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Operational Archives
Naval Historical Center
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Washington, DC

COLLECTION:

Navy R & D Management Archive
Collection: #00006
Title: Other Naval Shore Establishments
Series: #000010
Box: ~~00463~~
00707

APRIL 1969

THE NRDL CYCLOTRON

1. The NRDL cyclotron dates back to the FY 1963 Military Construction Program wherein it was identified as a Neutron Radiation Facility to be built at a total cost of \$2.3 million, including the building to house the cyclotron. The justification for the M-CON project stipulated that the NRDL "required the facility to generate nuclear radiations of the various types and relative intensities that occur as a result of nuclear detonations and in controlled nuclear processes in order to determine their characteristics and effects and carry out other functions of the mission."

2. The cyclotron project has progressed slowly and an internal beam was attained for the first time early in 1968. It is uncertain when, if ever, the design objective of 10^{15} neutrons per second could be attained. In the meanwhile the cyclotron today represents an investment more than \$6 million and time has overtaken the original need for the cyclotron. There are numerous other cyclotrons throughout the country available for research and development including one at the Naval Research Laboratory.

3. During the summer of 1968 when the NRDL disestablishment was being considered various sponsors of projects that might use the cyclotron were queried about future need for the NRDL cyclotron. Input from DASA, OCD, BUMED and others indicated that no known sponsor or group of sponsors can financially afford to maintain the NRDL cyclotron. The annual cost will run from \$0.6 million to \$1.0 million. The cover of secrecy about the NRDL plans precluded examining needs or sponsors over a wider area. Where discussions were held, however, with the aforementioned agencies the response was essentially the same: That cyclotron time could be purchased from cyclotrons already on the line and the NRDL cyclotron was too expensive to acquire either individually or jointly.

4. Accordingly, the cyclotron will be declared excess and its availability will be made known throughout the other segments of DOD and the Federal government in accordance with established procedures. Should a user within the Federal government not be found, the cyclotron will be disposed of by GSA as provided for by public law.

MARCH 1969

NAVAL RADIOLOGICAL DEFENSE LABORATORY
SAN FRANCISCO, CALIFORNIA

(Disestablish the Naval Radiological Defense Laboratory by December 1969)

I. MISSION AND WORKLOAD -

A. The mission of the Naval Radiological Defense Laboratory (NRDL) which was established in 1950 and is primarily located in facilities at the San Francisco Naval Shipyard, is to perform research, development, test, and evaluation of the effects of nuclear explosions, natural and controlled nuclear processes, nuclear accidents and incidents, and related fields of science and engineering.

B. The NRDL currently has 507 civilian personnel positions and 61 military personnel positions authorized. This activity is a tenant at the San Francisco Naval Shipyard where it occupies about 17 acres of land and 12 buildings. The real property investment in the buildings used by the NRDL amounts to \$10 million. The investment in special equipment and technical facilities of the NRDL amounts to about \$10 million. These facilities include a radiation measurement facility, Van De Graaff accelerator, cyclotron and other similar facilities.

C. The NRDL program has been sponsored primarily by the Navy with strong support from the Defense Atomic Support Agency (DASA) and the Office of Civil Defense (OCD).

II. PLANNED ACTION -

A. National Defense needs dictate a reorientation within the Navy research and development establishment. The beginning of this reorientation was the creation of large centers of excellence, each of sufficient size and technical capability to develop large and complex warfare systems, such as the Naval Ship Research and Development Center, Carderock, Maryland; the Naval Weapons Center, China Lake, California; and the Naval Air Development Center, Johnsville, Pennsylvania. As part of this reorientation the missions and functions of the existing independent Naval laboratories were studied in order to eliminate duplication and to ensure that valid and urgent requirements for their continued operation existed. The study of NRDL indicated that the activity, mission, experience, and size are too confined to undertake major systems responsibilities. This activity is not involved significantly in major Navy programs. Further, even in the unlikely event of future availability of significant programs, the NRDL immediate locale and physical environment are unsuitable for increasing the magnitude of its operation. The few elements of sufficient importance which exist can readily be transferred and accomplished elsewhere.

B. It is therefore proposed that about 220 civilian personnel spaces identified with important programs be transferred as follows:

<u>Function</u>	<u>No. of Personnel</u>	<u>Receiving Agency</u>
1. Nuclear Warfare	102	Naval Ordnance Laboratory, White Oak
2. Military Systems Analysis	63	Naval Undersea Warfare Center, San Diego
3. Ship Sys. Analysis	14	Naval Ship Research and Development Center, Carderock
4. B/C Warfare	29	Naval Weapons Laboratory, Dahlgren
5. Biomedical Research	12	Bureau of Medicine and Surgery (undesignated activity)

C. It is proposed that, following transfer of the foregoing designated functions and personnel, the NRDL be disestablished. As a result of this action all of the facilities in San Francisco will be vacated by NRDL. The activities of the Naval Facility, San Bruno, will be relocated to the buildings now occupied by NRDL at the San Francisco Bay Naval Shipyard. The NRDL research facilities will be made available for use by other Navy and DOD activities and also by Government-sponsored research activities.

D. The proposed actions will eliminate two hundred eighty-seven (287) civilian personnel positions and release sixty-one (61) military billets for assignment elsewhere. The estimated annual saving is \$7.6 million. It will cost approximately \$3.3 million to implement this action but \$3.5 million is planned military construction in the FY 70-74 time frame will be avoided. This action is to be completed by 1 December 1969.

III. PHYSICAL INSTALLATION DATA -

A. The NRDL is a tenant at the San Francisco Naval Shipyard where it occupies about 17 acres of land and 12 buildings. The real property investment in the buildings used by the NRDL amounts to \$10 million. The investment in special equipment and technical facilities of the NRDL amounts to \$10 million. These facilities include a radiation measurement facility, Van De Graaff accelerator, a cyclotron, and other related facilities. NRDL has historically operated a remote site consisting of 595 acres at the Army's Camp Parks located in Alameda County. The NRDL efforts at Camp Parks have diminished significantly during the past few years and all holdings there will be released to the Army upon the disestablishment of the NRDL.

B. 1. Facilities: The following detail from the Inventory of Naval Shore Facilities for the San Francisco Bay Naval Shipyard delineates facilities used by the NRDL. The principal item is obviously Building 815 which houses most of the NRDL. The years cited in the date acquired column in general follow the MIL-CON program by one or two years. Precise data on the related MIL-CON programs may be obtained following the public release of Navy plans to disestablish the activity.

<u>Facility Name</u>	<u>Area</u>	<u>Cost</u>	<u>Date Acquired</u>	<u>Other Info</u>
a. Bio-Med	1000 ft ²	\$ 5,792	1953	50'X20'X8' 1 story
b. Eng Test Equip	2000 ft ²	111,122	1950	50'X40'X28' 1 story
c. Hi Voltage Accel	9076 ft ²	191,464	1954	111'X69'X28' 3 stories
d. Storage	374 ft ²	20,924	1950	22'X17'X24' 1 story
e. Animal Colony	9912 ft ²	85,298	1950	168'X59'X10' 1 story
f. Animal Research	20099 ft ²	533,000	1967	199'X101'X10' 1 story
g. Animal Research	1200 ft ²	90,467	1967	40'X30'X10' 1 story
h. Research Kennels	--	59,000	1967	95'X77'
i. Decontamination Cen	828 ft ²	14,980	1954	36'X23'X10' 1 story
j. Radioactive Waste Sys	229 M	18,601	1963	144'X112'X46'
k. Bldg. 815	279966 ft ²	7,648,010	1955	412'X108'X138' 7 stories
l. Bldg. 820 (Cyclotron)	16752 ft ²	879,977	1963	144'X112'X46' 1 story

2. The Naval Facility, San Bruno will be relocated to the principal buildings now occupied by the NRDL.

C. Technical Facilities and Equipment:

1. The major items include:

	<u>Equipment Investment</u>	<u>Date</u>
a. Cyclotron (Located in Bldg. 820)	\$5.5M	1967
b. Van De Graaff Accelerator	1.0M	1964
c. Irradiation Facility (Camp Parks)	0.7M	1960
d. X-Ray Radiation Facility	0.1M	1956
e. Radiation Measurement Facility	0.1M	1960
f. Instrument Calibration Facility	0.1M	1950
g. Radiation Analyzer Facilities	0.4M	1964
h. Library	0.4M	1950
i. Mobile Radiochemistry Laboratories	1.4M	1955

2. In addition to the foregoing the NRDL has a collection of laboratory apparatus and equipment including spectrofluorometers, gamma spectrometers, calibration standards and related items. It is expected that much of the equipment can be applied to good advantage in other laboratories.

D. MILCON PROGRAM -

1. The results of the previous five year MILCON program are shown under Facilities in the preceding paragraph B. The last items are the animal research facilities acquired in 1967.

2. Plans for the future five year MILCON include only a Technical Services Shop planned for FY 1973 at a cost of \$3.5 million.

IV. PERSONNEL ANALYSIS -

A. The current status is as follows:

	<u>Authorized</u>	<u>On-Board</u>
Military	61	49
Civilian	507	536

B. The planned action as addressed in Section II is:

1. To transfer 220 civilian technical personnel to other activities as designated:

<u>Function</u>	<u>No. of Personnel</u>	<u>Receiving Agency</u>
a. Nuclear Warfare	102	Naval Ordnance Laboratory, White Oak
b. Military Systems Analysis	63	Naval Undersea Warfare Center, San Diego
c. Ship Sys. Analysis	14	Naval Ship Research and Development Center, Carderock
d. B/C Warfare	29	Naval Weapons Laboratory, Dahlgren
e. Biomedical Research	12	Bureau of Medicine and Surgery (undesigned activity)

2. To drop the remainder of the NRDL civilian personnel under reduction in force actions.

3. To release the 49 on-board military personnel for other assignments. This includes 23 officers and 26 enlisted personnel.

V. ECONOMIC ANALYSIS -

A. Annual Operating Costs for FY 1969 (Before the Action):

1. By Object Class:	<u>\$M</u>
Personnel Compensation	6.7
Personnel Benefits	0.5
Travel & Transportation	0.3
Rent, Communications & Utilities	0.4
Other Services	2.2
Supplies & Materials	1.6
Equipment	0.3
	<u>\$12.0 Million</u>

2. By Appropriation:	<u>\$M</u>
RDT&E, Navy	5.3
O&MN	0.6
OPN	0.3
RDT&E, Other DOD	4.1
Other Gov't Depts & Agencies	1.7
	<u>\$12.0 Million</u>

B. Annual Operating Costs at NRDL After the Action:

\$0.0 Million

C. The increase in annual operating costs at the gaining installations resulting from the action will be:

1. By Object Class:						\$M
	NOL	NUWC	NSRDC	NWL	BUMED	Totals
Personnel Compensation	1.50	0.80	0.10	0.20	0.10	2.7
Personnel Benefits	0.14	0.03	0.01	0.01	0.01	0.2
Travel & Transportation	0.04	0.03	0.00	0.02	0.01	0.1
Rent, Communications, etc.	0.05	0.03	0.00	0.02	0.00	0.1
Other Services	0.38	0.20	0.02	0.09	0.01	0.7
Supplies & Mat'ls	0.27	0.14	0.02	0.06	0.01	0.5
Equipment	0.06	0.00	0.00	0.02	0.02	0.1
Totals	2.44	1.23	0.15	0.42	0.16	4.4

2. By Appropriation:						\$M
RDT&E, Navy	0.92	0.71	0.15	0.26	0.06	2.1
O&MN	0.50	0.00	0.00	0.00	0.00	0.5
OPN	0.10	0.10	0.00	0.00	0.00	0.2
RDT&E, Other DOD	0.92	0.42	0.00	0.16	0.10	1.6
Totals	2.44	1.23	0.15	0.42	0.16	4.4

D. Estimated Annual Savings:

1. By Object Class:	\$M
Personnel Compensation	4.0
Personnel Benefits	0.3
Travel & Transportation	0.2
Rent, Communications, & Utilities	0.3
Other Services	1.5
Supplies & Materials	1.1
Equipment	0.2
Total Savings	\$7.6 Million

2. By Appropriation:

RDT&E, Navy	\$3.2
O&MN	0.1
OPN	0.1
RDT&E, Other DOD	2.5
Other Gov't Depts & Agencies	1.7
Total Savings	\$7.6 Million

E. Schedule of Completion of Action:

Assuming the DOD announcement at time 0 of the firm intention to proceed with the plan as proposed in this document, the following schedule is projected:

<u>Days</u>		
24 Apr	0	Announce the general plan to disestablish NRDL.
9 May	15	Convene disestablishment teams for personnel, programs, financial management and technical facilities.
11 Aug	90	Announce detailed plans regarding transfer of programs and reduction-in-force of the remainder of the civilian personnel.
10 Sept	120	Begin the transfer of programs and personnel to receiving activities.
10 Oct	150	Begin reduction-in-force of surplus civilian personnel and transfer of military personnel.
10 Nov	180	Relocate or surplus the scientific and technical equipment.
10 Dec	210	Conclude the transfer of programs and personnel to receiving activities.
25 Dec	225	Officially disestablish the NRDL.
29 Jan 1970	240	Detach the remainder of the military personnel.

F. Estimated One-Time Costs:

	<u>\$M</u>	<u>Appropriation</u>
Relocation Costs for 49 Military Personnel	0.1	O&MN
Relocation Costs for 220 Civilian Personnel	0.6	RDT&EN
Terminal Leave Pay for 92 Retirees	0.1	RDT&EN
Terminal Leave & Severance Pay for RIF Employees	0.6	RDT&EN
Closing Costs at NRDL	0.5	RDT&EN
Transportation Costs to Gaining Activities	0.4	RDT&EN
Reinstallation Costs at Gaining Activities	1.0	RDT&EN
Total One-Time Costs	\$3.3	Million

C. Budget Impact Schedule:

	<u>FY 1970</u>	<u>FY 1971</u>	<u>FY 1972</u>	<u>FY 1973</u>	<u>FY 1974</u>
<u>RDT&EN</u>					
Annual Savings	\$1.5M	\$3.2M	\$3.2M	\$3.2M	\$3.2M
-One-Time Costs	2.7	0.5	0.0	0.0	0.0
Net Savings	-\$1.2M	\$2.7M	\$3.2M	\$3.2M	\$3.2M
<u>MILCON Cost Avoidance</u>	0.0	0.0	0.0	\$3.5M	0.0
<u>O&MN</u>					
Annual Savings	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
-One-Time Costs	0.1	0.0	0.0	0.0	\$0.0
Net Savings	\$0.0M	\$0.1M	\$0.1M	\$0.1M	\$0.1M
<u>OPN</u>					
Annual Savings	\$0.0M	\$0.1M	\$0.1M	\$0.1M	\$0.1M
<u>RDT&E, Other DOD</u>					
Annual Savings	\$1.5M	\$2.5M	\$2.5M	\$2.5M	\$2.5M
<u>Other Gov't Agencies</u>	\$0.8M	\$1.7M	\$1.7M	\$1.7M	\$1.7M

VI. OTHER -

The proposed action will have a negligible effect on Navy sponsored research and development work at colleges and universities. In the past NRDL has let and monitored contracts for other sponsors such as the Office of Civil Defense, Defense Atomic Support Agency, the Advanced Research Projects Agency and the Atomic Energy Commission. The level of this type of contracting service has been significantly reduced in recent years due to budget reductions in the sponsoring agencies. From the FY 1969 appropriation NRDL has one contract with the University of Illinois for \$7 thousand and one contract with the University of California for \$27 thousand, sponsored by OCD and AEC, respectively. It is expected that the proposed action will have no adverse effect on future contracts with colleges and universities. On the contrary, it may make available funds that would otherwise have gone into the maintenance and operation of the NRDL.

VII. ARGUMENTS FOR AND AGAINST THE ACTION -

A. For the Action:

1. Defense needs have dictated a reorientation of the Navy research and development establishment toward centers capable of

accommodating large complex warfare systems developments. NRDL has neither the size nor the technical expertise to contribute significantly as a center or to a center.

2. The NRDL locale and physical environment are unsuitable for expansion to an adequate size to undertake nuclear offensive or nuclear weapon responsibilities to any significant extent.

3. The NRDL mission and experience are too narrow to undertake major responsibilities of current and future Navy research and development.

4. The major programs of NRDL do not comprise a unified or warfare-oriented purpose.

5. The NRDL is not involved significantly in major Navy problems including the nuclear propulsion and the FBM programs.

6. There is insufficient Navy work within the mission of NRDL to support an organization of critical size.

7. The remaining Navy laboratory complex (with assistance in some cases by other Department of Defense laboratories) is capable of accommodating foreseeable Navy needs.

8. The mandate to reduce spending and Federal civilian employment re-emphasizes the relative priorities of Navy programs. The NRDL programs, mission and capabilities suffer in comparison with other Navy laboratories.

9. The possible economic impact of the disestablishment of NRDL on the San Francisco area is considered minimal. The political impact is less predictable, but expected to be mild.

B. Against the Action:

1. The NRDL has developed over its 20-year history some capabilities in each of the following areas:

- a. Nuclear Warfare Operations Analysis
- b. Biological Effects of Nuclear Radiations
- c. A 70-inch Cyclotron ultimately aimed at producing neutrons of a wide variety of energies in great quantities.
- d. Radiation Instrumentation
- e. Fallout and Decontamination
- f. Threat and Mission Analyses For Ship Concept Formulation
- g. B/C Warfare Defense Analysis
- h. Strategic Warfare Analysis
- i. Electromagnetic Pulse Investigations

2. Attempts to relocate some of the relatively important programs at activities in other geographical locations will probably result in the loss of some personnel with expertise that the Navy will have to redevelop.

3. The action may result in personal hardships for some of the employees who are reduced-in-force as well as for some who must relocate to a different geographical location.

VIII. COMMUNITY DATA -

A. There are no known commitments to the Congress or to local communities regarding the future status of NRDL. At least one Congressman queried the Navy regarding future plans for NRDL as a result of disestablishment rumors during late summer of 1968.

B. The economic impact of the disestablishment of NRDL on the local economy is considered insignificant. Moreover, the relocation of the Naval Facility, San Bruno to the NRDL site will tend to compensate.

C. The list of the current Congressional delegation will be provided by the Office of Legislative Affairs.