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The Navy's Research, Development, Testing, and Evaluation (RDT&E) Management Archives

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In 1958 the submarine USS *Nautilus* made the world's first transpolar crossing under the arctic ice. The Chief Scientist on board, Dr. Waldo K. Lyon, received for his work on that mission and others the President's Distinguished Federal Civilian Service Award, one of the numerous citations and honors he earned during the 40-plus years he directed the Navy's Arctic Submarine Laboratory.

In September of 1992 the Navy's research and development centers, engineering centers, and testing and evaluation activities were combined into four warfare centers. The reorganization created a system unique in the armed forces, in that these warfare centers carry out research, development, testing, evaluation, and in-service engineering; they go from idea to reality, or rust to rust, if you will. This effort was one of many in the last 50 years that focused on a perennial issue in the Navy: providing the best organizational structure for technical activities.

One thing these two events have in common is that their histories are documented in the sole, formal repository for the Navy's materiel establishment.

The Navy's Research, Development, Testing, and Evaluation (RDT&E) Archives are housed at the Operational Archives Branch of the Naval Historical Center at the Washington Navy Yard. The collection comprises approximately 700 cubic feet, and with a couple notable exceptions it is management and policy, rather than program, or operational, records. In other words, the records reflect a macro-level view of the Navy laboratory community. Although there are of course many fine works that discuss Navy research and development (R&D), and many others that treat the history of a particular institution, the history of the Navy's laboratory community has yet to be written. Further, there are many other more specific, unexplored topics in the history of Navy R&D management, and this collection provides a wealth of material for anyone interested.

The Navy Laboratories and the Creation of the Archives

The archive was established in 1980 as part of a larger effort by then Chief of Naval Material Frederick Michaelis to create a broader awareness, within both the Navy and the Department of Defense, of the contributions of the Navy's material establishment. Under the aegis of the Director of Navy Laboratories (DNL), a small history and archives program was begun to collect significant records from the labs, provide research assistance to Navy planners and managers, and publish scholarly works on the history of the Navy's materiel establishment.

As the Office of the Director of Navy Laboratories was responsible for collecting the records and maintaining the program, the archive reflects the concerns of that office. The DNL was established in 1966 as part of an effort to reduce duplication of effort among, and provide management oversight for, the Navy's major technical facilities and test ranges, and to be a Washington-based advocate for these organizations spread out across the country. The archives somewhat reflect these concerns, in terms of touting the accomplishments of the R&D community and focusing on its overall management. (The DNL reported to the Chief of Naval Material until the latter was disestablished in 1985,

then to the Space and Naval Warfare Systems Command, and then was disestablished itself in 1992.)

The Navy in-house laboratories have a rich history, stretching back more than 150 years. Some of the Navy component activities that make up this community had their roots in legislation passed by Congress in 1841, which first established the Navy bureau system. Over time the component activities of this community have evolved from small, specialized laboratories focused on a particular component (e.g. fuse) or weapon (e.g. gun, torpedo) to warfare-oriented RDT&E centers.

Since the late 1940s, the capabilities and management of the in-house laboratories have been the subject of much scrutiny and debate. Countless reports and committees, from the Hoover Commission in the early 1950s to the government reinvention efforts of the 1990s, have addressed recurring issues and problems inherent in the Navy and Department of Defense R&D establishment: Attracting and retaining high-quality scientists and engineers; overcoming bureaucratic encumbrances; lab reform and alternative management options; achieving the proper mix between doing work in house and contracting it out; balancing the long-term nature of R&D with the need to surge, or produce quickly, especially in times of crisis; and how much military research and development are actually needed in the first place. This last question is once again affecting policy decisions now that the country is the only remaining superpower.

The Navy in-house RDT&E activities have undergone many realignments, consolidations, and closures in the past few decades, and, as mentioned, in 1992 most of those activities were consolidated into four warfare centers. The archives contain records from the early 1900s to the present, but the majority of them cover the era of the Director of Navy Laboratories, the mid-1960s-1992, a period during which there was considerable pressure for the country to field ever better technical capabilities, pressure that ultimately led to significant advances in the art of war, not to mention in communications, computers, lasers, and dozens of other areas. The work performed by these centers and by Navy affiliated university laboratories cover all technical phases of a naval system's

life cycle—from conception to retirement—and all areas of naval warfare—space, air, land, and sea.

Overview of Records

The archives are divided into 13 record collections, arranged hierarchically from the presidential and congressional levels down through the Department of Defense, Department of the Navy, individual R&D centers, oral histories, and personal papers. There is a file-by-file finding guide, which gives a folder title but no abstract of the contents. Sometimes the contents are obvious from the title; other times the folder title simply gives a general subject. The following is a brief description that highlights some of the types of records included.

Oral histories—the collection contains over 300 oral histories from many of material establishment’s major players of the last few decades. Interviewees include Secretaries of the Navy, Chiefs of Naval Operations, Chiefs of Naval Material, Systems Commanders, Directors of Navy Laboratories, Technical Directors and Commanding Officers of RDT&E centers, program directors, and various scientists and engineers. Many subjects are covered; two on which many interviews focus are the development of the MK-48 torpedo and the establishment of the Space and Naval Warfare Systems Command, or SPAWAR.

The SPAWAR interviews are an excellent example of the kind of issues covered in the archives. Many of the interviewees were remarkably candid, a tremendous asset to researchers trying to understand the nuances of the Department of Defense policy and program decision processes. One of SPAWAR’s main tasks was to execute what was called warfare systems architecture and engineering, or WSA&E. This was an ambitious effort to generate top-level warfare requirements that would provide a foundation, an overall architecture, for the coordinated design of all future warfighting systems. Most of the 40 or so interviews on the establishment of SPAWAR address at length its attempt to institute WSA&E; a subject that periodically receives renewed interest in the Navy.

There is an *Abstract of Oral Histories Related to Navy RDT&E and Acquisition*, available upon request, which provides not only abstracts of these and other interviews but also an extensive subject index.

R&D Center Records—the archives contain an abundance of material generated by the individual R&D centers. These include congressional correspondence files, personnel and budget records, Independent Research/Independent Exploratory Development (IR/IED) reports (abstracts of the center programs), long-range and five-year plans, program reviews and program summaries, management briefs, and other materials. To find the nuts and bolts specifics of a given program, say the development of a certain submarine test vehicle at David Taylor Research Center, one would need to talk to the people involved, but these records are the place to find organizational, personnel, budget, program, and/or policy overviews.

RDT&E Management Reports—one of the records series, a collection of reports, contains most of the major reports on the management of Navy and often Department of Defense labs issued from the late 1940s to the mid 1990s. In some cases the archives contain many of the working papers, correspondence, white papers, and other background material that went into the generation of these reports. This series of records has been utilized to good effect—Rodney Carlisle of History Associates Inc. used them as the basis for his *Management of the U.S. Navy R&D Centers during the Cold War: A Survey Guide to Reports*.

As the entire archives relates to R&D management, it should be noted that these reports are kind of top-level, big picture overviews, or in other words fairly abstract and general arguments about the most effective methods of enhancing scientific and technological innovation in the Department of Defense. The archives also contain much material related to specific programs designed to foster innovation and effectiveness. To give just one example, there are numerous files on Project Reflex (Resources Flexibility), a program of the mid 1970s that attempted to remove some of the bureaucratic limitations on laboratory personnel.

The Records of the Navy Industrial Fund, or NIF—One identifying characteristic of the Navy technical community is the approach used to fund work. It is called industrial funding, and as the name implies, it emulates what is done in industry in that a paying customer, for example a program manager who has money from Congress to develop something, decides who does what. If a customer is not happy with a particular Navy provider he can, and often does, go elsewhere. The consequence for Navy technical organizations is that the effects of competition permeate their culture. This does not typically happen when funding flows directly from Congress, as is the case with most other Department of Defense technical activities

For those interested in this funding technique, there is in the correspondence files, R&D center financial statements, and other material a complete set of the resource/financial management records of the R&D centers in the 1980s.

The Records of Waldo Lyon and the Arctic Submarine Laboratory—though there are many detailed accounts of individual contributions in the archives, the most complete collection on one person's life work is that of the late Waldo Lyon, fondly known in the Navy as "Mr. Arctic." Lyon ran the Arctic Submarine Laboratory from its beginning in the late 1940s until the early 1990s. As mentioned, he was the Chief Scientist on board the Nautilus submarine in 1958 for the first transpolar crossing, and on at least a dozen other under ice submarine missions. The collection is approximately 75 cubic feet and includes basically all the records he kept, which was a lot. This material has a separate finding guide, with abstracts for every document and a complete subject index, available through the website of Planning Systems, Inc. The records have also been transferred to CD-ROM.

The Records of the Vietnam Laboratory Assistance and Navy Science Assistance Program (VLAP/NSAP)—the VLAP program was established during the Vietnam War to provide a more rapid transition of war fighting innovations from the laboratory to the field. The collection contains the final reports for the hundreds of projects initiated by VLAP/NSAP, and much of the correspondence, interim reports, budget information, and other working material generated in carrying out the programs. A few of those include

early work in fiber optics, swimmer defense, night vision, various radar improvement programs, and electronic countermeasures.

This has been a general overview and sampling of the kinds of records available in the archives. There are of course many other collections and many other subjects covered. To name just a few: We are the repository for the Joint Directors of Laboratories, an organization at the three-star level that provides oversight and management advice to the Army, Navy, and Air Force labs; we have all kinds of records on lab reorganizations/realignments/closures; there is a nice collection of speeches given by the Chiefs of Naval Material in the 1970s and early 1980s; a lot of material on underwater explosion testing, a subject that brings in things like dealing with environmental concerns; and records of the CO/TD meetings in the 1970s and 1980s.

For various reasons the archives have remained underutilized. The office moved three times in four years in the early 1990s, and its parent organization, the DNL, was disestablished during that time. The records are now, as mentioned, at the Operational Archives of the Naval Historical Center, certainly the most appropriate location for the collection, yet the office remains organizationally separate from the center and is managed by the Navy Laboratory/Center Coordinating Group. Nonetheless, for anyone interested in the management of the Navy's material establishment in the last 50 years, this collection is the place to start.



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