NSWC MP 87-85

NAVY DOMESTIC TECHNOLOGY TRANSFER FACT SHEET: 1986 STATISTICS

BY CINDY MILLER
ENGINEERING DEPARTMENT

JUNE 1987

NAVAL SURFACE WEAPONS CENTER
Dahlgren, Virginia 22448-5000 • Silver Spring, Maryland 20903-5000

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

AD-A198 217

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) NSWC MP 87-85	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION Naval Surface Weapons Center 6b. OFFICE SYMBOL (If applicable) E211	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) Dahlgren, VA 22448-5000	7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION Office of Chief of Naval Research 8b. OFFICE SYMBOL (If applicable) ONT-07I	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code) Washington, DC 20361	10. SOURCE OF FUNDING NOS. PROGRAM ELEMENT NO. 65804N; PROJECT NO. Z0835SL; TASK NO. Z0835SL000; WORK UNIT NO. E20AA

11. TITLE (Include Security Classification)
Navy Domestic Technology Transfer Fact Sheet: 1986 Statistics

12. PERSONAL AUTHOR(S)
Cindy Miller

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Yr., Mo., Day)	15. PAGE COUNT
Final	FROM 01/86 TO 12/86	1987, June, 30	27

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB. GR.	
05	02		technology transfer; domestic technology; private industry; educational institutions; state governments; local governments; federal government (edc)

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Statistical data are gathered on the *Navy Domestic Technology Transfer Fact Sheet*, a four-page newsletter that is published monthly to satisfy congressional demands. The data have been gathered to determine its readership's organizational type (private industry, educational institutions, and local, state, and federal governments), their localities, and other data associated with the *Fact Sheet*'s publication, such as the type of information requested and what Navy Laboratory contributed. This information guides the editor in a direction of publishing current and pertinent information that enhances the Navy's technology transfer program.

Keywords: Information transfer, Navy research

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION	
UNCLASSIFIED/UNLIMITED X SAME AS RPT. DTIC USERS	UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL Cindy Miller	22b. TELEPHONE NUMBER (Include Area Code) (703) 663-8921	22c. OFFICE SYMBOL E211

DD FORM 1473, 84 MAR

EDITION OF 1 APR 83 IS OBSOLETE.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

FOREWORD

The *Navy Domestic Technology Transfer Fact Sheet* is the Navy's primary vehicle for complying with congressional mandate to disseminate Navy technology. The success of the Navy's technology transfer (T^2) program has been achieved largely through the newsletter's adaptation to private and public sector needs and support from the Navy Laboratories' technology transfer representatives.

The work was performed for and funded by the International Policy Office, Office of Chief of Naval Research (OCNR), Washington, D.C.

This publication has been reviewed by Diane Sullivan, Head, Technical Writing/Editing Section; and Austin T. Brown, Head, Technical Publications Branch.

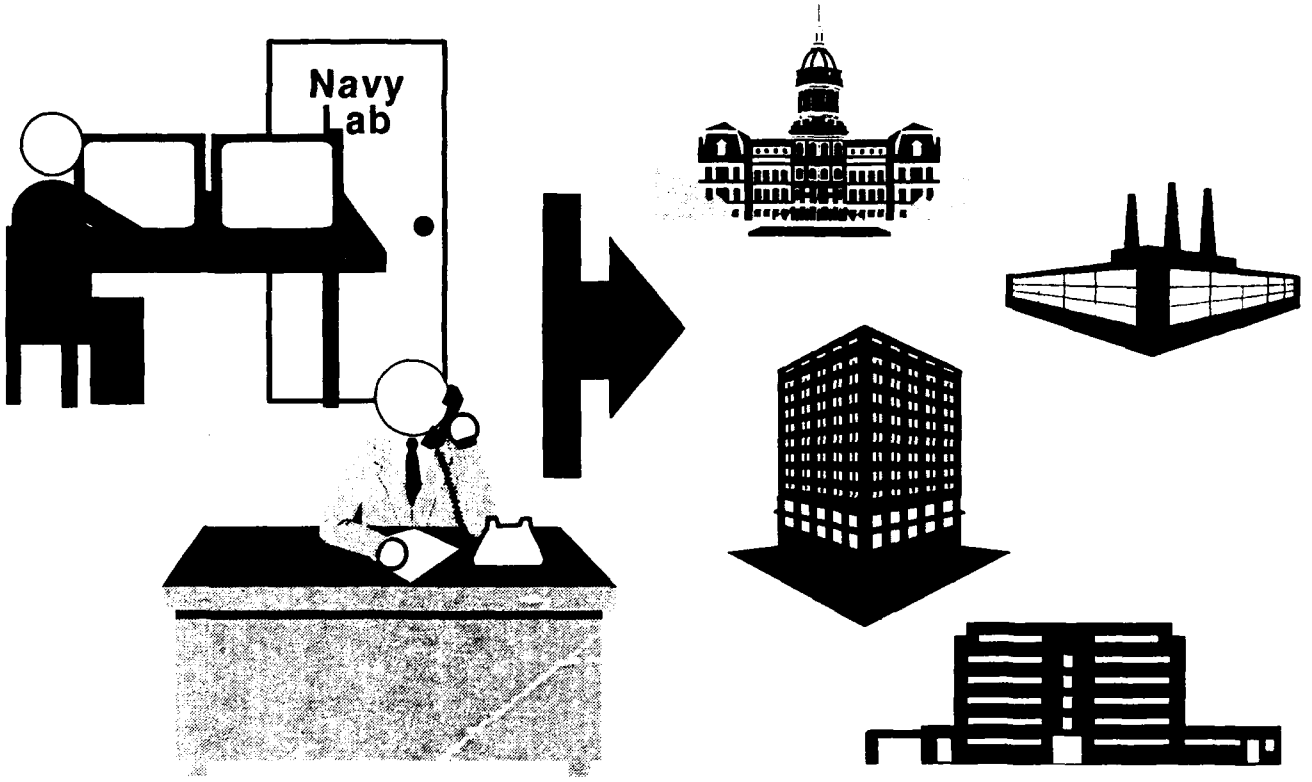
Approved by:

R. D. WISEMAN, JR., Head
Technical Information Division

CONTENTS

ILLUSTRATIONS

TABLES



The *Navy Domestic Technology Transfer Fact Sheet* serves as a bridge connecting Navy researchers with private industry. It exists to disseminate useful technical discoveries, methods, etc., developed in Navy labs to private industry researchers and managers.

INTRODUCTION

The *Navy Domestic Technology Transfer Fact Sheet,* referred to in this publication as the *Fact Sheet* (Figure 1), is the Navy's primary vehicle for disseminating its technology to the private and public sectors. This monthly newsletter represents a first-time exposure of material to an audience of over 7300 subscribers in the private sector and the federal, state, and municipal governments.

FIGURE 1. NAVY DOMESTIC TECHNOLOGY TRANSFER FACT SHEET

In accordance with Public Laws 96-480, *Stevenson-Wydler Technology Innovation Act of 1980* and 99-502, *Federal Technology Transfer Act of 1986*, federal agencies "shall strive where appropriate to transfer federally owned or originated technology to State and local governments and to the private sector."

The Naval Surface Weapons Center (NSWC) supports the technology transfer program through NAVSWC Instruction 5700.2A. The *Fact Sheet* is published in the Technical Information Division, Engineering Department. The other functions stated in

that instruction are performed by NSWC's Office of Research and Technology Applications (ORTA), Associate Technical Director's office.

FACT SHEET COMPOSITION

CATEGORIES

The *Fact Sheet* is a four-page newsletter that represents the Navy's latest technological developments, covering categories listed below, such as computer technology, civil engineering, electrotechnology, physical sciences, and aeronautics.

- Aeronautics
- Civil Engineering
- Computer Technology
- Electrotechnology
- Energy
- Environment
- Fire and/or Safety
- Health and Medicine
- Machinery
- Management and Maintenance
- Manufacturing Technology
- Marine Technology
- Materials
- Physical Sciences

ARTICLE PREPARATION

Article preparation involves an approval process (Figure 2) that requires gathering information from all the Navy Laboratories and consulting with their technology transfer

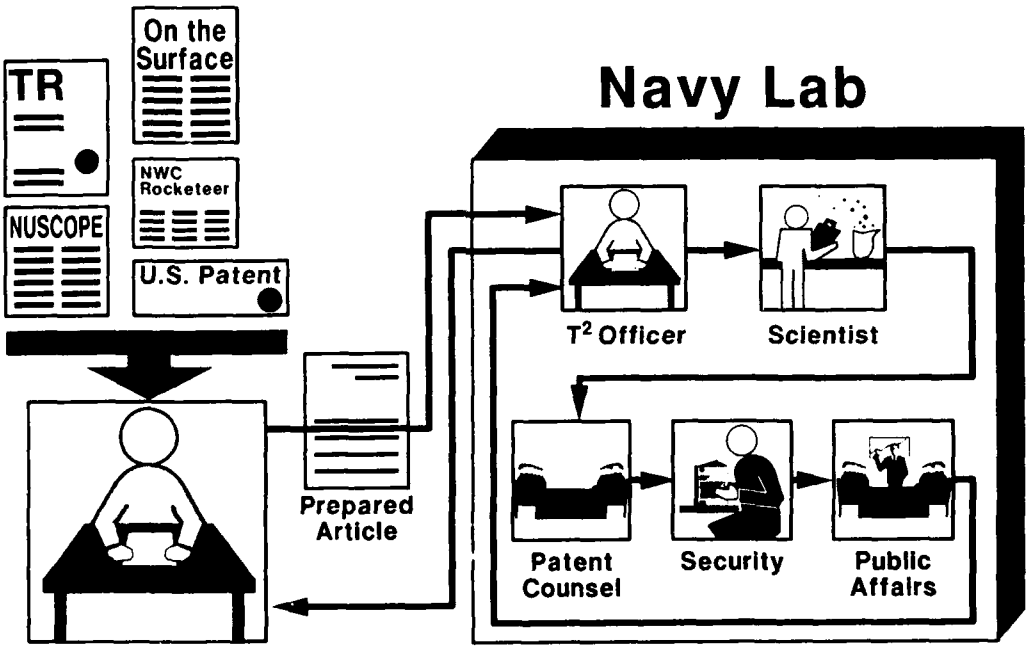


FIGURE 2. APPROVAL PROCESS

representatives and the scientist involved with a particular development. The process ensures accuracy of material and appropriate release criteria. It then links developers of Navy technology with potential users in business, government, and the military, providing information on Navy inventions, manufacturing and scientific processes, and marketable technologies.

PRODUCTION

The production of the *Fact Sheet* (Figure 3) takes place in the Technical Writing/Editing Section, Technical Publications Branch. The Branch has published the *Fact Sheet* since 1979. The *Fact Sheet* goes through the normal publications cycle as that of a report. The editor determines the appropriate material suitable for its audience of 7300, investigates what the technological demands are, and does followup exercises to update previously published articles.

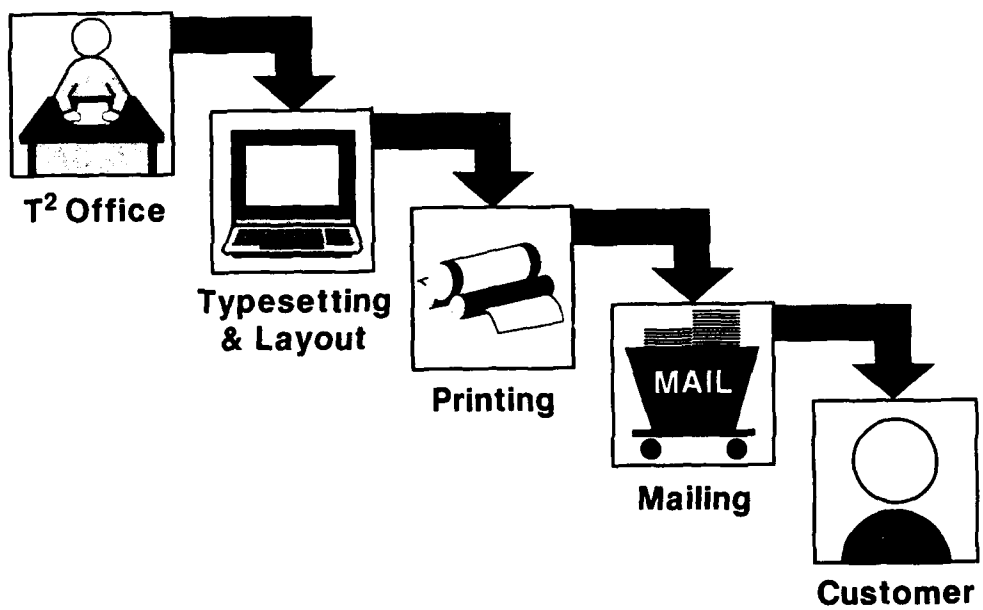


FIGURE 3. PRODUCTION PROCESS

Since 1982, the *Fact Sheet's* camera-ready copy (typesetting and layout) has been contracted to Columbia Graphics, Columbia, Maryland. The Dahlgren Print Shop has printed it since 1979. A distribution database for updating the mailing list and supplying the address labels was handled by CRS, Inc., Virginia Beach, Virginia. Presently, that function resides with Micro Computer Systems, Inc., (MCSI), Dahlgren, Virginia. Stapling, affixing labels, and mailing are performed by the Dahlgren Mail Room. Also, MCSI supplies backup support for the reader reply service.

READER REPLY SERVICE

The reader reply service enhances the *Fact Sheet*'s transfer of technology and is one of its most significant features. It includes a database of backup material issued upon readers' requests. The backup packages consist of public-releasable material, such as technical reports, news releases, patent information, and journal articles. The reader is placed in contact with the Navy Laboratory's ORTA, who gives the reader additional information or has the reader contact the scientist involved in a particular development.

EXHIBIT

The *Fact Sheet* exhibit (Figure 4) is another means of enhancing technology transfer. Each year, the exhibit is displayed at conventions, such as the American Society for Naval Engineers (ASNE) and the National League of Cities. New subscribers sign up at the conventions; and scientists, engineers, and municipalities participate in this information-exchange effort. In 1986, the following conventions increased the *Fact Sheet*'s mailing list, adding 50 to 75 new subscribers per convention:

- ASNE Convention, Biloxi, Mississippi, October 1986
- Navy Micro/OA'86, Virginia Beach, Virginia, May 1986
- National League of Cities, San Antonio, Texas, December 1986

FIGURE 4. FACT SHEET EXHIBIT

Since computer technology is of prime interest to businesses and other organizations, NSWC published more computer articles in 1986 and continued to respond to that interest by attending the Navy Micro Convention again in May 1987, when a record 132 people subscribed.

STATISTICAL INFORMATION

The figures revealed in this report indicate a growing interest in technology transfer. The statistical information is gathered daily. It consists of a listing of the types of people who subscribe to the *Fact Sheet*, the geographical regions and states those subscribers reside, and their organizational codes (that is, whether they are Navy, private business, local government, etc.). A listing of the Navy contributors, along with the types of articles published, is also shown. Statistical information is kept on people who request backup packages, along with their geographical locations, organizational codes, and types of articles they request.

DISTRIBUTION

The *Fact Sheet*'s distribution (Figure 5) has increased by 4,776, since publication began at Dahlgren in 1979. It receives continued support from its subscribers. As of January 1987, the total reached 7,376. Figure 6 shows the distribution list divided by geographical areas. The Mid-Atlantic region, as in previous years, continues to lead with the highest number of subscribers, followed by the Northeast region and then the Far West region. Table 1 is a listing of the distribution sorted by organizational codes. As in previous years, business and industry and the Navy continue to be the primary subscribers.

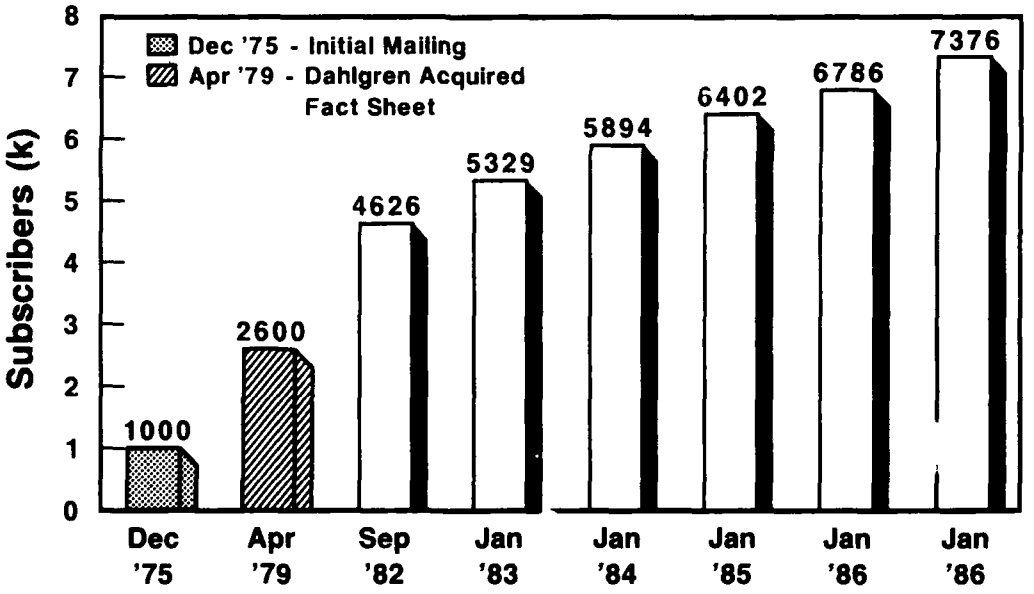


FIGURE 5. FACT SHEET CIRCULATION

The distribution list sorted by states (Table 2) gives an insight into the areas attention is needed. Almost half the *Fact Sheet* subscribers come from California, Virginia, Maryland, Washington, District of Columbia, and Pennsylvania. The state with the largest number of subscribers is California. Only two states have no subscribers.

FACT SHEET CONTRIBUTORS

The Naval Research Laboratory (NRL) and David Taylor Naval Ship Research and Development Center (DTNSRDC) remain the key contributors (Figure 7) to the *Fact Sheet*, as they have been since the beginning of publication. Table A-1 of Appendix A gives an overview of contributors since 1976.

In 1986, the Naval Civil Engineering Laboratory (NCEL) and the Naval Weapons Center (NWC) saw articles published in eight issues; NSWC published three articles. Organizations that published in 1986 but not the previous year were OCNR, Naval Weapons Support Center (NWSC), Naval Air Rework Facility (NARF), Puget Sound Naval Shipyard (PSNS), and Naval Ocean Research and Development Activity (NORDA). NWC, Naval Ocean Systems Center (NOSC), and NORDA increased the percentage of contributed articles from the previous year.

READER REPLY SERVICE

The *Fact Sheet* includes a reader reply service that provides on request more detailed information about *Fact Sheet* articles. Requests for backup material average 320 per month. Most of the requests come from the Mid-Atlantic region, followed by the Northeast and Far West regions (Figure 8). Business and industry request additional information more often than any of the other organizations (Table 3). The Navy is the next biggest requestor of information.

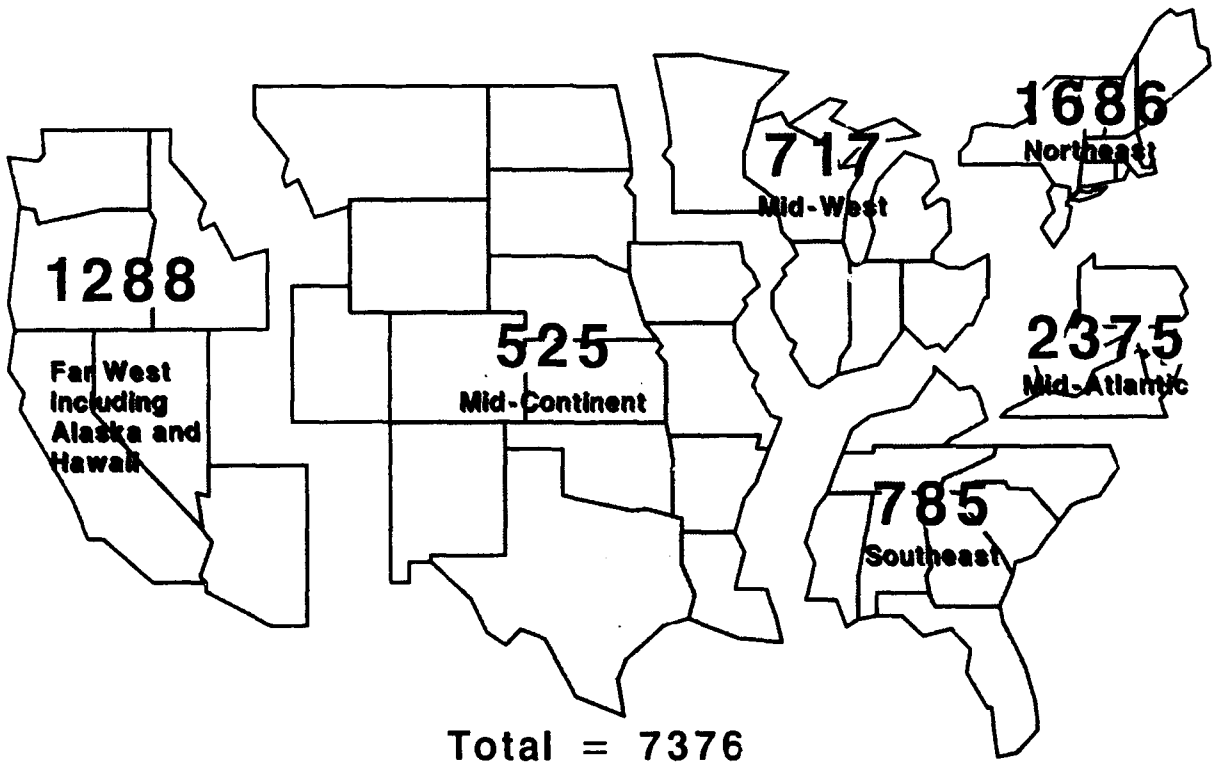


FIGURE 6. DISTRIBUTION BY GEOGRAPHICAL AREA

TABLE 1. DISTRIBUTION BY ORGANIZATIONAL CODE

Code	Organization Type	Distribution
N	United States Navy Navy Focal Point	1595
M	United States Army United States Air Force United States Marine Corps United States Coast Guard	327
Q	Other Military	6
J	National Aeronautics & Space Administration	61
C	Congressional User	19
F	Other Federal Government	184
S	State Government	67
L	Local Government	355
E	Educational Institution	283
O	Industrial/Professional Organization	71
R	Research Institute	226
B	Business/Industry	3527
U	Utility Corporation User	16
P	Publication	35
H	NSWC, Dahlgren/White Oak	110
MM	Multiple Distribution	494
	Total	7376

TABLE 2. DISTRIBUTION BY STATE

Alabama	67	Louisiana	60	Ohio	255
Alaska	0	Maine	20	Oklahoma	57
Arizona	27	Maryland	609	Oregon	33
Arkansas	16	Massachusetts	286	Pennsylvania	482
California	996	Michigan	90	Rhode Island	159
Colorado	50	Minnesota	86	South Carolina	26
Connecticut	364	Mississippi	261	South Dakota	0
Delaware	15	Missouri	60	Tennessee	37
Florida	256	Montana	0	Texas	178
Georgia	42	Nebraska	2	Utah	26
Hawaii	31	Nevada	7	Vermont	5
Idaho	27	New Hampshire	35	Virginia	678
Illinois	126	New Jersey	230	Washington	121
Indiana	47	New Mexico	33	West Virginia	15
Iowa	4	New York	342	Wisconsin	32
Kansas	20	North Carolina	69	Wyoming	1
Kentucky	18	North Dakota	0	District of Columbia	491

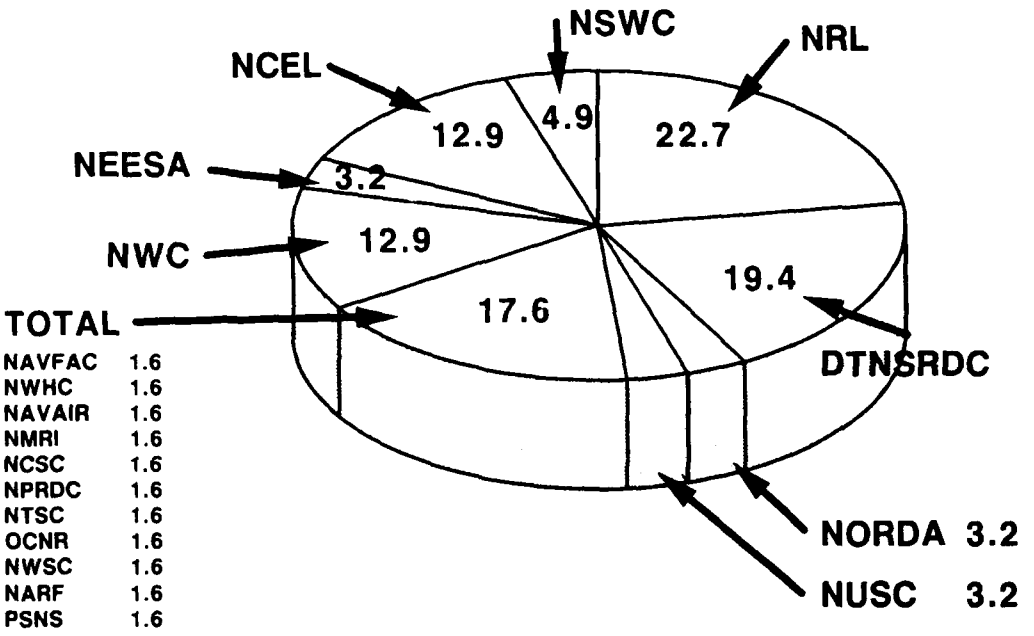


FIGURE 7. CONTRIBUTORS (%)

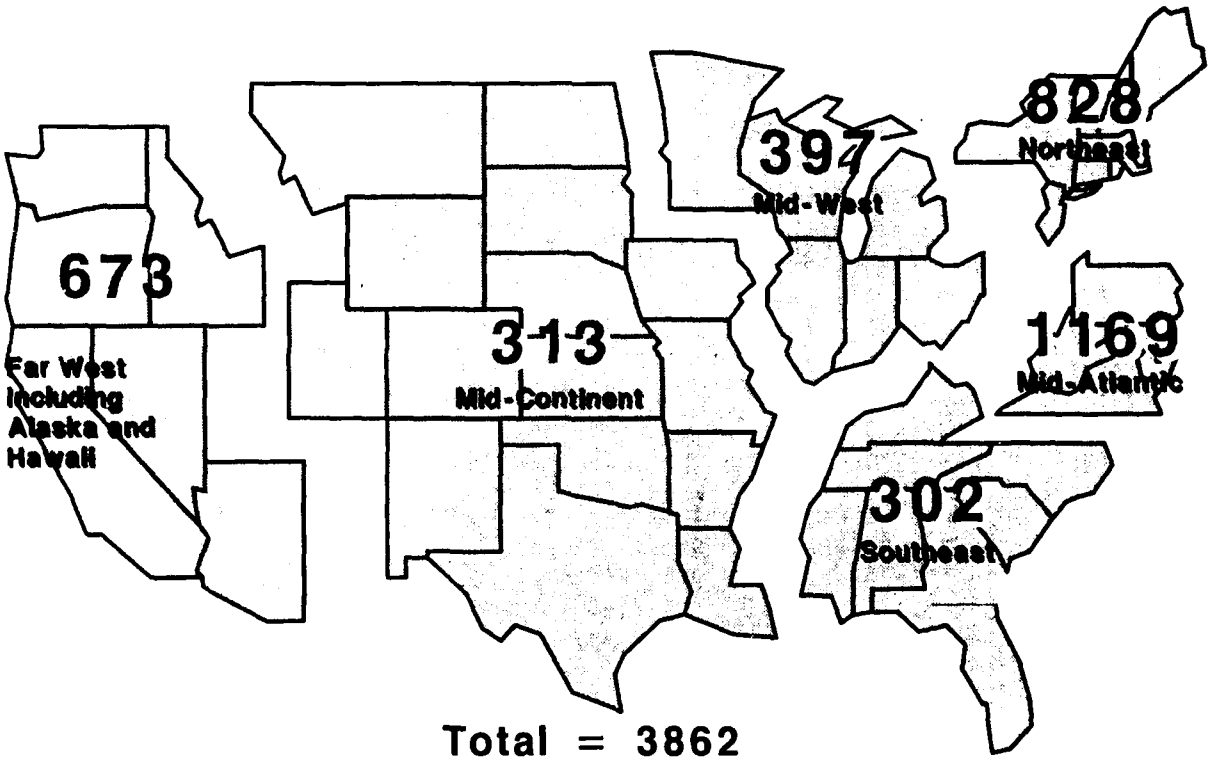


FIGURE 8. BACKUP REQUESTS BY GEOGRAPHICAL AREA

MOST REQUESTED ARTICLES

The *Fact Sheet* contained 62 articles in 1986. The most requested article, as shown in Table 4, was "New Coatings to be Applied to Navy's Aluminum Hulls," which was NRL's development of nontoxic fouling-release paint as a coating for the underwater hulls of all aluminum-hull ships in the fleet. A total of 186 subscribers requested additional information on this item.

Another NRL article, "Raindrops Affect Radar Echoes of the Sea," was the next most requested article. This article documents research that has a bearing on the interpretation of sea clutter encountered by conventional radar systems and from microwave sensing instrumentation. A total of 181 subscribers asked for additional information on this item.

TABLE 3. BACKUP REQUESTS BY ORGANIZATION

Code	Organization	Request
N	United States Navy Navy Focal Point	761
M	United States Army United States Air Force United States Marine Corps United States Coast Guard	169
Q	Other Military	1
J	National Aeronautics & Space Administration	35
C	Congressional User	1
F	Other Federal Government	97
S	State Government	48
L	Local Government	79
E	Educational Institution	127
O	Industrial/Professional Organization	29
R	Research Institute	179
B	Business/Industry	1957
U	Utility Corporation User	11
P	Publication	26
H	NSWC, Dahlgren/White Oak	32
X	Undefined User	130
Total		3682

DTNSRDC articles were popular with *Fact Sheet* readers. Three articles--"Multidimensionally Braided Composites Investigated," "Antifouling Polyurethane Synthesized," and "Thermal Spray Coatings for Controlling Corrosion in Marine Environments"--averaged approximately 130 requests per article.

TABLE 4. MOST REQUESTED ARTICLES FOR 1986

Article	Lab	Requesters
New Coatings to be Applied to Navy's Aluminum Hulls	NRL	186
Raindrops Affect Radar Echoes of the Sea	NRL	181
Multidimensionally Braided Composites Investigated	DTNSRDC	155
Magnetic Research Revolutionized	NRL	152
Solar Systems Evaluated	NCEL	149
Antifouling Polyurethane Synthesized	DTNSRDC	127
Navy Tests First Hazardous Waste Incinerator	NWSC	115
Battery Charge Control Device Invented	NWC	118
Game Provides Cross-Cultural Training	NPRDC	113
Roofing System Experiments Conducted	NCEL	113
Micromechanics Theory Provides Guidance for Composites Design	OCNR	110
Thermal Spray Coatings for Controlling Corrosion in Marine Environments	DTNSRDC	107
Navy's Laser Research Used For New Surgical Techniques	NRL	101

CONCLUSIONS

The growth of the *Fact Sheet* gives a clue as to where the technology transfer program is headed. To ensure Navy technology is transferred to the appropriate audience and the material published is of a suitable nature, the Navy Laboratories, the designated ORTAs, the *Fact Sheet* sponsor, and its editor form an alliance, taking an active role to further the technology transfer program. This alliance stems from the Federal Laboratory Consortium (FLC) for Technology Transfer, an organization that was established more than a decade ago to provide industry with the fullest possible utilization of federally sponsored research and development results. NSWC has participated in the consortium for 10 years. FLC

includes over 330 federal labs and was formalized with the passage of PL 99-502, *Federal Technology Transfer Act of 1986.*

The *Fact Sheet* continues to be the essential vehicle used to transfer Navy technology to a multifaceted audience who can comprehend and accept Navy technology as solutions to private sector problems.

APPENDIX A

CONTRIBUTORS TO THE FACT SHEET (1976-1986)

TABLE A-1. FACT SHEET CONTRIBUTORS (1976-1986)

Source	1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
David Taylor Naval Ship R&D Center	4	(3.3)	2	(2.1)	10	(8.9)	8	(12.1)	13	(19.1)	9	(20.0)	7	(12.5)	8	(16.0)	10	(15.9)	12	(22.1)	12	(19.4)
Naval Aerospace Medical Research Lab	--	--	--	--	--	--	1	(1.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Air Development Center	1	(0.8)	4	(4.3)	10	(8.9)	3	(4.5)	--	--	--	--	1	(1.8)	1	(2.0)	1	(1.6)	--	--	--	--
Naval Air Engineering Center	--	--	1	(1.1)	2	(1.8)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Air Propulsion Center	--	--	--	--	1	(0.9)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Air Rework Fac., Alameda	--	--	--	--	--	--	--	--	--	--	--	--	1	(1.8)	--	--	--	--	3	(5.5)	1	(1.6)
Naval Air Station, Bermuda	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	(2.0)	--	--	--	--	--	--
Naval Air Station, San Diego	--	--	--	--	1	(0.9)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Air Systems Command	--	--	--	--	--	--	--	--	3	(4.4)	--	--	--	--	--	--	--	--	1	(1.9)	1	(1.6)
Naval Air Test Center	1	(0.8)	--	--	--	--	--	--	--	--	1	(2.0)	--	--	--	--	--	--	--	--	--	--
Naval Avionics Center	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Biosciences Lab.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Blood Research Laboratory	--	--	--	--	2	(1.8)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Civil Engineering Laboratory	45	(37.2)	24	(25.5)	17	(15.2)	13	(19.7)	7	(10.3)	2	(4.0)	5	(8.9)	11	(22.0)	3	(4.8)	7	(13.0)	8	(12.9)
Naval Coastal Systems Center	5	(4.1)	1	(1.1)	3	(2.7)	3	(4.5)	1	(1.5)	3	(7.0)	--	--	1	(2.0)	2	(3.2)	1	(1.9)	1	(1.6)
Naval Dental Research Institute	--	--	--	--	--	--	--	--	--	--	1	(2.0)	--	--	--	--	1	(1.6)	--	--	--	--

TABLE A-1. FACT SHEET CONTRIBUTORS (1976-1986) (Cont.)

Source	1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Naval Electronic Systems Command	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--
Naval Energy and Environmental Support Activity	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	(2.0)	1	(1.6)	--	--	2	(3.2)
Naval Environmental Prediction Research Facility	--	--	--	--	--	--	--	--	4	(5.9)	1	(2.0)	--	--	--	--	2	(3.2)	--	--	--	--
Naval Experimental Diving Unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	(1.9)	--	--
Naval Facilities Engineering Command	6	(5.0)	4	(4.3)	--	--	--	--	--	--	1	(2.0)	--	--	2	(4.0)	--	--	1	(1.9)	1	(1.6)
Naval Health Research Center	--	--	--	--	1	(0.9)	--	--	--	--	--	--	--	--	--	--	4	(6.3)	2	(3.7)	--	--
Naval Industrial Resources Support Activity	--	--	--	--	--	--	--	--	--	--	--	--	10	(17.9)	--	--	--	--	--	--	--	--
Naval Medical Data Services Center	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Medical Field Research Lab	1	(0.8)	1	(1.1)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Medical R&D Command	--	--	2	(2.1)	--	--	1	(1.5)	1	(1.5)	--	--	1	(1.8)	--	--	--	--	--	--	--	--
Naval Medical Research Institute	2	(1.7)	--	--	1	(0.9)	1	(1.5)	--	--	2	(4.0)	2	(3.6)	--	--	3	(4.8)	1	(1.9)	1	(1.6)
Naval Observatory	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--
Naval Ocean R&D Activity	--	--	--	--	--	--	--	--	3	(4.4)	2	(4.0)	2	(3.6)	3	(6.0)	1	(1.6)	--	--	2	(3.2)
Naval Ocean Systems Center	8	(6.6)	18	(19.1)	18	(16.1)	11	(16.7)	7	(10.3)	2	(4.0)	3	(5.4)	--	--	1	(1.6)	1	(1.9)	2	(3.2)
Naval Oceanographic Office	1	(0.8)	--	--	--	--	--	--	1	(1.5)	1	(2.0)	--	--	--	--	--	--	--	--	--	--
Naval Oceanography Command	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Ordnance Station, Indian Head	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE A-1. FACT SHEET CONTRIBUTORS (1976-1986) (Cont.)

Source	1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Naval Ordnance Station, Louisville	--	--	--	--	--	--	--	--	--	--	1	(2.0)	--	--	--	--	--	--	--	--	--	--
Naval Postgraduate School	1	(0.8)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Research Laboratory	27	(22.3)	23	(24.4)	24	(21.4)	11	(16.7)	12	(17.6)	5	(11.0)	9	(16.1)	11	(22.0)	14	(22.2)	13	(24.0)	14	(22.7)
Naval Reserve Center, Pacific Grove	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	(2.0)	--	--	--	--	--	--
Naval San Diego Fire-fighting Training School	1	(0.8)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Sea Support Center Atlantic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Sea Support Center, Pacific	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Sea Systems Command	2	(1.7)	--	--	1	(0.9)	--	--	--	--	--	--	--	--	1	(2.0)	--	--	--	--	--	--
Naval Ship Engineering Center	--	--	--	--	1	(0.9)	1	(1.5)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Ship Weapon Systems Engineering Station	--	--	--	--	1	(0.9)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Submarine Medical Research Laboratory	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Supply Systems Command	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Surface Weapons Center	7	(5.8)	3	(3.2)	7	(6.3)	8	(12.1)	7	(10.3)	4	(10.0)	5	(8.9)	6	(12.0)	3	(4.8)	3	(5.5)	3	(4.9)
Naval Training Systems Center	--	--	--	--	1	(0.9)	--	--	3	(4.4)	--	--	--	--	--	--	7	(11.1)	1	(1.9)	1	(1.6)
Naval Underwater Systems Center	4	(3.3)	5	(5.3)	2	(1.8)	--	--	2	(2.9)	6	(14.0)	--	--	--	--	1	(1.6)	--	--	--	--
Naval War College	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE A-1. FACT SHEET CONTRIBUTORS (1976-1986) (Cont.)

Source	1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%).	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Naval Weapons Handling Center	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5	(9.1)	1	(1.6)
Naval Weapons Center	3	(2.5)	--	--	5	(4.5)	5	(7.6)	3	(4.4)	2	(4.0)	2	(3.6)	2	(4.0)	4	(6.3)	1	(1.9)	8	(12.9)
Naval Weapons Station, Yorktown	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Weapons Station, Corona	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naval Weapons Support Center	--	--	--	--	--	--	--	--	--	--	1	(2.0)	--	--	--	--	1	(1.6)	--	--	1	(1 6)
Navy Astronautics Group	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Navy Clothing and Textile Research Facility	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Navy Personnel R&D Center	1	(0.8)	--	--	--	--	--	--	--	--	2	(4.0)	2	(3.6)	1	(2.0)	2	(3.2)	1	(1.9)	1	(1.6)
Office of the Chief of Naval Research	1	(0.8)	3	(3.2)	2	(1.8)	--	--	1	(1.5)	--	--	6	(10.7)	1	(2.0)	1	(1.6)	--	--	1	(1.6)
Office of Naval Research, Boston	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Office of Naval Research, Pasadena	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Missile Test Center	--	--	2	(2.1)	--	--	--	--	--	--	--	--	--	--	--	--	1	(1.6)	--	--	--	--
Polaris Missile Facility, Atlantic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Puget Sound Naval Shipyard	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	(1.6)
Saudi Naval Expansion Program	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strategic Weapons Facility, Pacific	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trident System Project	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
U.S. Naval Academy	--	--	--	--	1	(0.9)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ARTICLES PER YEAR	121	(99.9)	94	(100.0)	112	(100.2)	66	(99.9)	68	(100.0)	46	(100.0)	56	(100.2)	51	(100.0)	63	(100.2)	54	(100.0)	62	(100.0)

DISTRIBUTION

	Copies
Commanding Officer Office of Chief of Naval Research Attn: Dr. David L. Woods (Code ONT-071) P.O. Box 15114 Arlington, VA 22215	10
Commanding Officer Office of Naval Technology Attn: Dr. Ronald M. Culpepper Washington, DC 22217-5000	1
Commander Naval Medical Command Navy Department Washington, DC 20372-5120	1
Commanding Officer Naval Aerospace Medical Research Laboratory Naval Air Station Attn: Kathleen Mayer (Code 00A3) Pensacola, FL 32508-5700	1
Commanding Officer Naval Submarine Medical Research Laboratory Naval Submarine Base, New London Groton, CT 06349	1
Commanding Officer Naval Biodynamics Laboratory P.O. Box 29407 New Orleans, LA 70189	1
Commanding Officer Naval Medical Research Institute Naval Medical Command National Capital Region Bethesda, MD 20814	1
Commanding Officer Naval Medical Research and Development Command Naval Medical Command National Capital Region Bethesda, MD 20814	1
President Naval War College Newport, RI 02841	1
Commanding Officer Naval Health Research Center P.O. Box 85122 Attn: #12 San Diego, CA 92138	1
Commanding Officer Naval Dental Research Institute Naval Base Attn: Ms. Judy Benny (Code 02) Great Lakes, IL 60088-5259	1
Commanding Officer Navy Environmental Health Center Naval Station Norfolk, VA 23511	1
Commanding Officer Naval Biosciences Laboratory Naval Supply Center Oakland, CA 94625-5015	1
Commanding Officer Naval Research Laboratory Attn: Richard Fulper (Code 1005.4) Washington, DC 20375-5000	1
Commanding Officer Naval Ocean Research and Development Activity Attn: Jim Sullivan (Code 104) NSTL Station, MS 39529-5004	1
Commander Naval Space Command Dahlgren, VA 22448-5170	1
Commander Naval Data Automation Command Washington Navy Yard Washington, DC 20374-1662	1

	Copies
Chief of Naval Education and Training Naval Air Station Pensacola, FL 32508	1
Commander Naval Safety Center Naval Air Station Norfolk, VA 23511	1
Superintendent U.S. Naval Observatory 34th and Massachusetts Ave., NW Washington, DC 20392-5100	1
Superintendent United States Naval Academy Annapolis, MD 21402-5000	1
Commanding Officer Naval Air Engineering Center Lakehurst, NJ 08733-5000	1
Commander Naval Air Test Center Patuxent River, MD 20670-5304	1
Commanding Officer Naval Air Propulsion Center P.O. Box 7176 Trenton, NJ 08628-0176	1
Commanding Officer Naval Weapons Evaluation Facility Kirtland Air Force Base Albuquerque, NM 87117-5000	1
Commander Pacific Missile Test Center Attn: Ernest Mora Dan Kimsey John Foss (Code 1032) Point Mugu, CA 93042-5000	3
Commanding Officer Naval Avionics Center Attn: Larry J. Halbig (Code 802) 6000 East 21st Street Indianapolis, IN 46219-2189	1
Commanding Officer Naval Environmental Prediction Research Facility Monterey, CA 93943-5006	1
Commanding Officer Naval Electronic Systems Engineering Center, Charleston 4600 Marriott Drive North Charleston, SC 29418	1
Commanding Officer Naval Electronic Systems Engineering Center, Portsmouth P.O. Box 55 Portsmouth, VA 23705-0055	1
Commanding Officer Naval Electronic Systems Engineering Center, San Diego P.O. Box 80337 San Diego, CA 92138	1
Commanding Officer Naval Electronics Systems Engineering Center, Vallejo Vallejo, CA 94592-5017	1
Commander Naval Air Development Center Attn: Jerry Bortman (Code 024) Warminster, PA 18974-5000	1
Commander Naval Weapons Center Attn: George Linsteadt (Code 01T3) China Lake, CA 93555	1
Officer in Charge David Taylor Research Center Attn: Dr. Basil Nakonechny (Code 0117) Bethesda, MD 20084-5000	1
Commanding Officer Naval Coastal Systems Center Attn: Don Wright (Code 041) Panama City, FL 32407-5000	1

	Copies
Commander Naval Ocean Systems Center Attn: Dr. Richard November (Code 013) San Diego, CA 92152-5000	1
Officer in Charge Naval Underwater Systems Center Attn: Margaret McNamara (Code 107) Bldg. 80T New London, CT 06320	1
Commanding Officer Navy Personnel Research and Development Center Attn: Robert Turney (Code 232) San Diego, CA 92152-6800	1
Commanding Officer Navy Space Systems Activity P.O. Box 92960 Worldway Postal Center Los Angeles, CA 90009	1
Commanding Officer Naval Civil Engineering Laboratory Attn: Jerry Dummer (Code L03C) Port Hueneme, CA 93043-5003	1
Commanding Officer Naval Undersea Warfare Engineering Station Keyport, WA 98345-0580	1
Commanding Officer Naval Ship Weapon Systems Engineering Station Attn: Russ Cohen Director, Ship Systems Assessment Directorate Port Hueneme, CA 93043-5007	1
Commanding Officer Naval Ordnance Station Indian Head, MD 20640-5000	1
Commanding Officer Naval Ordnance Station Louisville, KY 40214	1
Commanding Officer Naval Weapons Support Center Attn: William Chancellor Crane, IN 47522-5000	1
Commanding Officer Naval Explosive Ordnance Disposal Technology Center Indian Head, MD 20640-5070	1
Commanding Officer Navy Experimental Diving Unit Panama City, FL 32407-5001	1
Commanding Officer Naval Ship Systems Engineering Station Naval Base Philadelphia, PA 19112-5083	1
Director Naval Weapons Engineering Support Activity Washington Navy Yard Washington, DC 20374-2203	1
Commanding Officer Naval Sea Combat Systems Engineering Station Naval Station Norfolk, VA 23511-5698	1
Officer in Charge Naval Clothing and Textile Research Facility Attn: John Mylotte (Code 13) 21 Strathmore Road Natick, MA 01760-2490	1
Commanding Officer Naval Education and Training Program Management Support Activity Pensacola, FL 32509-5000	1
Commanding Officer Fleet Numerical Oceanography Center Monterey, CA 93943-5005	1
Commanding Officer Naval Polar Oceanography Center Navy Department 4301 Suitland Road Washington, DC 20395-5180	1

	Copies
Commanding Officer Naval Training Systems Center Attn: Robert Lynchard (Code 7B) Orlando, FL 32813-7100	1
Commanding Officer Naval Air Rework Facility Naval Air Station North Island San Diego, CA 92135	1
Mare Island Navy Ship Yard Attn: Richard A. Smith William R. Gibney (Code 140C) SEACOSD, P.O. Box 2263 Vallejo, CA 94592-5100	2
Commander Naval Air Systems Command Legislative and Public Affairs Office Attn: AIR-07D2 Washington, DC 20361	1
Commander Naval Oceanographic Office Attn: (Code 0010) NSTL Station Bay St. Louis, MS 39522-5001	1
Superintendent Naval Postgraduate School Attn: J. W. Creighton (Code 54CF) Monterey, CA 93940	1
Internal Distribution:	
D21	2
E211 (Miller)	1
(Orendorf)	15
E231	10
E31 (GIDEP)	1