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United States Coast Guard

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COMDTNOTE 7044
JUL 17 2001
CANCELLED: JUL 16 2002

COMMANDANT NOTICE 7044

Subj: CH-1 TO RESEARCH, DEVELOPMENT, TEST AND EVALUATION (RDT&E) APPROPRIATION; PROCEDURES FOR OBTAINING SERVICES AND APPROPRIATION DEFINITION, COMDTINST 7044.1A

1. PURPOSE. This Notice publishes changes to Research, Development, Test and Evaluation (RDT&E) Appropriation; Procedures For Obtaining Services and Appropriation Definition, COMDTINST 7044.1A.
2. ACTION. Area and district commanders; commanders of maintenance and logistics commands; commanding officers of Headquarters units; and assistant commandants for directorates shall ensure the contents of this Instruction are considered when accessing RDT&E services.
3. DIRECTIVES AFFECTED. None.
4. SUMMARY OF CHANGES. Correction to Commandant (G-CIR) intranet address cited in Enclosure (2); addition of Enclosure (4), which describes the functions and membership of the various program management boards and councils of the Research and Development (R&D) Program.

5. PROCEDURE.

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| <p>a. <u>Remove and discard:</u>
Enclosure (2)</p> | <p><u>Insert:</u>
Enclosure (2), CH-1</p> |
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Enclosure (4) pages 1-2, CH-1

V. S. CREA
Director of Information and Technology

Encl: (1) CH-1 to Research, Development, Test And Evaluation (RDT&E) Appropriation; Procedures For Obtaining Services and Appropriation Definition, COMDTINST 7044.1A

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COMDTINST 7044.1A
21 September 2000

COMMANDANT INSTRUCTION 7044.1A

Subj: RESEARCH, DEVELOPMENT, TEST AND EVALUATION (RDT&E)
APPROPRIATION; PROCEDURES FOR OBTAINING SERVICES AND
APPROPRIATION DEFINITION

1. PURPOSE. This Instruction describes the function of the Coast Guard Research and Development Program; provides an overview of the processes the R&D Program uses for making investment decisions; outlines the procedures for accessing RDT&E services; and describes authorized uses of the Research, Development, Test and Evaluation (RDT&E) appropriation.
2. ACTION. Area and district commanders; commanders of maintenance and logistics commands; commanding officers of Headquarters units; and assistant commandants for directorates shall ensure the contents of this Instruction are considered when accessing RDT&E services.
3. DIRECTIVES AFFECTED.
 - a. The information relating to the RDT&E appropriation will be incorporated into a future change to the Financial Resource Management Manual (FRMM), COMDTINST M7100.3 (series).
 - b. Obtaining and Coordinating Research, Development, Test and Evaluation (RDT&E) Services, HQINST 5401.6, 18 SEP 90, is cancelled.
 - c. Research, Development, Test and Evaluation (RDT&E) Appropriation Definition and Use, COMDTINST 7044.1, 10 AUG 94, is cancelled.
4. DISCUSSION.
 - a. The Commandant has declared his intent to exploit emerging technologies to move toward the vision of Coast Guard 2020. Attaining this vision requires appropriate integration of technology as part of the solutions that will close gaps in the performance of Coast Guard operations and missions. The R&D Program is adapting two of the best practices that have helped successful R&D programs maximize their return on investment. The first uses an investment portfolio process to concentrate R&D activities on significant performance gaps. The second, the New Product Gating Process (NPG) (enclosure [1]) is based upon industry Best Practices and is aimed at helping both the R&D Program and the entire Coast Guard make better decisions about the products we develop and use. These improvements are designed to complement the Coast Guard's newly emerging planning process and will allow us to integrate our R&D efforts within the context of an overall CG investment strategy. The success of the NPG process depends on the involvement of all key stakeholders throughout the product lifecycle; their participation is essential to the timely delivery of quality products. Customers access the R&D Program through an Idea Submission (enclosure [2]), which provides valuable information about customer needs and requirements, and feeds ideas into the NPG process.

COMDTINST 7044.1A

- b. The RDT&E Appropriation was established and authorized by Congress as a specific appropriation for research, development, test, and evaluation of technologies, materials, and human factors directly relating to improving the performance of the Coast Guard's missions. It is important to be able to distinguish between RDT&E and other more general appropriations because the RDT&E appropriation is a specific appropriation. Federal Appropriations Law specifies that if a federal agency has a specific appropriation (such as RDT&E for a particular budget item and also has a general Appropriation (such as OE) which is broad enough to cover the same budget item, the specific appropriation must be used exclusively. Further, when two appropriations are available to fund a particular budget item (e.g. RDT&E and AC&I), neither of which specifies the item in question, the agency may elect which appropriation it wishes to use to fund that item. However, once it has made that election and has used the selected appropriation to fund that item, it cannot change its election or use the other appropriation to fund the same item in the future. Understanding both the nature and limits of the RDT&E appropriation is essential to make prudent technology investment decisions. To ensure proper use of RDT&E funds, a description of the function of the Research and Development (R&D) Program and definitions of research, development, testing and evaluation are provided in enclosure (3).
5. FUNCTION OF THE COAST GUARD R&D PROGRAM. The R&D Program's sole responsibility is to improve the Coast Guard's performance by leveraging technology through partnerships within the Coast Guard and within the research community, by keeping the Coast Guard advised of high potential science and technology related opportunities, and by delivering quality, well-targeted research and development products.
6. PROCESS FOR THE SELECTION OF RDT&E WORK. Enclosure (1) is an overview of the New Product Gating (NPG) process that is used for the selection, continuation and implementation/handoff of projects funded from the RDT&E appropriation.
7. ACCESSING RDT&E SERVICES. Enclosure (2) outlines the procedures for obtaining RDT&E services. The previously-used Request for R&D Support has been replaced by an Idea Submission form. The Coast Guard Intranet address to a sample of this form is also provided. Additionally, Appendix D of each Headquarters directorate's Business Plan outlines particular R&D requirements.
8. AUTHORIZED USE OF RDT&E FUNDS. RDT&E funds may only be used for activities included in one or more of the five categories listed in Enclosure (3).

V. S. CREA
Director of Information and Technology

- Encl.: (1) New Product Gating (NPG) Process
(2) Procedures for Obtaining RDT&E Services
(3) Authorized Uses of RDT&E Funds

Enclosure (1) to COMDTINST 7044.1A

NEW PRODUCT GATING (NPG) PROCESS

The R&D Program has recently adopted the New Product Gating (NPG) process, a systematic stage-gate process for the selection, execution and implementation of its products. The NPG process is based on industry best practices and is aimed at helping both the R&D Program and the entire Coast Guard make better decisions about the products we develop and use. The NPG process shown below is a five-stage process covering R&D involvement in a product's lifecycle from conception through implementation. Although this is a process used by the R&D Program for new product development, active involvement by R&D customers, support program managers and decision-makers at all levels is needed to allow this process to deliver the maximum benefit for the Coast Guard. Implementation costs are ultimately borne by the customers and support program managers; their commitment is therefore assessed at each successive gate.

Each NPG stage is designed to gather the information needed to move the product to the next decision point. A go/kill decision gate precedes each stage. Each gate has two parts: an evaluation of the product against pre-defined criteria, and an evaluation of the product's merits against those of the other R&D products in progress. Gate criteria include (but are not limited to): strategic policy alignment; technical feasibility and risk; availability of necessary expertise; value to the Coast Guard; **strength of customer and stakeholder commitment**; and likelihood of CG acceptance and implementation. Use of the NPG process ensures that the portfolio of R&D product development efforts is systematically evaluated and judged to provide the best return for the Coast Guard's R&D investment.

The foldout diagram on the next page describes the Coast Guard R&D Program's NPG Process in detail.

**USCG Office of Research, Development and Technology Management
New Product Gating Process**

	Concept Formulation		Business Case Development		Project Execution		Implementation		
	STAGE 1		STAGE 2		STAGE 3		STAGE 4		
Process Diagram									
Process Description	<p>Ongoing, proactive phase where product ideas from inside and outside of the R&D Program are generated and prepared for screening at Gate 1. Gate 1 evaluates ideas in terms of technical feasibility, strategic alignment & value to the CG.</p> <ol style="list-style-type: none"> Idea translated to a Coast Guard need/investment idea <ol style="list-style-type: none"> Demand Pull: Formal Idea Submission, LEAP, Select Project. Technology Push: Idea from win R&D Program. Appropriation Use Screening Panel: If idea doesn't qualify for RDT&E funding (see Encl. (9)), idea is forwarded to appropriate PM/SM for evaluation, originator notified. Proposed effort entered into New Start evaluation process and into RADVIEW database. If proposal completes successfully, allocate BY-2 funds (i.e., current year) for Preliminary Investigation (PI). Respond to originator within 30 days. <p>*Guidance for ideas also comes from directorate Business Plans (esp. Appx D: R&D Requirements), DOT&N&C Plans, CG IT Plan, budget information, GPRRA goals/guidance, CG Strategic Plan, Agency Capital Plan, information on CG Major Acquisitions, C&IS/JO&ATP, Regional Strategic Assessments, and congressional guidance/mandates.</p>		<p>Quick scoping of the product to determine its technical merit and potential value to the CG. Includes preliminary market, technical and economic assessments. Gate 2 is a more rigorous evaluation of implementation potential and "market" attractiveness, and a closer look at technical feasibility, goal alignment and value to the CG.</p> <ol style="list-style-type: none"> Determine Go/No Go criteria for Gate 2. Develop proposal for R&D effort. Perform only enough preliminary investigation to negotiate Criteria. Begin dialogue with all stakeholders, i.e. Program & Support Managers, intended end-users and any others. 		<p>Detailed investigation including user needs/wants study, detailed market analysis, concept testing, detailed technical appraisal and detailed economic analysis. This Stage defines the product's attributes and verifies its attractiveness prior to significant commitment of resources in the development stage. Gate 3 is the last "kill point" prior to product development, and criteria are thus more exacting: must be high priority; have demonstrable CG value; be well-planned & defined; have key stakeholder support; and have high implementation likelihood.</p> <ol style="list-style-type: none"> Sponsor, Tentative Support Manager(s) & R&D Pgm together build business case. Business Case presented to PM, PD, IB, or SMT as appropriate, depending on scope (risk, cost) and any other relevant factors. Business case outcomes: <ol style="list-style-type: none"> Approved, Go Now: Implementation resources provided. Approved, Continue R&D. Disapproved, Stop R&D. If Go, establish Matrix Product Team. 		<p>Emphasizes technical work, but market analysis & customer feedback continue, with frequent "reality checks" as product takes shape. Detailed launch programs and production & operations plans are developed, & financial & legal analyses are updated. Gate 4 is a post-development re-check of product's continued desirability, quality of work, and conformity to the original Gate 3 definition.</p> <ol style="list-style-type: none"> Sponsor, R&D Program, Support Managers determine continuation criteria. R&D executes project IAW continuation criteria. Periodic reviews by sponsor, support manager, and R&D program. Has RP for implementation or acquisition been submitted? 		<p>Tests and validates entire project: the product itself, CG implementation process, customer acceptance, and economic considerations. Gate 5 opens the door to full CG implementation, and is the final point at which the product can be killed. Criteria focus on quality of efforts to date, appropriateness of implementation plans, and financial viability of the product.</p> <ol style="list-style-type: none"> Sponsor, support manager, and R&D Program determine delivery criteria and sponsors readiness for implementation.
Gate Decision Makers	R&D Center Technical Director for PIs ≤ \$5K. R&D Program Manager for PIs > \$5K.		R&D Center Technical Director and R&D PM Technical Advisor consulting w/PMs and SMs and originator and others as needed.		Ranges from PMs (R&D & other) to Resource Group, depending on scope of follow-on funding requirements.		R&D Program Manager in consultation with PM, SM & other stakeholders.	R&D Program Manager in consultation with PM, SM & other stakeholders.	
Resources	<ol style="list-style-type: none"> R&D Staff Time. Originator's PM/SM staff time. RDT&E Funds (BY-2). 		<ol style="list-style-type: none"> RDT&E Funds (BY-2) supplemented by BY-1 RDT&E Funds if needed. R&D Staff Time. PM & SM Staff Time. 		<ol style="list-style-type: none"> RDT&E Funds (BY-2) supplemented by BY-1 and BY RDT&E Funds if needed. R&D Staff Time. PM & SM Staff Time. 		<ol style="list-style-type: none"> BY and Follow-on RDT&E Funds. R&D Staff Time. PM & SM Staff Time. 	<ol style="list-style-type: none"> BY+1 and later RDT&E Funds. R&D Staff Time. 	
Comments	Can occur at anytime. Idea submissions are independent events. Funding for PIs is BY-2 and comes from the RDT&E "Technology Assessment Budget Sheet."		RDT&E Funds BY-2 and BY-1 funds are provided for on the RDT&E "Technology Assessment" Budget Sheet.		<p>NOTE: Approval obtained at this gate is planning approval, NOT budget approval. In fact, Stage 3 (Development) - done with RDT&E) could take 2 or more years. This means a BY Resource Proposal would likely not reflect AC&IOE follow-on for this R&D product.</p>		<ol style="list-style-type: none"> Start: Approval of Business Case. End: Failure of Continuation Board criteria at any review OR successful completion of criteria. Request for Implementation/Acquisition resources submitted (RP(s)). 		

NOTE: "BY" = budget year; "BY-2" = current year; "PM" = Program Manager, "SM" = Support Manager, "PD" = Program Director, "IB" = Investment Board, "SMT" = Senior Management Team

PROCEDURE FOR OBTAINING RDT&E SERVICES

The R&D Program has recently implemented simplified, more responsive procedures for suggesting/requesting and selecting projects. The goal of these new procedures is to *encourage potential customers from throughout the Coast Guard to submit product ideas or request R&D assistance at any time*. Appendix D to directorate Business Plans (**R&D Requirements**) will continue to be a source (along with the rest of the directorate's Business Plan) for potential RDT&E investments. Other planning documents used include: DOT/NSTC Plans; The Coast Guard IT Plan; budget information; GPRA goals/guidance; the CG Strategic Plan; the Agency Capital Plan; information on CG Major Acquisitions; the C4ISR/OATP; Regional Strategic Assessments; and congressional guidance/mandates (Q&As, directives, etc.).

R&D Idea/Request Submission Procedures:

1. All Coast Guard personnel may submit requests for R&D assistance or R&D product ideas at any time using the Idea Submission format provided below. The idea or request should be submitted to the R&D Program Manager (G-CIR) with copies to the CO, R&D Center and the submitter's chain of command as necessary.¹ The submission may take any written form (e-mail, letter, memo, etc) that is convenient for the submitter and acceptable to the submitter's chain of command.
2. Receipt of the submission prompts a New Product Gating (NPG) Gate 1 screening. The NPG screening process is described and explained in Enclosure (1) to this directive.
3. G-CIR will transmit the Gate 1 screening results to the submitter by the most expeditious means available (e-mail when possible). Feedback is typically provided within one month of the submission's receipt. Work on submissions that successfully pass the initial (Gate 1) screening begins immediately.

Idea Submission Format: (An example can be viewed on the Coast Guard Web at:

<<http://cgweb.comdt.uscg.mil/g-sir/G-CIR/ReqFormatNEW.doc>>)

1. **Problem Statement:** A clear, concise statement of the problem or need requiring R&D support. Specify the desired/recommended performance improvement, and the related specific mission requirement. (This will be reviewed and refined at each stage of the NPG process.)
2. **Idea:** A brief description of the technology, product, investigation, model, etc (this portion is required only if the submitter is proposing a solution to the problem or need).
3. **Benefit:** A description of the expected impact on the Coast Guard if the problem was solved and/or the proposed idea was successfully developed and implemented.

¹ Formal review by submitter's Program Manager occurs at NPG Gate 2.

AUTHORIZED USES OF RDT&E FUNDS

RDT&E funds may be used for the following specifically-defined purposes:

1. RDT&E TECHNOLOGY BASE BUILDING involves technology scans, forecasts or assessments to produce a base of agency knowledge to support applied R&D efforts 5-15 years hence. This category facilitates the R&D Program's obligation to systematically develop and maintain knowledge that can bring the latest technological advances to the attention of sponsors. All such efforts must align with the Coast Guard's R&D Strategy and goals.
2. RDT&E RESEARCH is systematic study and experimentation directed toward scientific or engineering phenomena/principles as they relate to addressing Coast Guard needs. It provides fundamental knowledge for the solution of identified Coast Guard problems. It also augments the knowledge base for subsequent exploratory and advanced development of Coast Guard-related technologies, and of new and improved functional capabilities for performing Coast Guard missions. EXAMPLE: Determining the physiological effects leading to small boat crew fatigue.
3. RDT&E EXPLORATORY DEVELOPMENT is the systematic use of the knowledge of scientific or engineering phenomena/principles in the initial stages of producing or adapting technology new to an intended Coast Guard application; it is performed to establish some confidence that the proposed technology can address the pertinent mission requirement. Its distinguishing characteristic is the goal of evaluating and demonstrating the feasibility and practicality of the technology in meeting the mission requirement. Specific activities include analytical modeling, simulation, or the minor-scale production of methods, procedures or systems. The effort produces relatively low cost, rudimentary or "proof of concept" systems, methods, or procedures to support decisions as to whether the technology shows sufficient promise to warrant the additional cost of further, advanced development. EXAMPLE: Exploring a new lamp technology for short-range aids that would produce the same amount of light at lower power requirements.
4. RDT&E ADVANCED DEVELOPMENT begins once the proposed technology's feasibility and practicality have been sufficiently established to warrant further development for experimental use within an actual or simulated operational environment. Specific activities include extensions or upgrades of the analytical modeling or simulation or the fuller production of methods, procedures or system hardware/software. The distinguishing characteristic of this category is the goal of further evaluating and demonstrating technology for test or experimentation, rather than producing technology designed and engineered for eventual service use (OE/AC&I). RDT&E advanced development is a follow-on activity to exploratory development. In advanced development, the level of effort is established so that at completion of this effort, uncertainty regarding the functional capability of the new technology has been eliminated. EXAMPLE: Adaptation of solar power technology to the rigors of the marine environment typical to lighted aids to navigation, especially buoys.

Enclosure (3) to COMDTINST 7044.1A

5. RDT&E TEST AND EVALUATION (T&E) is performed to confirm the results of the research and/or development stages of projects and to validate that the effects on the Coast Guard will be those desired. However, rather than comprising a separate category of research and development, T&E is an inherent part of all of the categories defined above; it is a logical outflow of the work performed in each. Research T&E involves the systematically planned establishment of conditions from which data can be collected, assembled, and analyzed. Exploratory Development T&E involves the collection and analysis of data to determine feasibility and practicality. Advanced Development T&E involves the collection and analysis of data to establish suitability for Coast Guard uses.

RESEARCH AND DEVELOPMENT PROGRAM MANAGEMENT

Several governing and administrative bodies have been established to provide direction, guidance and oversight for the Research and Development (R&D) Program. The following paragraphs describe the responsibilities, functions and membership of each:

1. **R&D Investment Board** - The R&D Investment Board (RDIB) provides senior management oversight to the work being carried out by the R&D Program. The RDIB meets annually in the Sept-Oct timeframe to approve the R&D Strategic Plan. The membership does not change. The RDIB will brief the CG Investment Board annually regarding R&D Program strategy and significant projects requiring OE/AC&I implementation/follow-on funding.

Members: R&D Program Director (G-CIT - Chair)

Planning/Resource Directors from:

Acquisition (G-A-1)

Marine Safety and Environmental Protection (G-MRP)

Operations (G-OR)

Systems (G-SR)

Human Resources (G-WR)

Office of Plans, Policy and Evaluation (G-CPP) representative.

Non-voting members: R&D Program Manager (G-CIR)

CO, R&D Center

R&D Center Technical Director

Office of R&D Technical/Policy Advisor

Office of Programs (G-CPA) R&D Program Reviewer.

2. **R&D Management Board** - The R&D Management Board (RDMB) meets quarterly to set and review the Program's strategic direction, goals, and overall business strategy, including the identification of broad investment areas that guide R&D Program investment decisions over a 3-5 year timeframe. Their decisions are based upon R&D customer feedback and analysis of the Regional Strategic Assessments, Headquarters Business Plans, the Agency Capital Plan, the Coast Guard Strategic Direction and the Annual Performance Plan. They also provide the RDIB with validation and/or recommended changes to the existing R&D Program Strategy.

Members: R&D Program Manager (G-CIR - Chair)

R&D Program Technical/Policy Advisor

R&D Program Resource Advisor

R&D Center Commanding Officer

R&D Center Technical Director

R&D Center Resource Director

3. **The Portfolio Management Council** - The Portfolio Management Council (PMC) meets monthly and is responsible for executing the RDMB's strategy. This is done by focusing the Program's resources into product lines within each Investment Area, establishing desired portfolio characteristics including a range of risk, projected return on investment, time to market, a mix of technology push vs. pull, etc., and by setting resource allocation targets. The PMC establishes criteria and methodologies for making investment

decisions and distributes these criteria to R&D Program staff, the Resource Allocation Council, customers, and other stakeholders. The PMC is charged with making high-cost Gate 2 and all Gate 3 and beyond investment decisions and with managing the R&D Program's portfolio to achieve the goals set by the RDMB.

Members: R&D Center Technical Director (Chair)
Office of R&D Technical/Policy Advisor
R&D Center Resource Director
R&D Center Management Analyst

4. **Resource Allocation Council** - The Resource Allocation Council (RAC) meets on an *ad hoc* basis, but within 2 weeks of receiving recommendations from the New Product Council (NPC). The RAC approves and allocates resources to New Product Gating (NPG) process Gate 1 submissions and Gate 2 approvals, and provides funding status to the Portfolio Management Council for subsequent Gates.

Members: R&D Center Comptroller (Chair)
R&D Center Technical Division Chiefs (3)

5. **New Product Council** - The New Product Council (NPC), made up of five senior technical staff, meets *ad hoc* (within 30 days of Gate 1 submissions) to screen all ideas and products as they pass through NPG Gates 1 and 2 to ensure they meet established criteria. The NPC has "kill" authority at these early gates, and provides "go/kill" decisions and resource recommendations to the Resource Allocation Council (RAC), as well as Investment Area change recommendations to the PMC. The R&D Program Manager (G-CIR) appoints members during August for a term of one year, to change each fiscal year.

Members: Two Headquarters R&D Program Coordinators
Three R&D Center Program Area Managers