIBILITIES

1. The Sponsoring DoD Components shall:

a. Establish standard reporting requirements and performance measuring criteria for each IAC under its cognizance to the extent possible to permit evaluation of the relative effectiveness of individual IACs.

b. Ensure that the IAC has a clear definition of subject fields to be covered to avoid duplication.

c. Evaluate the cost, effectiveness, and continuing need for assigned IACs.

2. The Technical Monitors shall:

a. Establish operational procedures consistent with DoD security guidelines and technology transfer policy for IAC services to Federal agencies, the private sector, and other customers.

b. Review and correct as necessary IAC publications prior to printing and dissemination.

c. Review, in conjunction with responsible security officials, IAC-originated information and material prior to public release to ensure correct distribution statement marking in accordance with DoD Directive 5230.24 (reference (e)) and to ensure correct public release in accordance with DoD Directive 5200.21 (reference (f)).

3. The IAC shall:

a. Provide services to the DoD departments, agencies, and contractors registered for services with the DTIC.

b. Manage and control information and data elements consistent with the requirements of DoD Directive 5000.10 (reference (g)) and DoD Directive 5000.11 (reference (h)).

c. Report on their activities consistent with the Contract Data Requirements List for contractor-operated IACs and with report requirements of the sponsoring DoD Component for DoD in-house operated IACs. DoD Components of the National Foreign Intelligence Program involved in intelligence collection, processing, analysis, production, and dissemination functions similar to those of IACs are excluded from reporting requirements of this DoD Regulation 3200.12-R-2.

d. Comply with directions and requirements issued by the sponsoring DoD Component and the Technical Monitor.

NSWC TR 88-138

APPENDIX I

SHOCK AND VIBRATION INTERAGENCY COMMITTEE (SAVIC)
INTERAGENCY AGREEMENT

SHOCK AND VIBRATION INTERAGENCY COMMITTEE (SAVIC)

INTERAGENCY AGREEMENT

This agreement among the United States Army, United States Navy, United States Air Force, the Defense Nuclear Agency, the National Aeronautics and Space Administration, and the Department of Energy establishes a continuing committee to be known as the Shock and Vibration Interagency Committee (SAVIC). This Committee shall have the purpose, field of interest and implementation defined herein.

I. PURPOSE

The purpose of the SAVIC Committee is to promote and facilitate the exchange of technical information among the participating organizations of DoD, NASA and DOE; to promote the establishment of standards; to effect coordination of research, exploratory development, and advanced technology development programs which involve shock, vibration and related dynamic loads and their effects on vehicles, structures, equipment, components and humans; and to promote problem solving in areas of joint interest. This Committee is to function continuously and actively to develop mechanisms for the effective interchange of technical information.

II. FIELD OF INTEREST

The Shock and Vibration Interagency Committee (SAVIC) will concern itself with the technology of dynamic loads (shock, vibration, blast, high intensity acoustics, etc.) and their effects on vehicles, structures, equipment, components and humans. Technical areas of interest will include instrumentation, data analysis, environmental data, specifications and standards, test and design criteria, dynamic tests, test equipment, dynamic analysis, structural analysis, design techniques and procedures, design analysis methods, analysis techniques, modal testing and analysis, mobility, vibration control, isolation, damping, dynamic properties of materials specifically related to land, sea, air, space and energy systems; and the evaluation of the ability of these systems to perform under dynamic loads. This Interagency Committee will also provide a forum for discussion of technical issues related to shock and vibration that cross DoD, NASA and DOE lines and that are related to international issues.

III. ORGANIZATION

The Shock and Vibration Interagency Committee (SAVIC) will consist of technical representatives appointed by each of the affiliate agencies. Each agency will appoint a minimum of two and a maximum of four technical members of SAVIC, depending upon the level of interest of the agency.

Alternate members may be designated for the purposes of agency representation at meetings and receipt of information on committee activities and plans. Due to the necessity for continuity of management, the tenure of office of members will be at the discretion of each agency but will be reviewed annually. Chairmanship will rotate among the participating agencies for a duration of office not to exceed two years. The Chairman will be responsible for all arrangements, announcements and minutes of Committee meetings. The Committee will meet at least once in any given calendar year and additionally as required. Each participating agency may designate a management representative as an Ex Officio member of the SAVIC. Ex Officio members will receive copies of all Committee correspondence and will be invited to participate in all meetings.

This Interagency Agreement establishes the Shock and Vibration Interagency Committee(SAVIC). This Agreement will be reviewed and considered for reaffirmation every four years.

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Space Administration

Department of Energy

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