

**VOLUME 2B, CHAPTER 5: “RESEARCH, DEVELOPMENT, TEST, AND
EVALUATION APPROPRIATIONS”**

SUMMARY OF MAJOR CHANGES

This chapter has been extensively reorganized and should be reviewed in its entirety.

Substantive revisions are denoted by an * symbol preceding the section, paragraph, table, or figure that includes the revision.

Unless otherwise noted, chapters referenced are contained in this volume.

Hyperlinks are denoted by ***bold, italic, blue and underlined font***.

The previous version dated [September 2012](#) is archived.

PARAGRAPH	EXPLANATION OF CHANGE/REVISION	PURPOSE
Overall	Reorganized Chapter 5 to reflect revised PPBES process and to make it easier to read	Revision
0502	Added requirements for preparation of procurement exhibits using Extensible Mark-up Language (XML)	Addition
0502	Added guidance concerning Major Defense Acquisition Programs (MDAPs)/Major Automation Information Systems (MAIS)	Addition
0504	Deleted unused/little used RDT&E exhibits: R-1C, R-5, and Buy and Delivery Schedule	Deletion

Table of Contents

VOLUME 2B, CHAPTER 5: “RESEARCH, DEVELOPMENT, TEST, AND EVALUATION APPROPRIATIONS” 1

0501 GENERAL 3

 050101. Purpose 3

 050102. References 3

 050103. Submission Requirements 3

 050104. Classification 3

 *050105. RDT&E Budget Activities 3

 050106. Establishing RDT&E Program Elements 6

*0502 RDT&E EXHIBIT REQUIREMENTS 6

 050201. Purpose 6

 *050202. Submission Requirements 7

*0503 CONGRESSIONAL JUSTIFIATION/PRESENTATION 8

*0504 RDT&E APPROPRIATION BUDGET EXHIBIT FORMATS 9

 050401. Standardized budget exhibit formats 9

 050402. RDT&E exhibit formats 9

Exhibit R-1: RDT&E Programs 10

Exhibit R-2: RDT&E Budget Item Justification 12

Exhibit R-2a: RDT&E Budget Item Justification (Project) 13

Exhibit R-3: RDT&E Project Cost Analysis 18

Exhibit R-4: RDT&E Schedule Profile 22

Exhibit R-4a: RDT&E Schedule Detail 23

CHAPTER 5**RESEARCH, DEVELOPMENT, TEST, AND EVALUATION APPROPRIATIONS**

0501 GENERAL

050101. Purpose

This chapter provides instructions applicable to budget formulation and congressional justification for Research, Development, Test, and Evaluation (RDT&E) appropriations. Unless otherwise specified, these instructions apply to all RDT&E appropriations and to all budgets.

050102. References

Volume 2A, Chapter 1, Section 010210 provides policies and definitions concerning costs that are to be financed in RDT&E appropriations.

050103. Submission Requirements

A. General guidance on submission requirements is in Volume 2A, Chapter 1. This chapter provides guidance for the preparation of RDT&E appropriation backup material required to support the Budget Estimates Submission (BES) and the President's budget request. Other chapters in the Financial Management Regulation require additional exhibits. The Components will also submit any exhibits required by the Office of Management and Budget (OMB) Circular A-11, Preparation and Submission of Budget Estimates.

B. Military Departments and Defense Agencies will be responsible for clearing the justification material with the Washington Headquarters Services, Directorate for Office of Security Review, prior to transmittal to the OMB, the Office of the Secretary of Defense (OSD), and the congressional committees.

050104. Classification

The budget justification material should be unclassified. All classified material shall be submitted separately. Components must include a R-2 RDT&E Budget Justification exhibit for special access programs (SAPs) that are not labeled as secret. The R-2 exhibits for SAPs must only include funding streams and cite the following justification: "This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress." All other (non-intel and non-SAP) classified funding requests must be identified (i.e., submit a one page R-2 exhibit) within unclassified justification budget materials.

*050105. RDT&E Budget Activities

The RDT&E budget activities are broad categories reflecting different types of RDT&E efforts. The definitions are provided in paragraphs A through G. [The acquisition milestones](#)

identified in the definitions are established by Department of Defense Instruction 5000.02, "Operation of the Defense Acquisition System." Acquisition program developmental criteria and administrative requirements for each milestone are set forth in this instruction.

A. Budget Activity 1, Basic Research. Basic research is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes all scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs. It is farsighted high payoff research that provides the basis for technological progress. Basic research may lead to: (a) subsequent applied research and advanced technology developments in Defense-related technologies, and (b) new and improved military functional capabilities in areas such as communications, detection, tracking, surveillance, propulsion, mobility, guidance and control, navigation, energy conversion, materials and structures, and personnel support. Program elements in this category involve pre-Milestone A efforts.

B. Budget Activity 2, Applied Research. Applied research is systematic study to understand the means to meet a recognized and specific need. It is a systematic expansion and application of knowledge to develop useful materials, devices, and systems or methods. It may be oriented, ultimately, toward the design, development, and improvement of prototypes and new processes to meet general mission area requirements. Applied research may translate promising basic research into solutions for broadly defined military needs, short of system development. This type of effort may vary from systematic mission-directed research beyond that in Budget Activity 1 to sophisticated breadboard hardware, study, programming and planning efforts that establish the initial feasibility and practicality of proposed solutions to technological challenges. It includes studies, investigations, and non-system specific technology efforts. The dominant characteristic is that applied research is directed toward general military needs with a view toward developing and evaluating the feasibility and practicality of proposed solutions and determining their parameters. Applied Research precedes system specific technology investigations or development. Program control of the Applied Research program element is normally exercised by general level of effort. Program elements in this category involve pre-Milestone B efforts, also known as Concept and Technology Development phase tasks, such as concept exploration efforts and paper studies of alternative concepts for meeting a mission need.

C. Budget Activity 3, Advanced Technology Development (ATD). This budget activity includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment. Budget Activity 3 includes concept and technology demonstrations of components and subsystems or system models. The models may be form, fit, and function prototypes or scaled models that serve the same demonstration purpose. The results of this type of effort are proof of technological feasibility and assessment of subsystem and component operability and producibility rather than the development of hardware for service use. Projects in this category have a direct relevance to identified military needs. Advanced Technology Development demonstrates the general military utility or cost reduction potential of technology

when applied to different types of military equipment or techniques. Program elements in this category involve pre-Milestone B efforts, such as system concept demonstration, joint and Service-specific experiments or Technology Demonstrations and generally have Technology Readiness Levels of 4, 5, or 6. (For further discussion on Technology Readiness Levels, see the Assistant Secretary of Defense for Research and Engineering's Technology Readiness Assessment (TRA) Guidance.) Projects in this category do not necessarily lead to subsequent development or procurement phases, but should have the goal of moving out of Science and Technology (S&T) and into the acquisition process within the Future Years Defense Program (FYDP). Upon successful completion of projects that have military utility, the technology should be available for transition.

D. Budget Activity 4, Advanced Component Development and Prototypes (ACD&P). Efforts necessary to evaluate integrated technologies, representative modes, or prototype systems in a high fidelity and realistic operating environment are funded in this budget activity. The ACD&P phase includes system specific efforts that help expedite technology transition from the laboratory to operational use. Emphasis is on proving component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives. Program elements in this category involve efforts prior to Milestone B and are referred to as advanced component development activities and include technology demonstrations. Completion of Technology Readiness Levels 6 and 7 should be achieved for major programs. Program control is exercised at the program and project level. A logical progression of program phases and development and/or production funding must be evident in the FYDP.

E. Budget Activity 5, System Development and Demonstration (SDD). System Development and Demonstration (SDD) programs have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production. This budget activity is characterized by major line item projects, and program control is exercised by review of individual programs and projects. Prototype performance is near or at planned operational system levels. Characteristics of this budget activity involve mature system development, integration, demonstration to support Milestone C decisions, conducting live fire test and evaluation, and initial operational test and evaluation of production representative articles. A logical progression of program phases and development and production funding must be evident in the FYDP consistent with the Department's full funding policy.

F. Budget Activity 6, RDT&E Management Support. This budget activity includes management support for research, development, test, and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test, and evaluation. Test ranges, military construction, maintenance support of laboratories, operation and maintenance of test aircraft and ships, and studies and analyses in support of the RDT&E program are funded in this budget activity. Costs of laboratory personnel, either in-house or contractor operated, would be assigned to appropriate projects or as a line item in the Basic Research, Applied Research, or ATD program areas, as appropriate. Military construction costs directly related to major development programs are included in this budget activity.

G. Budget Activity 7, Operational System Development. This budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year. All items are major line item projects that appear as RDT&E Costs of Weapon System Elements in other programs. Program control is exercised by review of individual projects. Programs in this category involve systems that have received approval for Low Rate Initial Production (LRIP). A logical progression of program phases and development and production funding must be evident in the FYDP, consistent with the Department's full funding policy.

050106. Establishing RDT&E Program Elements

A. The program element is the primary data element in the FYDP and is the major aggregation, at which RDT&E efforts are organized, budgeted, and reviewed. All funding associated with a major system new start must be identified in a unique program element. Requests to establish program elements should be forwarded to Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) for coordination and approval.

B. In general, the coding symbology identifies the RDT&E budget activity for the program element. Program elements in RDT&E budget activities 1 through 6 will have "06" in the first two positions; "06" indicates it is part of Major Force Program 6, Research and Development. The third and fourth position will identify the specific budget activity (e.g., 0602 is an RDT&E budget activity 2 program element). Program elements in RDT&E budget activity 7 reflect the Major Program of the fielded system in the first two positions (e.g., "01" indicates a strategic system).

*0502 RDT&E EXHIBIT REQUIREMENTS

050201. Purpose

This section prescribes instructions for the preparation and submission of RDT&E appropriations budget material to support the BES and the President's budget request. See Volume 2A, Chapter 1, Section 0104, for specific printing requirements.

SUMMARY OF EXHIBIT REQUIREMENTS

	<u>Exhibit</u>	<u>Appropriation</u>
R-1	RDT&E Programs	All
R-2	RDT&E Budget Item Justification	All
R-2a	RDT&E Project Justification	All
R-3	Cost Analysis	All
R-4	RDT&E Program Schedule Profile	All
R-4a	RDT&E Program Schedule Detail	All

*050202. Submission Requirements

* A. Extensible Markup Language (XML) Exhibits. All Components must submit required budget exhibits as PDFs with the source XML file embedded. These PDFs will be generated by one of the following two processes:

1. Submit an XML file to the XML Tools section of the Comptroller XML Exhibits web site, <https://exhibits.dtic.mil/r2/app> (for Components capable of building an XML file from an internal system). The XML files submitted through the XML Tools section must be compliant with the latest RDT&E XML schema, located within the same section of the website; or

2. Create a RDT&E exhibit manually within the “Create New R-2” section of the Comptroller XML Exhibits web site, <https://exhibits.dtic.mil/r2>.

3. The result of either process will be a PDF file with an XML file embedded. All RDT&E exhibit PDFs/XMLs must be assembled into a Justification Book(s) within the same website using one of the Justification Book tools and posted to the SIPRNET website <https://cisweb.ousdc.osd.smil.mil/>

4. Formats and examples of the exhibits are contained in Section 0503.

* B. Each backup book will include an Exhibit R-1, RDT&E Program, two indices of program elements (including R-1 line number, program element title, program element number, and backup book page number), one alphabetically by program element title and on by budget activity and R-1 line number, and specific exhibits for those items covered by the backup book.

C. The exhibits will be aggregated in the following order for each R-1 line item, as applicable to that line item and submitted in R-1 line item order.

Arrangement of Exhibits – General

- R-1 RDT&E Programs
- R-2 RDT&E Budget Item Justification
- R-2a RDT&E Project Justification
- R-3 RDT&E Project Cost Analysis
- R-4 RDT&E Program Schedule Profile
- R-4a RDT&E Program Schedule Detail

Note: the R-3/R-4/R-4a supporting each R-2a Project Justification will be arranged immediately following the R-2a.

* D. Major Defense Acquisition Programs (MDAPs)/Major Automated Information Systems (MAIS)

1. Joint budget guidance from the Under Secretaries of Defense for Acquisition, Technology & Logistics (AT&L) and Comptroller directs that all MDAPs or MAIS will be budgeted in separate, dedicated Program Elements (R-1 line items), and associate all of the funding for a given MDAP/MAIS with a PRCP Program Number (PNO).

2. For all MDAP/MAIS programs, the R-2 RDT&E Budget Item Justification exhibit must include the PNO. Components must also ensure that all applicable fiscal years of the PRCP and FYDP annex data bases are updated to reflect the program budget estimates for all MDAP/MAIS programs, including all prior years and cost-to-complete columns. Each MDAP/MAIS subprogram is a component that will be identified by appropriation, budget line item, and budget activity under the End Item R-1 Line Item header.

E. If an amended budget is submitted, identify the revised budget exhibits accordingly.

F. Facilities Exhibit. For improvements to and construction of government-owned facilities funded in the RDT&E appropriation, a DD Form 1391, Military Construction Project Data, must be provided separately for each Budget Year (BY) project and any Prior Year (PY) or Current Year (CY) projects not previously reported. These exhibits will be included with the program element justification. In addition, a copy of all DD Forms 1391 should be packaged together and a copy provided to the Office of the Under Secretary of Defense (Comptroller) (OUSD(C)) Program/Budget (P/B) Investment Directorate and to the Military Personnel and Construction Directorate. A copy of the form and the instructions are in Volume 2B, Chapter 6.

*0503 CONGRESSIONAL JUSTIFICATION/PRESENTATION

This Section presents the backup book organization and the exhibit requirements for submission to Congress. See Volume 2A, Chapter 1, Section 0104 for specific printing requirements. Justification material will be organized into a Committee Staff Procurement Backup Book. Volume 2A, Chapter 1, Section 010403 provides a detailed distribution schedule for the procurement backup books. A separate congressional committee backup book will be prepared for the President's budget request for each RDT&E appropriation.

Cover

Department of Defense

FY 20BY President's Budget Submission

Justification Book Volume X of X

Appropriation Title

Section 1 - Summary Material

Table of Contents

R-1 listing (R-1 Exhibits will be prepared using the OUSD(C) automated system with input from the Services and Defense Agencies)

Section 2 - Budget Appendix Extract Appropriation Language

Section 3 - R-1 Line Item Detail. RDT&E budget exhibits will be organized as discussed in paragraph 050202.C.

*0504 RDT&E APPROPRIATION BUDGET EXHIBIT FORMATS

050401. Standardized budget exhibit formats.

Section 050202 describes the use of XML budget exhibits for RDT&E appropriations. In addition to the key attribute of making budget exhibit data electronically searchable, the XML exhibits standardize the various budget displays, enabling more effective and efficient budget formulation, review, analysis, and submission.

A. The exhibit formats provided on the following pages reflect guidance presented in previous sections.

* B. The use of XML exhibits is mandatory for BES and President's budget request backup justification material.

C. XML exhibits will automatically standardize formatting, to include:

1. Exhibits displayed on 8 1/2 inch by 11 inch paper in landscape format.

2. Actual fiscal years (e.g., FY 2016, FY 2017, etc.) rather than the template entries (i.e., Prior Years (PYs), Prior Year (PY), Current Year (CY), Budget Year (BY), BY+1, BY+2, BY+3, and BY+4).

3. Annotating the applicable R-1 line item number and page number within the line item (e.g., Item 1-1 of 5, 2-1 of 1, 3-1 of 20, etc.) at the bottom center of each exhibit page.

4. Properly paginate the backup book.

050402. RDT&E exhibit formats

There are six RDT&E exhibits that support the formulation and submission of the BES and the President's budget request. The exhibits provide data and information that justifies budgetary requirements for the various RDT&E appropriations. The exhibit formats follow. Volume 2B, Chapter 19, Other Special Analyses, also identifies budget exhibits that may be required.

Exhibit R-1: RDT&E Programs

Exhibit R-1, RDT&E Programs								
Department of the _____								
Appropriation: _____			Date: _____					
							<u>TOA, \$ in Millions</u>	
R-1 Line	Program		Budget	Prior	Current	Budget	Budget	Total
Item No	Element	Item	Activity	Year	Year	Year	Year	Budget
	Number			Cost	Cost	Cost	OCO	Year
							Cost	Cost

Exhibit R-1, RDT&E Programs
(Exhibit R-1, page 1 of 1)

Exhibit R-1: RDT&E Programs

A. General Instructions:

1. Unless otherwise specified, this format will be used to present the Research, Development, Test and Evaluation (RDT&E) program to:

- a. The Office of the Under Secretary of Defense (Comptroller) in support of the OSD/OMB budget review and,
- b. The Congress in support of the President's budget request.

B. RDT&E Line Item Content:

The basic document for presenting RDT&E requirements is the Exhibit R-1, RDT&E Programs. The R-1 line items are program elements, which define a development effort with specific design, cost, schedule and capability parameters. All costs of basic and applied scientific research, development, test, and evaluation, including maintenance, rehabilitation, and lease/operation of facilities and equipment will be included in appropriate R-1 line items. The R-1 exhibit will contain the following information:

1. Program element title and number. Appropriate security classification coding should be included as part of each program element title listed. All classified material should be bracketed.
2. Line items will be arranged in ascending program element order within each budget activity.
3. Approved funding for the Prior Year (PY), the Current Year (CY), and Budget Year (BY).
4. Subtotals by Budget Activity and total funding for the appropriation for the Prior Year (PY), the Current Year (CY), and Budget Year (BY).

(Exhibit R-1, page 2 of 2)

Exhibit R-2: RDT&E Budget Item Justification

Exhibit R-2, RDT&E Budget Item Justification: BES/PB 20xx Service/Agency										DATE: Month/Year	
APPROPRIATION/BUDGET ACTIVITY Appropriation Code: Appropriation Name BA Number: Budget Activity Title						R-1 ITEM NOMENCLATURE Program Element Number: Program Element Title					
COST (\$ in Millions)	FY PY	FY CY	FY BY Base	FY BY OCO	FY BY Total	FY BY+1	FY BY+2	FY BY+3	FY BY+4	Cost to Complete	Total Cost
Total Program Element											
Project Number: Project Title 1											
Project Number: Project Title N											
Note Identify when a Program Element or a Project: 1) is a new start, 2) was terminated/completed, 3) was previously funded, or will be funded, in a different Program Element, or 4) has had a Title change. For Program Element or Project transfers, include the current and previous Program Element number and title, and Project number and title, if applicable.											
A. Mission Description and Budget Item Justification The R-2 shall include a general description and justification of the efforts included in the program element. The R-2A shall include a detailed description and justification of the efforts included in the specific project. Every Project shall include an R-2A exhibit: including where a Project is an aggregate of Congressional Adds. An exception may be to create an R-2 without an R-2A for Single Project PEs. For ACAT 1D programs, identify Cost to Complete and Total Cost for the program and all projects; otherwise, the appropriate value shall be "Continuing". An R-3 Exhibit must be provided for Budget Activity 4, 5, and 7 Programs.											
B. Program Change Summary (\$ in Millions)						FY PY	FY CY	Base FY BY	OCO FY BY	Total FY BY	
Previous President's Budget											
Current President's Budget											
Total Adjustments											
Congressional General Reductions											
Congressional Directed Reductions											
Congressional Rescissions											
Congressional Adds (appropriated)											
Congressional Directed Transfers											
Reprogrammings											
SBIR/STTR Transfer											
Other Adjustment Title 1											
Other Adjustment Title N											
Congressional Add Details (\$ in Millions, and includes General Reductions)								FY PY	FY CY		
Project Number, Project Title 1											
Congressional Add Title:											
Congressional Add Title:											
Subtotal for Project 1											
Project Number, Project Title N											
Congressional Add Title:											
Subtotal for Project N											
Total for all Projects											
Change Summary Explanation											
R-2 Schema 3.4 Template as of 5-19-2010											

(Exhibit R-2, page 1 of 6)

Exhibit R-2a: RDT&E Budget Item Justification (Project)

Exhibit R-2A, RDT&E Project Justification: BES/PB 20xx Service/Agency										DATE: Month/Year	
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					PROJECT	
Appropriation Code/ BA Number					Program Element Number: Program Element Title					Project Number: Project Title	
COST (\$ in Millions)	FY PY Actual	FY CY Estimate	Base FY BY Estimate	OCO FY BY Estimate	Total FY BY Estimate	FY BY+1 Estimate	FY BY+2 Estimate	FY BY+3 Estimate	FY BY+4 Estimate	Cost to Complete	Total Cost
Project Number: Project Title											
Quantity of RDT&E Articles											
<p><i>Project Articles are optional. If none are included, the Articles row is not required.</i></p> <p><i>Article Quantities can be included at the Project level and/or Accomplishments/Planned Programs level.</i></p> <p>Note</p> <p><i>Identify when a Project: 1) is a new start, 2) was terminated/completed, 3) was previously funded, or will be funded, in a different Program Element, or 4) has had a Title change.</i></p> <p><i>For Project transfers, include the current and previous Program Element number and title, and Project number and title, if applicable.</i></p>											
A. Mission Description and Budget Item Justification											
<p><i>Provide a Project overview. For BAs 1, 2 and 3, specify the technology area as defined in annual budget guidance.</i></p> <p><i>Provide a description and justification. Identify the military requirement(s) that this Project will meet. Identify new start efforts for the budget year(s) within the Program Element and new start efforts since the previous President's budget. New start details shall be displayed on the R-2A rather than the R-2.</i></p>											
B. Accomplishments/Planned Program (\$ in Millions, Article in Whole Units)"							FY PY	FY CY	Base FY BY	OCO FY BY	Total FY BY
Title: Accomplishment/Planned Program Title 1											
Articles											
Description:											
FY PY Accomplishments:											
FY CY Plans:											
Base FY BY1 Plans:											
OCO FY BY1 Plans:											
Total FY BY1 Plans:											
Title: Accomplishment/Planned Program Title N											
Articles											
Description:											
FY PY Accomplishments:											
FY CY Plans:											
Base FY BY1 Plans:											
OCO FY BY1 Plans:											
Total FY BY1 Plans:											
<p><i>Provide a brief description using key terms of the Accomplishment and/or Planned Program. Include objectives, output or end product, and specific program name or major technology effort.</i></p> <p><i>For BAs 1, 2, and 3 also include specific technology terms as defined in budget guidance or provided by the DDR&E.</i></p> <p><i>Accomplishments/Planned Programs Articles are optional. If none are included, the row is not required.</i></p> <p><i>Accomplishments/Planned Programs Descriptions are optional.</i></p>											
Congressional Add Details (\$ in Millions, and includes General Reductions)								FY PY	FY CY		
Congressional Add: Title 1											
FY PY Accomplishments:											
FY CY Plans:											
Congressional Add: Title N											
FY PY Accomplishments:											
FY CY Plans:											
Congressional Add Subtotal											

(Exhibit R-2, page 2 of 6)

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	FYPY	FYCY	Base FYBY	OCO FYBY	Total FYBY	FYBY+1	FYBY+2	FYBY+3	FYBY+4	Cost to Complete	Total Cost
Line Item #/Title											
<i>Note: P-1 Procurement Line Item No./Name; C-1 MilCon Project No./Name; Related RDTE: PE Number/Name (it is not necessary to include the related RDT&E funding profile unless there is a funding dependency between the RDT&E programs).</i>											
D. Acquisition Strategy											
<i>Note: Acquisition Strategy is NOT required for BA 1, 2, 3, and 6.</i>											
E. Performance Metrics											
<i>Narrative description</i>											
F. Major Performers											
<i>Narrative description</i>											
<u>Name</u>	<u>Description</u>					<u>Location</u>	<u>Award Date</u>	<u>Funding</u>			
Name	Description					Location	YYYY/MM				
Name	Description					Location	YYYY/MM				
Name	Description					Location	YYYY/MM				
Name	Description					Location	YYYY/MM				
<i>Major Performers is required for the BES cycle only.</i>											
<i>List major contractors, universities, colleges, government facilities, federally funded research and development centers, laboratories, centers, or other organizations contributing to this effort through BY 1.</i>											
<i>List only those who were primary recipients of funds (e.g., received 15% or over \$10 million, whichever is less).</i>											
<i>Include name or titles, locations, and brief description of work performed. Include actual or projected award date (month/year).</i>											
<i>Tabular data is optional, and can be included in addition to a general description.</i>											

(Exhibit R-2, page 3 of 6)

Exhibit R-2a: RDT&E Budget Item Justification (Project)**Exhibit R-2: RDT&E Budget Item Justification**

A. General Instructions

1. An Exhibit R-2 shall be prepared for each program element. An Exhibit R-2a shall be prepared for each project, even if there is only one project and even if a project is funded only in a Prior Year (PY) and/or a Current Year (CY), regardless of funding amount. To provide full-funding visibility, every program, project, and activity specifically added by Congress to the President's Budget Request (a.k.a. Congressional Adds) shall be identified within an Exhibit R-2a. The programs, projects, and activities may be treated as individual projects, grouped, but separately identified, in one or more "Congressional Adds" projects, and/or included within "core" projects. Classified material will be submitted separately.

2. All funding within any R-exhibit will be expressed in millions, with three decimal places, unless specifically noted otherwise.

3. Care should be taken to see that exhibits are clear and concise. Abbreviations shall be identified on the page on which they occur.

B. Exhibit Instructions:

1. Date. Include the month and year of submission of the exhibit. If an Amended Budget is submitted, identify the date of the revised submission.

2. Exhibit R-2 RDT&E Budget Item Justification. Identify the Budget Cycle/Budget Year/Service Agency Name. Identify BES (Budget Estimates Submission) or PB (President's Budget) for Budget Cycle, the Budget Year, and the Service Agency Name. Information must match the Program Resources Collection Process (PRCP) (R-1) data base lock position.

3. Appropriation/Budget Activity. Identify Appropriation Code (Treasury Account Symbol) and Name/Budget Activity Number and Title. Identify the appropriation and budget activity. Information must match the RDT&E PRCP (R-1) data base lock position.

4. R-1 Item Nomenclature/Title (Program Element Name). Identify the name of the R-1 line item. Information must match the RDT&E PRCP (R-1) data base lock position.

5. Program Element Number. Identify the program element. Information must match the RDT&E PRCP (R-1) data base lock position.

6. Project Number and Nomenclature. Identify the project number and nomenclature.

7. Resource Summary. The Exhibit R-2 shall include a fiscal resource summary total for the total program element and, if there is more than one project in that program element, a fiscal

(Exhibit R-2, page 4 of 6)

resource summary for each project in that program element. Ensure the total funding for the program element matches the RDT&E PRCP (R-1) data base lock position by budget line item and that total costs for Acquisition Category 1 (ACAT) programs are consistent with Selected Acquisition Reports.

8. For ACAT 1 programs, identify Cost-to-Complete and Total Cost for the program and all projects; otherwise, the appropriate value shall be “Continuing”. The XML process will automatically insert “Continuing” if no data is submitted.

9. RDT&E Articles (R-2a only). Identify the test articles (engineering development models, test articles, low rate initial production test article, government furnished equipment articles) that are being procured and why. Test Articles can be identified for a project and/or for activities identified in Accomplishments/Planned Programs.

10. Program Element and Project Notes. Identify when a program element or project is: (1) a new start, (2) was terminated/completed, (3) was previously funded, or (4) will be funded in a different program element, or Title changes.

11. For program element or project transfers, include the current and previous program element number and names, and projected number and name if applicable.

12. Mission Description and Budget Item Justification. The R-2 will include a description and justification of the efforts included in the program element. The R-2a will include a description and justification of the efforts included in the specific project.

13. Program Change Summary. If there have been changes to the total funding, schedule, or technical parameters since the previous President’s budget submission, the Exhibit R-2 shall include a concise narrative summary explaining the changes in the total program element for the PY, CY, and BY. Further adjustments will be broken out into the following categories:

- Congressional General Reductions
- Congressional Directed Reductions
- Congressional Rescissions
- Congressional Adds
- Congressional Directed Transfers
- Reprogrammings
- SBIR/STTR* Transfers
- Total Other Adjustments – (unique titles may be added to describe

the change)

*Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)

14. Congressional Add Details (Exhibit R-2). Each “Congressional Add” will be identified separately by project and may be included as: (1) an individual project, (2) as groups in one or

(Exhibit R-2, page 5 of 6)

more “Congressional Add” projects, and/or (3) within “core” projects. The title (provided by Congress) and the funding for PY and CY will be listed in a bullet format. Congressional Adds should include only the funding provided by Congress.

15. Change Summary Explanation. Provide a separate, concise narrative summary explaining the changes in the total program element in the Prior Year, the Current Year, and the Budget Year, as applicable.

16. Accomplishments/Planned Programs (Exhibit R-2a). Provide a concise narrative summary and associated funding for each project for PY, CY, and BY in a bullet format. The total funding reflected should match the total project funding.

17. Other Program Funding Summary (Exhibit R-2a). Development projects often lead to subsequent development phases, production, and military construction. Also, some projects may depend on concurrent development in other projects. These related efforts and the funding profiles for other appropriation efforts shall be identified by appropriation, budget activity, R-1 line item and program element, and P-1 line item title and number. If there are funding dependencies among related research, development, test, and evaluation programs, then the funding profiles for these related programs shall be included.

18. Acquisition Strategy (Exhibit R-2a). An explanation of acquisition, management, and contracting strategies shall be provided for each project. This section is not required for the program element budget line items in Budget Activities 1 (Basic Research), 2 (Applied Research), 3 (Advanced Technology Development) and 6 (RDT&E Management Support).

19. Major Performers (Exhibit R-2a). This data is required for the Budget Estimates Submission (BES) only.

(Exhibit R-2, page 6 of 6)

Exhibit R-3: RDT&E Project Cost Analysis

Exhibit R-3, RDT&E Project Cost Analysis: BES/PB 20xx Service/Agency											DATE: Month/Year			
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							PROJECT NAME AND NUMBER			
Appropriation Code/BA Number				Program Element Number: Program Element Name							Project Number: Project Title			
Product Development (\$in Millions)				FY CY		FY BY Base		FY BY OCO		FY BY Total				
	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Total Cost	Cost To Complete	Total Cost	Target Value of Contract	
Cost Category Item 1	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Cost Category Item N	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Subtotal:														
Remarks: Typical Cost Categories are: Primary Hardware Development, Ancillary Hardware Development, Systems Engineering, Licenses, Tooling, GFE, and Award Fees.														
Support (\$in Millions)				FY CY		FY BY Base		FY BY OCO		FY BY Total				
	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Total Cost	Cost To Complete	Total Cost	Target Value of Contract	
Cost Category Item 1	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Cost Category Item N	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Subtotal:														
Remarks: Typical Cost Categories are: Development Support, Software Development, Training Development, Integrated Logistics Support, Configuration Management, Technical Data, and GFE.														
Test & Evaluation (\$in Millions)				FY CY		FY BY Base		FY BY OCO		FY BY Total				
	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Total Cost	Cost To Complete	Total Cost	Target Value of Contract	
Cost Category Item 1	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Cost Category Item N	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Subtotal:														
Remarks: Typical Cost Categories are: Developmental Test & Evaluation, Operational Test & Evaluation, Tooling, and GFE.														
Management (\$in Millions)				FY CY		FY BY Base		FY BY OCO		FY BY Total				
	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Total Cost	Cost To Complete	Total Cost	Target Value of Contract	
Cost Category Item 1	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Cost Category Item N	See notes below	Activity/Location			Mon/Year		Mon/Year		Mon/Year					
Subtotal:														
Remarks: Typical Cost Categories are: Contractor Engineering Support, Government Engineering Support, Program Management Support, Program Management Personnel, Travel, Labor (Research Personnel), and Overhead.														
				CY Cost		Cost		Total Cost		Cost		Total Cost	Cost To Complete	Total Cost
Project Total Cost:														
Remarks:														
An R-3 Exhibit shall be provided for BudgetActivityNumber 4, 5, or 7 PEs. The Project Total Cost shall equal the Project Cost on the R-2A. Contract Method may be any one of: C, SS, TBD, or Various. Contract Type may be any one of: CPAF, DPFF, DPIF, FP, FFP, FPI, TBD, or Various. Funding Vehicle may be any one of: Allot, BPA, FFRDC, MIPR, PO, Reqn, RO, TM, or Various.														

Exhibit R-3: RDT&E Project Cost Analysis

A. General Instructions:

1. The R-3 exhibit is required for all programs funded in budget activities 4 (Advanced Component Development and Prototypes), 5 (System Development and Demonstration), and 7 (Operational System Development), regardless of funding amount or acquisition category. A separate R-3 exhibit shall be prepared for each project in an applicable R-1 line item.

2. These exhibits shall be printed on 8 1/2 by 11 inch paper in landscape format. Classified material shall be submitted separately.

3. All funding within any R-exhibit will be expressed in millions, with three decimal places.

B. Exhibit Instructions:

1. Identify the month and year of submission of the exhibit. If an Amended Budget is submitted, identify the date of the revised submission.

2. Appropriation Code (Treasury Account Symbol)/ and Name/Budget Activity Number and Title. Identify the appropriation and budget activity. This information must match the PRCP (R-1) lock position.

3. R-1 Item Nomenclature/Title (Program Element Name): Identify the name of the R-1 line item as identified in PRCP (R-1) lock position. This information must match the PRCP (R-1) lock position.

4. Program Element Number: The Program Element must be unique. An R-2 Exhibit with a Budget Activity Number that is different from the previous years should include PY and CY information within the current R-2 Exhibit.

5. Project Number and Nomenclature: Identify the project number and nomenclature as identified in PRCP (R-1) lock position.

6. Project Cost Categories. Cost information shall be provided for each project regardless of funding amount, with project costs broken down into cost categories. Total of all project costs shall equal the project funding for any funding years. Sample cost categories shown are typical of various types of defense research and development efforts. Costs shall be distributed among categories in accordance with the project work breakdown structure (WBS) or other categories used by the project office in project execution. The illustrated sample cost categories may be used if these correspond to the project's structure; however, there is no requirement to use cost categories other than those used by the project office in project execution. Sample cost categories not used in project execution need not be included in the exhibit for that project. If the program office tracks efforts by major contract, then display the information accordingly. The cost categories shall be separated into 4 information categories as follows:

(Exhibit R-3, page 2 of 4)

a. **Product Development.** Efforts associated with the delivery of a fully integrated system that are in direct support of the system and essential to the development, training, operation, and maintenance of the system. Include all efforts directly supporting system development and delivery to include primary contracts, major component contracts, contracted services, in-house support, and government furnished property. Contracts or government efforts greater than \$1 million in any displayed budget year shall be reported individually.

b. **Support Costs.** Efforts not directly associated with the delivery of the primary product, including technical engineering services, research studies, and technical support not related directly to product development or to testing and evaluation. Contracts or government efforts greater than \$1 million in any displayed budget year shall be reported individually.

c. **Test and Evaluation.** Efforts (other than those included within contracts or government efforts) associated with engineering or support activities to determine the acceptability of a system, subsystem, or component. Contracts or government efforts greater than \$1 million in any displayed budget year shall be reported individually.

d. **Management Services.** Efforts associated with services provided in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and schedule tracking. Federally Funded Research and Development Centers (FFRDCs) are in this category. Contracts or government efforts greater than \$1 million in any displayed budget year shall be reported individually.

7. **Government Furnished Property.** Property, such as hardware, software, or information, which the government is contractually obligated to furnish a contractor or government performing activity shall be identified. Provide a brief identification of the item to be provided, and the contractor or government activity providing the item. Provide the estimated date that the government furnished property will be provided to the requiring contractor or activity. Provide the name of the requiring contractor or activity.

8. **Award Fees.** Identify amounts budgeted for award fees and indicate contractor performance and percentage of award fees actually awarded in past award fee periods.

9. **Contract Method/Type or Funding Vehicle.** The following codes shall be used to identify the contract method, contract type, and funding vehicle:

<u>Contract Type</u>	<u>Contract Method</u>
FFP	Firm Fixed Price
FP	Fixed Price
FPI	Fixed Price Incentive
C	Competitive
CPAF	Cost Plus Award Fee
CPFF	Cost Plus Fixed Fee

(Exhibit R-3, page 3 of 4)

<u>Contract Type</u>	<u>Contract Method</u>
CPIF	Cost Plus Incentive
SS	Sole Source
TBD	To Be Determined
VAR	Various

Funding Vehicle (when a government agency is the performing activity)

MIPR	- Military Interdepartmental Purchase Request
PO	- Project Order
WR	- Work Request
Allot	- Allotment
Reqn	- Requisition
BPA	- Blanket Purchase Agreement
FFDC	- Federally Funded Research and Development Center
VAR	-Various

10. Performing Organizations. Identify each contractor and government or performing activity and the location for each effort greater than \$1 million in any of the displayed years.

11. Total Prior Year (PY) Cost. Provide actual amounts for the total of all years before the Current Year (CY).

12. CY - BY. Provide actual or budget amounts for each year for the Current Year (CY) and the Budget Year (BY).

13. Award or Obligation Date. Provide actual or estimated date of contract award or the estimated date that funds will be obligated to government performing activities.

14. To Complete. Provide the amount required to complete this effort beyond.

15. Total Cost. Provide the cumulative total of all budgeted funds for the program (including funds obligated/budgeted for PY, CY, BY and to complete). Provide a comment in the Remarks section when the Project Office Estimate at Completion (EAC) differs from the total cost. Also provide a comment when the Performing Activity EAC differs from the Project Office EAC.

16. Target Value of Contract. Identify the target value of the contract and explain those cases where total cost differs significantly. For example, if the budget is at ceiling value of the contract vice target value or if budget is "program manager's best estimate" vice target value, then explain.

(Exhibit R-3, page 4 of 4)

Exhibit R-4: RDT&E Schedule Profile

Exhibit R-4, RDT&E Program Schedule Profile																	Date: (Month and Year)																			
Appropriation/Budget Activity										Program Element Number and Name										Project Number and Name																
Fiscal Year	PY				CY				BY				BY+1				BY+2				BY+3				BY+4				BY+5							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones	MS II								MS C												FRP															
Prototype Phase	█																								First Deployment											
Radar System Development	▲	▲	△	△					△									△																		
ABC Radar Delivery									△	△	△	△	△	△	△	△	△																			
Software Delivery 1XXSW 2XXSW									[Bar]																											
(U) T&E Milestones									△																											
Flight Test Developmt Test Continuous DT									DT IIA				DT IIB1				DT IIB2				DT IIC				TECHEVAL											
Production Milestones LRIP I FYBY2 LRIP II FYBY2+1 FRP FYBY2+2													LRIP I				OT I				LRIP II				OT BI				FRP				FRP Start			
Deliveries									Lot 24 (36)				Lot 25 (42)				Lot 26 (42)				Lot 27 (42)				Lot 28 (42)				Lot 29 (42)				Lot 30 (42)			

Sample Format - Agency Unique

R-1 Line Item No. XX

(Page X of X)

R-4 Program Schedule Profile

Exhibit R-4a: RDT&E Schedule Detail

Exhibit R-4A, RDT&E Project Cost Analysis: BES/PB 20xx Service/Agency			DATE: Month/Year	
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE		PROJECT NUMBER AND Title	
Appropriation Code/BA Number	Program Element Number: Program Element Title		Project Number: Project Title	
Schedule Details				
	Start		End	
<u>Event</u>	<u>Quarter</u>	<u>Year</u>	<u>Quarter</u>	<u>Year</u>
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYY	Q	YYY
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYY	Q	YYY
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYY	Q	YYY
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYY	Q	YYY
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYY	Q	YYY
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYY	Q	YYY
Event Title	Q	YYYY	Q	YYYY
Event Title	Q	YYY	Q	YYY
Event Title	Q	YYYY	Q	YYYY
<p><i>Within a Schedule Detail, the Start and End elements must be chronologically correct (value of Start <= value of End).</i></p> <p><i>Within a Schedule Detail, the Start and End elements cannot refer to years before the PriorYear and after the last budget year (BudgetYear 5).</i></p>				

Exhibit R-4: RDT&E Schedule Profile**Exhibit R-4a: RDT&E Schedule Detail**

A. General Instructions:

1. The R-4 and R-4a exhibits are required for all programs or projects funded in budget activities 4 (Advanced Component Development and Prototypes), 5 (System Development and Demonstration), and 7 (Operational System Development) only. Separate R-4 and R-4a exhibits shall be prepared for each project in an applicable R-1 line item.

2. These exhibits shall be printed on 8 1/2 by 11 inch paper in landscape format. If a program element is not divided into projects, then the program element itself is defined as a project for purposes of submitting R-4 and R-4a exhibits, and the exhibits and instructions apply to the entire program element. Classified material shall be submitted separately.

B. Detail Instructions:

1. Date: Identify the month and year of submission of the exhibit. If an Amended Budget is submitted, identify the date of the revised submission.

2. Appropriation Code (Treasury Account Symbol) and Name/Budget Activity Number and Title. Identify the appropriation and budget activity. The budget activity title must match the RDT&E annex and the Program Resources Collection Process (PRCP) (R-1) locked position.

3. R-1 Item Nomenclature: Identify the name of the R-1 line item as identified in PRCP (R-1) locked position.

4. Program Element Number and Name: Identify the number and nomenclature of the program element as identified in PRCP (R-1) locked position.

5. Project Number and Nomenclature: Identify the project number and nomenclature on each page as identified in PRCP (R-1) locked position.

6. For the R-4, Schedule Profile, provide a schematic display of major program milestones that reflect engineering milestones, acquisition approvals, test and evaluation events, and other key milestones for the program events. Cover the program years not just the budget year. Stub entries should be tailed to the events and activities of the reported program. Congressional “staffer day” briefing formats are acceptable. Software for this display should be embedded for web site formatting.

For the R-4a, Schedule Detail, provide a tabular display of the major program milestones identified on the R-4 as well as any additional programmatic events that contribute to and support the schedule profile identified on the R-4.