

*REPORT TO THE SUBCOMMITTEE ON
RESEARCH AND DEVELOPMENT
COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE*

Review Of Navy Research,
Development, Test, And Evaluation
Management And Support Funding
For Facilities And Installations

Department of the Navy

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

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FEB. 21, 1975



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-180537

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The Honorable Thomas J. McIntyre
Chairman, Subcommittee on Research and Development
Committee on Armed Services
United States Senate

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Dear Mr. Chairman:

Your letter of January 28, 1974 (see app. I), requested us to investigate the Navy's use of management and support funds for the Stable Semisubmerged Platform and to see whether these funds were being used in the same manner for other major research and development projects. Our letter of May 30, 1974, reported the results of our investigation of the funding of the platform.

This letter is in response to your concern that the Navy may be pursuing major research and development projects with management and support (6.5) funds provided under budget Program 65851N, Facilities and Installation Support, for fiscal year 1973 and Program 65862N, RDT&E Instrumentation and Material Support, for fiscal year 1974.

Our review of expenditures under these programs at selected Navy laboratories and test facilities did not show any major research and development projects being supported by these funds. Projects were identified, however, which we believe should have been supported by other appropriations or by other elements of the Research, Development, Test, and Evaluation (RDT&E) appropriation. These projects, which include constructing a 74-foot trawler and minor research and development efforts, are identified below and are discussed in detail in appendix II.

BACKGROUND

Descriptive summaries submitted to the Congress to support the Navy fiscal year 1974 budget, describe funds under Program 65861N, 1/ RDT&E Laboratory and Facilities Management Support, and Program 65862N, 1/ RDT&E Instrumentation and Material Support, as being for

1/ Programs 65861N and 65862N were combined as a single program in the RDT&E budgets in fiscal years 1972 and 1973.

- general-purpose research equipment, such as machine tools and collateral equipment required initially to outfit facilities;
- management and operation of the Office of Naval Research;
- military personnel and equipment support costs for quarters and mess facilities;
- tenant activity common support costs;
- minor construction and alteration; and
- first destination transportation costs for research and development materials.

The Department of Defense Budget Guidance Manual specifies that these descriptive summaries will be the official basis for authorizing expenditure of funds provided by the Congress for these programs.

MANAGEMENT AND SUPPORT FUNDS

For fiscal years 1972-74 the Navy received \$224.0 million for these programs. Approximately \$195.1 million of these funds was provided to the Office of Naval Research, the Director of Laboratory Programs (DLP) of the Naval Material Command, and the Naval Air Systems Command for managing and supporting laboratories and test facilities. Eight laboratories and test facilities we visited had expenditures totaling \$86.1 million from fiscal year 1972 through the first 6 months of fiscal year 1974 (the period covered by our review). Our review included a determination of the purposes for which these funds were obtained and used.

At four of these locations, we found eight research projects and one ship procurement which we believe should have been funded under other Navy appropriations or other RDT&E programs. Management and support funds for these totaled \$824,340. Except for an aircraft study funded by the Naval Air Systems Command, all of these projects and the ship procurement were funded by DLP. The projects included:

Naval Research Laboratory, Washington, D.C.

- Support of \$35,000 for resolving problems with electronic countermeasure equipment on gunline ships involved in Vietnam. DLP officials stated that these costs should have been charged to budget Program 62753N, Weapons Technology.

Naval Undersea Center, San Diego, California

- Constructing a hull inspection platform at a cost of \$70,000. This platform, designed to permit continuous underwater inspection of ship hulls without the limitations encountered by divers, was constructed as a prototype experimental vehicle for test and evaluation. DLP officials said that exploratory development (6.2) funds would have been more appropriate for this item.
- Developing an extended depth capability for the cable-controlled underwater recovery vehicle (CURV III) for \$128,000. CURV III is an engineering prototype of an unmanned submersible system developed for operational evaluation. It was designed to provide access to the deepest Navy underwater test ranges (6,000 feet). Extending the depth capability of CURV III from 7,000 feet to 10,000 feet resulted in the development of a capability beyond that necessary for RDT&E operations at Navy ranges.

DLP officials disagreed that RDT&E funds other than 6.5 should have been used. They say that CURV III is an operating range support vehicle, which is considered a "national asset" subject to be on call by the Department of Defense or other Federal agencies.

- Demonstrating a remotely manned experimental vehicle for undersea observation and inspection (Electric SNOOPY). This demonstration cost \$10,000.

Naval Undersea Center officials agreed that other RDT&E funds should have been used. DLP officials said, however, that, since funds were not set aside for demonstration purposes the use of 6.5 funds appeared appropriate.

Naval Weapons Center, China Lake, California

--Support of \$215,000 for evaluating various systems to solve specific problems related to gunline ships and aircraft involved in the Vietnam conflict. This support included:

1. Focal Point--a project to devise a system for detecting and locating enemy radar used for gun-fire control of shore artillery.
2. Shrike--a project to develop an effective counter-measure to radar-controlled shore artillery and surveillance radar.
3. Chaparral--a project to develop a ship defense against enemy aircraft and missiles.
4. Project BH--an approach to stop ships from entering the port of Haiphong, North Vietnam.

DLP officials said that funds for budget Program 62753N, Weapons Technology, should have been used for these evaluations.

--Evaluating an improved Chaparral missile at a cost of \$100,000. This was a test program to evaluate the basic and an improved Chaparral missile against high-speed, low-level targets which simulate enemy aircraft and antiship cruise missiles. DLP officials agreed that engineering development (6.4) funds should have been used for the Chaparral evaluation.

--Study establishing requirements, approaches, estimated costs, and schedules for converting T-38A aircraft to QT-38A target drones. This study cost \$21,978.

Naval Air Systems Command officials said that the QT-38A target conversion study was made with 6.5 funds because determining test requirements for such a target and the feasibility of meeting these requirements with this particular aircraft were considered management and support matters. We believe, however, that this study represents development effort and should have been funded under budget Program 64257N, Aerial Target System Development, as were studies for converting other aircraft for similar purposes.

--Testing nonexplosive PUFF projectiles to be used in shore bombardment training. This project cost \$41,000. DLP officials agreed that 6.5 funds should not have been used for this project; however, they could not identify what RDT&E funds should have been used.

Naval Underwater Systems Center, Newport, Rhode Island

--Construction of a 74-foot trawler to support hard-hat divers. RDT&E 6.5 funds used for construction totaled \$203,362. We believe this trawler should have been included in either the Shipbuilding and Conversion, Navy, or the Other Procurement, Navy, budget requests and purchased with funds from one of these appropriations.

Naval Underwater Systems Center officials said that this boat probably should have been procured with Shipbuilding and Conversion, Navy, funds. DLP officials disagreed, however, stating that using RDT&E funds appeared appropriate as the boat was (1) to be dedicated exclusively to support RDT&E efforts and (2) not intended to join the regular Navy fleet.

We believe that recommendations for changes in the 6.5 funding process are not warranted because of the relatively few projects we found where funding other than management and support should have been used. We believe that the Congress should continue to rely on the integrity and competence of Navy administrators to prevent the expenditure of management and support funds for projects other than for which they were justified. Additional management attention directed to administering 6.5 funds, however, could provide greater assurance that expenditures of these funds are made for the purposes described to the Congress.

SCOPE OF REVIEW

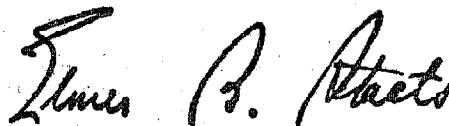
We visited the Naval Underwater Systems Center, Newport, Rhode Island; Naval Weapons Center, China Lake, California; Naval Undersea Center, San Diego, California; Naval Air Engineering Center, Philadelphia, Pennsylvania; Naval Air Development Center, Johnsville, Pennsylvania; Naval Research Center, Washington, D.C.; Naval Ship Research and Development Center, Carderock, Maryland; and the Naval Air Test Center, Patuxent River, Maryland. We also obtained data from and held discussions with officials of the Office of Naval Research, DLP, and the Naval Air Systems Command.

B-180537

We have not obtained formal comments on this report from the agencies but have discussed it with Navy officials.

As your office agreed, we are sending copies of this report to the Secretaries of Defense and Navy, and the Director of Defense Research and Engineering.

Sincerely yours,

A handwritten signature in cursive script that reads "James B. Stacks". The signature is written in dark ink and is positioned above the typed name.

Comptroller General
of the United States

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United States Senate

WASHINGTON, D.C. 20510

January 28, 1974

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Honorable Elmer B. Staats
 Comptroller General
 General Accounting Office
 Washington, D.C.

Dear Mr. Staats:

The Department of the Navy has constructed a Stable Semisubmerged Platform (SSP) at a cost of \$3,771,000, using Research, Development, Test and Evaluation funds provided for Fiscal Years 1969 through 1974. Details of this program and funding have been obtained from the Navy and copies are attached.

I am concerned that the Navy may have built this experimental craft without having obtained the specific approval and authorization of funds by the Congress. This program was not proposed to the Congress as a specific line item (program element) or project. Instead, it was financed from funds provided for other purposes under Program 65851N, Facilities and Installation Support prior to Fiscal Year 1974, and Program 65862N RDT&E Instrumentation and Material Support for the current fiscal year.

The Navy's own description of the aforementioned two programs does not cover design and construction of the SSP which could be the prototype of a multi-thousand ton craft. The use of funds from such programs, as stated on page 981, Volume 2, of the Descriptive Summaries supporting the Navy Fiscal Year 1974 RDT&E budget, is for "procurement of general purpose equipment such as machine tools, collateral equipment required initially to outfit facilities constructed under the Navy Military Construction Program, RDT&E photographic collateral equipment required Navy-wide..."

My interest involves not only this specific case, but also the possibility that other major R&D projects or tasks may be pursued by the Navy in the same manner without either the required knowledge or specific authorization of the Congress.

I would appreciate an investigation of the SSP case, with your findings to be reported by April 1, 1974. The broader ex-

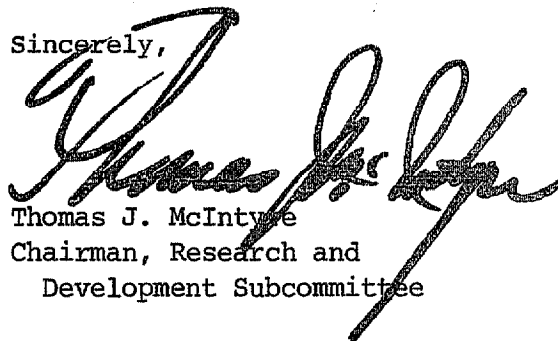
APPENDIX I

Honorable Elmer B. Staats

January 28, 1974

amination of this matter should be pursued expeditiously on a sampling basis, and reported with appropriate recommendations at the earliest practicable date.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Thomas J. McIntyre', written in a cursive style. The signature is positioned above the typed name and title.

Thomas J. McIntyre
Chairman, Research and
Development Subcommittee

cc: Secretary of Defense

NAVAL RESEARCH LABORATORYGunline ship support

This Naval Research Laboratory support project involved troubleshooting problems with electronic countermeasure equipment on Navy ships and aircraft involved in the Vietnam conflict. This support included removing and installing equipment, engineering services, and testing.

This support cost the Naval Research Laboratory \$62,500, of which \$35,000 was provided by DLP from fiscal year 1973 6.5 funds. The remaining \$27,500 was funded by DLP under Program 62753N, Weapons Technology, which provided for technical assistance to Navy forces in Vietnam on a crash basis to be completed in 90 days or less at a cost not to exceed \$50,000 per task. DLP officials agreed that the total cost should have been charged to program 62753N.

NAVAL UNDERSEA CENTERHull inspection platform

The hull inspection platform is a floating, twin-pontoon self-powered platform on which is mounted an articulated arm carrying an observation seat. The seat is rigged for underwater operation and provides the occupant an efficient means of inspecting hulls, piers, pilings, and other underwater installations, without the drawbacks of diving; i.e., exertion, body chills, limited field of view, slow progress, etc.

A Naval Undersea Center (NUC) representative told us that the hull inspection concept arose from the Vietnam war situation. Ships at anchor were subject to swimmer-emplaced mine attack and as a deterrent had to rely upon some means of underwater inspection.

In April 1971, NUC proposed the hull inspection platform concept to the Commander, Naval Material Command. Funds totaling \$70,000 for designing and fabricating a prototype platform were provided by DLP from fiscal years 1971 and 1972 RDT&E appropriations. These funds were charged to the Instrumentation and Equipment Program of the 6.5 category.

Since the hull inspection platform was constructed as a prototype experimental vehicle for testing and evaluating, RDT&E funds other than 6.5 should have been used. DLP officials agreed, stating that using 6.2 funds under the Vietnam Laboratory Assistance Program would have been more appropriate for this item.

APPENDIX II

Electric SNOOPY demonstration project

The Electric SNOOPY demonstration project represents a series of undersea observation and inspection tasks to gain experience with and demonstrate the use of this small, remotely manned vehicle. It was designed for remote observation and inspection to depths of 1,500 feet by a closed circuit television camera. A NUC representative said that Electric SNOOPY was an experimental research vehicle, whose development was funded from RDT&E exploratory development funds.

In November 1973, during Electric SNOOPY's development, NUC proposed to the Director of Naval Laboratories, four 1-week demonstrations of the vehicle. These were scheduled for the spring of 1974 and were associated with (1) a sonar contact classification project; (2) manned submersible recovery aid experiments; and (3) Hawaiian precious coral bed inspections. DLP provided \$10,000 for these demonstrations from fiscal year 1974 RDT&E appropriations. These 6.5 funds were charged to the Instrumentation and Equipment Program.

We believe that, since Electric SNOOPY was an experimental research vehicle for underwater observation and inspection, other RDT&E funds should have been used for its demonstration. NUC officials agreed with this; however, DLP officials said that, because funds were not set aside for demonstration purposes, the use of 6.5 funds seems appropriate.

Project to extend depth capability of CURV III from 7,000 to 10,000 feet

The cable-controlled underwater recovery vehicle (CURV III) is an operational engineering prototype of an unmanned submersible system. The basic system consists of an underwater vehicle, a surface ship, control console, and cable. The vehicle is equipped with sensors and a tool arm that enables it to perform a variety of underwater work and inspection tasks.

CURV III, designed for an operational depth of 7,000 feet, was developed by NUC, as were CURV I (2,000 feet) and CURV II (2,500 feet). This development, described by NUC as "an applied research task," was primarily funded by the Naval Ordnance Systems Command and the Naval Ship Systems Command's Deep Ocean Technology Project. The CURV III system was to provide access to the deepest Navy underwater test ranges (6,000 feet). In December 1971, at the request of the Deputy Director of Naval Laboratories, NUC proposed extending CURV III capability for deep recovery from 7,000 to 10,000 feet.

Management and support funds totaling \$128,000 were provided to NUC for this work by DLP from fiscal year 1972 RDT&E appropriations for the Instrumentation and Equipment Program. DLP officials consider these funds appropriate for extending the depth capability of CURV III because they say it is an operating range support vehicle rather than an engineering prototype. They assert that CURV III is a national asset, subject to be on call in case of emergency where the unique capabilities of this range support and recovery vehicle can be used by the Department of Defense or other Federal agencies if the need arises.

We believe, however, that because of (1) the nature of the work performed to develop an extended depth capability for CURV III, (2) the description of this in the NUC guide as an "engineering prototype system," and (3) the development of a capability beyond that necessary for operations at Navy underwater test ranges, RDT&E funds other than 6.5 should have been used.

NAVAL WEAPONS CENTER

Gunline ship support

This Naval Weapons Center (NWC) project was primarily an effort to provide a quick reaction capability to Navy ships and aircraft during the Vietnam conflict. This effort involved evaluating various systems to solve specific problems concerning enemy missiles, aircraft, and radar-controlled artillery. It included using 6.5 funds for:

1. Focal Point--This effort was to devise a system to detect and locate enemy radar used for gunfire control of shore artillery. A unit was devised to quickly locate the enemy radar through its radio-frequency emissions. Focal Point was used in conjunction with Shrike missiles in Vietnam.
2. Shrike--This project was to develop an effective countermeasure against radar-controlled shore artillery and surveillance radar. This was accomplished by adapting the U.S. Air Force Shrike air-to-air missile for shipboard point-to-point use. Paired with Focal Point, Shrike was successfully used in the Vietnam conflict.
3. Chaparral--This project was to develop a ship defense against enemy aircraft and missiles. This was accomplished by modifying the U.S. Army Chaparral missile system for shipboard use. Chaparral missiles were installed aboard ships deployed to Vietnam.

APPENDIX II

4. Project B H--The details of this are classified TOP SECRET-Hold Close. An NWC representative said that Project B H was an approach to stop ships from entering the port of Haiphong, North Vietnam, but was never used. (The overall description of the project is unclassified.)

NWC funding for gunline ship support totaled \$1,080,576, of which \$215,000 was provided by DLP from fiscal year 1972 RDT&E management and support funds. DLP officials said that funds for Program 62753N, Weapons Technology, rather than management and support, should have been used for this gunline ship support.

QT-38A conversion study

This study consisted of developing requirements, approaches, estimated costs, and schedules for converting T-38A aircraft to QT-38A target drones. Aircraft Support (6.5) funds of \$21,978 for the conversion study were provided by the Naval Air Systems Command to NWC from the fiscal year 1973 RDT&E Management and Support program. The study, completed in August 1973, resulted in a proposal to the Naval Air Systems Command for converting a T-38A aircraft to a remotely piloted vehicle. In April 1974, the Naval Air Systems Command provided \$57,000 of Aerial Target System Development (6.4) funds to NWC for planning and development of a prototype QT-38A.

Navy RDT&E descriptive summaries for the Aircraft Support program describe these funds as being for depot maintenance of RDT&E aircraft, including reworking and converting aircraft to aerial targets. Planning and developing a prototype aircraft for an aerial target system, however, should be done with Aerial Target System Development funds. The Navy fiscal year 1973 descriptive summary for these funds states,

"Studies and analyses are conducted on a continuing basis to define requirements for Aerial Target Systems and the technical approaches for satisfying these requirements * * *."

Command officials said that the QT-38A target conversion study was made with 6.5 Aircraft Support funds because it was considered a management and support matter to determine research and development test requirements for such a target and the feasibility of meeting these requirements with this particular aircraft. We believe, however, that this study represents development effort and should have been funded by the Naval Air Systems Command under Program 64257N, Aerial Target System Development, as were studies for conversion of other aircraft.

Chaparral evaluation

The Chaparral is a surface-to-air infrared homing guided missile system, designed and developed by NWC to provide a ship defense against low-flying aircraft and missiles.

The D/S 616 Chaparral evaluation was a product improvement test program to evaluate the basic and an improved Chaparral missile against high-speed, low-level targets which simulate enemy aircraft and antiship cruise missiles. The improved Chaparral missile is the basic missile with an improved infrared seeker.

Funding for the Chaparral evaluation totaled \$368,000. DLP provided \$100,000 of this from fiscal year 1972 funds for operations and management support. The remaining \$268,000 was provided by the Naval Ordnance Systems Command from fiscal years 1972 and 1973 RDT&E engineering development (6.4) funds. Management and support funds should not have been used for performance testing of the improved infrared seeker. DLP officials agreed and stated that RDT&E engineering development funds should have been used to support the entire Chaparral evaluation.

Nonexplosive PUFF projectile evaluation

The nonexplosive PUFF projectile evaluation, done at NWC for the Chief of Naval Material, was a test program for evaluating and selecting for final production a design for a nonexplosive projectile for use in shore bombardment training.

Two candidate projectiles were evaluated. One was designed by the Naval Weapons Laboratory, Dahlgren, Virginia, and the other by the Naval Ammunition Depot, Crane, Indiana. The test involved firing of both candidate rounds and standard high-explosive rounds to compare their ballistic and terminal performance.

DLP provided instrumentation and equipment funds of \$41,000 for these tests from the fiscal year 1972 RDT&E 6.5 program. We believe that these funds should not have been used for tests to select a projectile design for final production and service use. DLP officials agreed with this; however, they could not identify what RDT&E funds should have been used.

APPENDIX II

NAVAL UNDERWATER SYSTEMS CENTER

Diver support boat

Test and evaluation work at the Naval Underwater Systems Center (NUSC) requires the availability of a boat to support hard-hat divers who retrieve weapons that sink after test firing and who service range tracking hydrophones.

In June 1970, NUSC's diver support boat, the YDT-4 (yard diving tender), was stricken from the Naval Vessel Register because of its unsatisfactory condition. NUSC asked the Chief of Naval Operations whether a 100-foot Navy-owned torpedo weapon retriever was available for use as a YDT and was told that none was. NUSC then suggested that a new twin-hulled craft be constructed for \$300,000 but was told that this could not be authorized.

NUSC subsequently concluded that a landing craft, available from Naval Ship Systems Command (NSSC), could be converted to a diver tender and in December 1970 requested the Chief of Naval Material to fund a \$200,000 conversion. On March 2, 1971, the conversion was approved and DLP provided \$200,000 of fiscal year 1971 RDT&E research equipment funds for that purpose.

NUSC later decided that a new vessel would be more suitable than a converted landing craft and requested the Chief of Naval Material to approve the acquisition of a new 74-foot steel trawler and to reallocate the \$200,000 for that purpose.

On May 5, 1971, the Chief of Naval Material concurred and requested NSSC to review the basic request and assist NUSC in the acquisition. On May 12, 1971, NSSC approved the acquisition of the new 74-foot trawler to replace the YDT-4.

A contract was awarded in May 1972 to construct a 74-foot, all-welded, steel hull workboat. The contract, with amendments, totaled \$209,476. In addition, Government-furnished equipment valued at \$114,700 was installed bringing the total value of the boat to \$324,176. We were unable to determine the source of funds for the Government-furnished equipment.

Fiscal year 1971 funds originally authorized expired before the specifications and contract were written in May 1972. To retain these funds, NUSC used them to procure unrelated items and used the fiscal year 1972 funds for these items to procure the boat. Funds actually used were:

<u>Fiscal</u> <u>year</u>	<u>Type</u>	<u>Program</u> <u>element</u>	<u>Amount</u>
1972	RDT&E research equipment	65801	\$164,594
1972	RDT&E range instrumentation	65801	36,000
1973	RDT&E range instrumentation	65851	2,768
1973	Navy industrial fund overhead	-	<u>6,114</u>
	Total		209,476
	Government-furnished equipment		<u>114,700</u>
	Total		<u>\$324,176</u>

DLP officials commented that using RDT&E funds seemed appropriate, as the boat was (1) to be dedicated exclusively to RDT&E support and (2) not intended to join the regular Navy fleet. They noted NSSC is normally involved with boat procurement and the NUSC proposal for procurement was routed to them for review and assistance. Approval by NSSC, DLP officials said, confirmed their rationale that use of RDT&E funds was appropriate.

However, for expenses necessary for constructing, acquiring, and converting vessels, the Navy generally requests authorization and appropriation of funds under its Shipbuilding and Conversion, Navy budget. Budget Activity Number 5, Auxiliaries and Craft, of the Shipbuilding and Conversion, Navy, budget includes requests for constructing and converting auxiliary ships and various service and landing craft.

The Navy also requests funds for various small boats under Budget Activity Number 1, Ships Support Equipment, of the Other Procurement, Navy, appropriation. For example, the fiscal year 1973 budget included requests for \$3.6 million for 128 boats ranging from 14-foot punts at \$1,000 each to 65-foot patrol craft at \$300,000 each. The 1974 request included similar items.

We believe the 74-foot diver tender should have been included in either the Shipbuilding and Conversion, Navy, or Other Procurement, Navy, budget requests and purchased with funds from one of these appropriations. NUSC officials said that this boat probably should have been procured with Shipbuilding and Conversion, Navy, funds.