

CERD-M

Regulation
No. 70-3-9

31 March 1989

Research and Development

MANAGEMENT AND EXECUTION OF THE US ARMY CORPS OF ENGINEERS
MILITARY RESEARCH, DEVELOPMENT, TEST & EVALUATION (RDT&E) PROGRAM

1. Purpose. This regulation prescribes the management and execution responsibilities and procedures (including planning, programming, execution, documentation and review) for the US Army Corps of Engineers (USACE) Research & Development (R&D) program funded by Army Research, Development, Test, and Evaluation (RDT&E) appropriations as required by ER 70-1-5.

2. Applicability. This regulation is applicable to all HQ USACE elements, OCE, all USACE R&D Laboratories, and all USACE field operating activities (FOA).

3. References:

- a. AR 70-1
- b. AR 70-5
- c. AR 70-9
- d. AR 70-10
- e. AR 310-3
- f. ER 70-1-5
- g. Mil Std 847A

4. Background.

a. The Directorate of Research and Development (DRD) provides Department of Army (DA) staff level management and budget defense for a large, direct-funded and reimbursable military R&D program. This program supports a wide spectrum of the Army's mission, to include Military Engineering, Base Support, and Environmental Quality. The program is executed at five facilities of the Corps of Engineers: the Construction Engineering Research Laboratory, the Cold Regions Research and Engineering Laboratory, the Engineer Topographic Laboratories, the Waterways Experiment Station, and the Toxic and Hazardous Materials Agency; the Army Materiel Command's Atmospheric Sciences Laboratory; and the Surgeon General's Medical and Bioengineering Research and Development Laboratory. DRD also provides staff supervision for the Corps Laboratories.

This regulation supersedes ER 70-1-9, 28 November 1980; ER 70-3-8, 5 April 1988; and the portions of ER 70-1-11, 15 June 1981 that apply to the Military RDT&E program; and cancels Eng Forms 4745-R, May 81, and 4767-R, Oct 81.

b. ER 70-1-5 defines the policy by which USACE R&D is managed, and establishes the Assistant Director of Research and Development (Military Programs), CERD-M, as the overall manager of the Military RDT&E program. This Regulation specifies the requirements, responsibilities and procedures used to manage and execute the Military RDT&E program in accordance with the policy in ER 70-1-5.

5. Definitions. See Appendix A.

6. Military RDT&E Program. The USACE Military RDT&E program is divided into two major Program Areas: 1) Support to the Army in the Field (Military Engineering) and 2) Support to the Army in Garrison (Base Support and Environmental Quality). Each program supports different Proponents and customers as described below.

a. The Military Engineering portion of the Military RDT&E Program is conducted in support of the Army in the Field and covers environmental sciences, combat operations and echelons above corps support. The major Proponent is the U. S. Army Engineer Center and School; other Proponents include HQ Training and Doctrine Command (TRADOC), other TRADOC centers and schools, Commanders in Chiefs (CINCs), Deputy Chief of Staff for Intelligence (DCSI), Deputy Chief of Staff of Logistics (DCSLOG), Army Materiel Command activities, other MACOMs and other Army organizations. Functional Area Monitors are provided by the Military Engineering and Topographic Division (DAEN-ZCM) of the Office of the Chief of Engineers.

b. The Base Support and Environmental Quality portion of the Military RDT&E program supports the Army's Military Construction and Operation and Maintenance programs. It supports the USACE districts and divisions, the MACOMs, and the installations' Directorate of Engineering and Housing (DEH). The major Proponents are the Engineering and Construction (E&C) Directorate, and the Facilities Engineering (CEHSC-F) and Environmental (CEHSC-E) Divisions of the U. S. Army Engineering and Housing Support Center (CEHSC), and the Installation Planning Division (ZCI) of the Office of the Assistant Chief of Engineers (OACE). The Technical Monitors are provided by the Proponent.

7. Management Responsibilities. The responsibility for management of the R&D program rests with the Directorate of Research and Development (DRD), with support from the Proponents, and the performing Laboratories. For management purposes, the R&D program cycle is broken into three major R&D stages: 1) program development, 2) program execution, and 3) technology transfer. The actual responsibilities depend on the stage of the R&D cycle and the RDT&E program as discussed below. The functions of the organizations are further described in Appendix B.

31 Mar 89

a. Program Development. Program development is subdivided into six steps: 1) Deficiency identification, 2) Deficiency validation, 3) Development of the Long Range Science and Technology (LRS&T) Plan and Execution Year Program, 4) Proponent review and prioritization, 5) Program Guidance and Approval, and 6) Program Objective Memorandum (POM) submission and budget defense. The management responsibilities for these six steps are defined below.

(1) Problem Definition. Any member of the Army family, including the USACE Laboratories, can identify and submit problems or deficiencies for potential inclusion into the RDT&E requirements system. Problems or deficiencies are submitted to the appropriate Proponent or to CERD-M who will submit it to the appropriate Proponent. Military engineering deficiencies, for which TRADOC HQ is the Proponent, will be submitted to the applicable TRADOC school for validation and prioritization. Deficiencies in the Base Support and Environmental Quality mission area and the Military Engineering mission area not addressed by TRADOC Concept Based Requirement System (CBRS) are validated through Mission Area Deficiency Statements (MADS). MADS can be submitted at any time to either the Proponent or to CERD-M in the format shown in Appendix C.

(2) Deficiency Validation. Although problems or deficiencies can be submitted by anyone, they can only be validated by the Proponent. Only validated deficiencies can be used as a requirement for the Military RDT&E program. For the Base Support and Environmental Quality programs, the approved deficiencies are published as MADS. For the Military Engineering R&D program, the deficiencies are published in Mission Area Development Plans (MADP), Battlefield Development Plans (BDPs), or as MADS. CERD-M notifies the Laboratories of new MADS as they are validated and publishes the complete book of validated MADS in June of each year. Approved and prioritized MADPs and BDP deficiencies are published by TRADOC.

(3) Development of LRS&T Plan and Execution Year Program. DRD and the Corps Laboratories are responsible for developing an R&D program to provide the products and systems which will assist in eliminating the validated deficiencies. During the fourth quarter of the fiscal year, the Laboratories develop their Military RDT&E program, which consists of the execution year program for the next fiscal year and the Long Range Science and Technology (LRS&T) Plan, which covers the next iteration of the Program Objective Memorandum (POM) Cycle. The Laboratories develop their program in response to CERD-M guidance, which includes the program priorities, and the validated deficiencies. In developing their program they work closely with the Proponents to insure that the proposed work is responsive to the deficiencies and the output is appropriate for

technology transfer. The 6.2 and 6.3A Military RDT&E Programs must be supported by validated deficiencies with the exception of the portion of the 6.2 program funded under the Laboratory Commander's initiative. Commander's initiative supports high priority but previously unidentified deficiencies. The portion of the program which can be funded under Commander's initiative is established each year by the Director of DRD and is included in the guidance letter for assembling the program. The 6.1 program is developed to produce those basic R&D capabilities needed to support the 6.2 and 6.3A RDT&E programs as opposed to solving specific deficiencies. Documentation requirements for the Military R&D program are described in paragraph 8.

(4) Proponent Review and Prioritization. In the spring of each year, the Proponents for the R&D programs review the LRS&T Plan for responsiveness to the validated deficiencies, and for applicability of the proposed products. Based on this review and the mission requirements, the Proponents give their criticality ratings and work unit priorities for the portions of the R&D program for which they are the Proponent.

(5) Program Guidance and Approval. The Proponents' comments and ratings are used by DRD to develop the guidance letter to the Laboratories for the development of the next year's execution program and the next iteration of the Long Range Science & Technology (LRS&T) Plan (see 7a(3) above). The Director of DRD, with advice from the Proponents, is the final approval authority for the execution year program. The Director of DRD also approves the new LRS&T Plan, which is reviewed at the next spring's Proponent review meeting.

(6) POM Submission and Budget Defense. DRD, with support from the Proponents, is responsible for submitting the USACE Military RDT&E program to the Office of the Assistant Secretary of the Army for Research, Development, and Acquisition (ASARDA). DRD is also responsible for supporting ASARDA in defense of these programs in the Army Planning, Programming, Budgeting, and Execution System (PPBES) process.

b. Program Execution. DRD has management responsibility for the execution of the approved R&D program. The performing Laboratories have responsibility for the execution of the RDT&E program. The Proponent is responsible for monitoring the RDT&E program during execution to assure conformance to the approved R&D plan, coordinating product completion with tech transfer activities, and assuring that the final research product can be transferred. The program execution stage ends with the development and pilot testing of the approved R&D products.

31 Mar 89

(1) R&D Products. The R&D product is the new or improved capability the Army is getting by funding this work and not the technical report documenting the research. It is the R&D performing element's responsibility to insure that the final product is in a form which can be easily transferred to the user. The Proponents are responsible for approval of the form of the final product. The form of the final product will be described in the Technology Transfer Plan (TTP).

(2) Pilot Test. It is critical that R&D products be tested under actual applications. The completion of the program execution stage is the pilot test conducted by the performing Laboratory in an actual or closely simulated application. Pilot tests will be funded by the R&D program and monitored by the Proponent. The Laboratories will submit a list of pilot tests for the coming year as part of their input to the Research and Development Management Information System (RDMIS). Pilot test plans will be developed in conjunction with the Proponent and a copy sent to CERD-M. Planning for the pilot test will be included in the TTP.

c. Technology Transfer. The Proponent has management responsibility for technology transfer. Although technology transfer is formally the final stage of the R&D process, planning for technology transfer must be integrated throughout the R&D process. This planning is jointly the responsibility of the Laboratory and the Proponent. Technology transfer consists of the Operational tests of the R&D products, the development of Technology Transfer Documentation, and the final implementation of the products. The planning for Technology Transfer is documented in the Technology Transfer Plan (TTP) as described in paragraph 8.

(1) Operational Tests. It is critical that R&D products be tested under actual application by the ultimate users of the technology. Operational tests will be conducted in accordance with a test procedure approved by the Proponent to insure suitability of the product/system for technology transfer. These tests can be conducted under 6.3A funding or funds supplied by the Proponent. Planning for the operational test will be included in the TTP.

(2) Technology Transfer Documentation and Implementation. In general, in order to implement the final product from an R&D effort, documentation such as technical manuals, guide specs, users manuals are required for technology transfer. Technical reports and test reports are generally not considered technology transfer documents. The technology transfer documentation will be specified in the TTP. The production of the technology transfer documentation is the responsibility of the Proponent. In addition to documentation,

user support, training, and feedback evaluation may be needed to complete full implementation. User support, training and evaluation of products is the responsibility of the Proponent. The Laboratories however will fully support the Proponents in these activities. Planning for technology transfer documentation and implementation will be included in the TTP.

8. Program Documentation and Reporting (RCS:DAEN-RD-7). Program documentation is the formal reporting, for management purposes, of the R&D program planning and the execution of the program against that plan. Program documentation is intended for use both inside and outside USACE. This paragraph describes the program documentation for the Military RDT&E program. Program documentation is unclassified but not releasable for public dissemination. Program documentation consists of the following:

(a) Mission Area Deficiency Statements (MADS). The format for submitting deficiencies is contained in Appendix C. CERD-M will publish a list of validated MADS in June of each year.

(b) Research and Development Management Information System (RDMIS). The RDMIS is a microcomputer based management information system used by DRD to manage, monitor and document the Military R&D program. It is DRD's main source of information about the details of military R&D program. The RDMIS is described and documented in the RDMIS users Manual. By 30 June, DRD will send the Laboratories: 1) a guidance letter for developing the next year's RDT&E execution program and the next iteration of the LRS&T plan and 2) a Letter of Instruction (LOI) for inputting the RDMIS data. By 30 September, the Laboratories will submit their RDT&E plan, including both the proposed execution year program and the LRS&T plan, to CERD-M, in RDMIS database format as prescribed in the RDMIS User's Manual and the CERD-M letter of instruction for inputting the RDMIS data. The Laboratories will also submit data needed by DRD for the LRRDAP and budget defense as prescribed in the guidance letter.

(c) Long Range Science and Technology (LRS&T) Plan. CERD-M will edit the RDMIS data input by the Laboratories and publish the LRS&T plan by 31 March. The format for the LRS&T Plan will be specified in the LOI for the RDMIS input.

(d) Execution Year Program Books. By 30 October, CERD-M, using the data in the RDMIS system, will print and distribute to the Proponents, their Technical Monitors and the Laboratories the program books describing the work units funded for the current fiscal year. The format for the Program Books will be specified in the LOI for the RDMIS input.

(e) DD Form 1498. The Laboratories will submit the data for the DD Form 1498 to the Defense Technical Information Center (DTIC) in accordance with AR 70-9.

31 Mar 89

(f) Technology Transfer Plan (TTP). At the initiation of an RDT&E effort, a Technology Transfer Plan (TTP) will be formulated by the R&D Performing Element in coordination with the Proponent to document the technology transfer planning described in paragraph 7c. TTPs can be prepared for an individual product/systems or for a group of mutually supporting product/systems. The TTPs are product or product system oriented and may include the results of mutually supporting work units. Each work unit must reference a TTP. Each work unit in the RDMIS system will reference an existing or proposed TTP. The details for developing the TTP will be included in the LOI for the RDMIS input. The TTP will be updated at appropriate milestones and/or In-Process Reviews (IPRs). Projected Pilot Tests (PT) and Operational Tests (OT) must be included as part of the TTP, and budgeted for by both the R&D Performing Element and the Proponent.

(g) Mid Year Progress Reports. At the end of the first half of the fiscal year, the Laboratories will report their progress for the first two quarters of the execution year by updating the RDMIS database in accordance with guidance supply by CERD-M. The updated database will be submitted to CERD-M by 20 April of each year. CERD-M will use this information to develop and distribute to the Proponents and their Technical Monitors a report on the progress of the RDT&E program for the first half of the fiscal year.

9. In-Process Review (IPR). IPRs constitute reviews of a research and development project conducted at a critical decision point in the research cycle for the purpose of evaluating the status of the project, accomplishing effective coordination for technology transfer, and facilitating proper and timely decisions bearing on the future course of the projects. They will be scheduled in the R&D program plan or called by R&D Performing Elements in accordance with AR 70-1.

a. In-Process Reviews (IPR) with Corps as User.

(1). IPRs should be organized so as to retain the significant elements and objectives set forth in AR 70-1 but are intended to address specific issues as defined by HQ USACE and OCE.

(2). IPRs will be planned, scheduled and chaired by the R&D Performing Element Commander and Director with participation from DRD, other HQ USACE Directorates, OCE, Users, and R&D Performing Element personnel. Upon completion of the IPR, the Commander and Director will prepare a report that will include a record of issues resolved, and recommendations for solutions to unresolved issues.

31 Mar 89

b. Technical Base Program IPRs with TRADOC as User.

(1) IPRs shall be organized to include the objectives and elements set forth in AR 70-1 and AMC/TRADOC Pamphlet 70-2.

(2) IPRs will be planned, scheduled and chaired by the Commander and Director of the R&D Performing Element. The results are jointly approved by Commander and Director of the R&D Performing Element and the senior TRADOC representative to the IPR.

10. Executive Agents. Effective program execution often requires integration of products from two or more Laboratories and extensive coordination with agencies outside of the USACE. To assist DRD in developing and encouraging well coordinated programs, particularly in certain designated high-priority research areas, Executive Agents and Supporting Agents are established. Executive Agent responsibility for selected technology areas will be assigned to Commander/Director of a Laboratory. The Commander/Director of the Laboratory may delegate a member of the senior technical staff to serve as the action officer for the assigned inter-laboratory program. The details of the executive agent program are defined in Appendix D.

FOR THE COMMANDER:



ALBERT J. GENETTI, JR.
Colonel, Corps of Engineers
Chief of Staff

4 Appendixes
A-Definitions
B-Organizational Responsibilities
C-Mission Area Deficiency
Statements (MADS)
D-Executive Agent Program