

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0708011N

PROGRAM ELEMENT TITLE: Industrial Preparedness

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 2001 ACTUAL	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R1050 Manufacturing Technology	67,305	72,459	70,631	71,732	73,870	75,128	76,422	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Manufacturing Technology (MANTECH) Program is intended to improve the productivity and responsiveness of the U.S. defense industrial base by funding the development of manufacturing technologies. The MANTECH program, by providing seed funding for the development of moderate to high risk process and equipment technology, permits contractors to upgrade their manufacturing capabilities. Ultimately, the program aims to produce high-quality weapon systems with shorter lead times and reduced acquisition costs. Major areas of endeavor both underway and planned include: advanced manufacturing technology for electronics assembly, laser metalworking, flexible computer manufacturing, composites, metal working and welding technology. The MANTECH program is being integrated into the Joint Mission Area/Support Area and Joint Warfare Operational Capability process and will utilize the results of these initiatives as appropriate in the program planning process. The MANTECH program is aimed at achieving affordability in the acquisition of weapons systems by inserting manufacturing process solutions early into the design phase to reduce lifecycle costs, improve schedules and ensure quality.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

R-1 Line Item 215

Budget Item Justification
(Exhibit R-2, page 1 of 8)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness PROJECT TITLE: Manufacturing Technology

1. U) FY 2001 ACCOMPLISHMENTS:

- The Navy MANTECH program executes a significant amount of its projects through the Centers of Excellence. The technical efforts performed are reflected throughout the following taxonomy:
 - (U) \$6,750 - Composites Processing and Fabrication - Initiated a rotorcraft composites affordability initiative. Completed work on the Composites Topside Structures; Enhanced Production Techniques for Low Observable Structures and Materials. Continued work on the Teaching Factory; Rapid Response; Z-Direction Reinforcement for Composite Laminates; Ceramic Matrix Composites; and Resin Transfer Molding. Completed Korex Phase III.
 - (U) \$11,200 - Electronics Processing and Fabrication - Continued AEGIS Electronic Demonstration, Flexible Manufacturing of Microwave Power Module Manufacturing, Learning Center and Demonstration Factory, and the Power Electronic Building Blocks Manufacturing plan. Continued electro-optics efforts in Sapphire Domes, Manufacturing Automation of Monolithic Ring Gyros; and initiated efforts for Fiber Optic Velocity Sensors, Remote Source Lighting Technology, Radio Frequency Photonics for Multi-Function Phased Array Antennas, and Affordable Array Technology Tooling.
 - (U) \$25,400 - Metals Processing and Fabrication - Completed the Centrifugally Cast Titanium/Chromium Bronze Components. Continued the following metalworking projects: Neodymium Ribbon Development, Optimized Atomization of Magnesium Powder, Titanium Alloy Hearth Melting Processing Technology, Optimized High Strength Lightweight Alloy Welding, and Thin Wall Superalloy Structural Castings. Completed Powder Metallurgy and Materials Initiative. Continued the following joining projects: Weld Residual Stress and Distortion, Titanium Welding, Adhesive Bonding Integrity, Knowledge Based Ultrasonic Testing of Welds, and continued rapid response actions. Continued the following materials processing initiatives: Laser Processing of Nickel Aluminum Bronze, Non-Contact High Speed Gear Inspection, Repair/Refurbishment of Fatigue/Wear Limited Navy Structures, Advanced Manufacturing Processes for the Advanced Amphibious Assault Vehicle, and Manufacturing of High Performance of Transmission Housing. Continued a joint effort with the Air Force in Metals Affordability. Continued work on the Propulsor Affordability Initiative.

R-1 Line Item 215

Budget Item Justification
(Exhibit R-2, page 2 of 8)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness PROJECT TITLE: Manufacturing Technology

- (U) \$7,000 - Advanced Manufacturing Enterprise - Continued leveraging the Best Manufacturing Practices and Acquisition Reform Initiatives. Continued efforts in shipbuilding and simulation based design. Continued efforts in Shipboard Sensors; Effective Aluminum Catamaran Structures; Chromium Primer for Aluminum Substrates; and the Environmental Resource Information Center. Continued ongoing and initiated new research efforts in support of the National Shipbuilding Research Program - Advanced Shipbuilding Enterprise. Continued work on the Pathways for Continuous Improvement Program, and Supply Chain Integration.
- (U) \$9,555- Other - Continued projects in the repair technology arena that support the depots and shipyards such as Supercritical CO2 Parts Cleaning, Ball Valve Repair Process Improvement, Shearography System Development, and Reverse and Re-Engineering Technical Data Generation System. Continued the Ammonium Dinitramide and Composite Propellants projects in support of energetic materials. Continue Phase III of the F414 Engine Demonstration Device with General Electric. Continued technical assistant work at the Systems Command's Program Offices and Program Executive Offices. Continued the Shipbuilding Initiative by starting three new projects.
- (U) \$7,400 - Initiated the Surface Strike Affordability Initiative and the Joint Service Microelectrical - Mechanical Sensors (MEMS) Affordability initiatives.

2. U) FY 2002 PLAN:

- The Navy MANTECH program executes a significant amount of its projects through the Centers of Excellence. The technical efforts performed are reflected throughout the following taxonomy:
 - (U) \$9,850 - Composites Processing and Fabrication - Continue work on the Rotorcraft Affordability Initiative. Continue work on the Teaching Factory; Rapid Response; Z-Direction Reinforcement for Composite Laminates; Ceramic Matrix Composites; and Resin Transfer Molding.

R-1 Line Item 215

Budget Item Justification
(Exhibit R-2, page 3 of 8)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

- BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness PROJECT TITLE: Manufacturing Technology
- (U) \$8,500 - Electronics Processing and Fabrication - Continue AEGIS Electronic Demonstration, Flexible Manufacturing of Microwave Power Module Manufacturing, Learning Center and Demonstration Factory, and the Power Electronic Building Blocks Manufacturing plan. Continue electro-optics efforts in Sapphire Domes, Manufacturing Automation of Monolithic Ring Gyros; Fiber Optic Velocity Sensors, Remote Source Lighting Technology, Radio Frequency Photonics for Multi-Function Phased Array Antennas, and Affordable Array Technology Tooling.
- (U) \$20,000 - Metals Processing and Fabrication - Continue the following metalworking projects: Neodymium Ribbon Development, Optimized Atomization of Magnesium Powder, Titanium Alloy Hearth Melting Processing Technology, Optimized High Strength Lightweight Alloy Welding, and Thin Wall Superalloy Structural Castings. Continue the following joining projects: Weld Residual Stress and Distortion, Titanium Welding, Adhesive Bonding Integrity, Knowledge Based Ultrasonic Testing of Welds, and continue rapid response actions. Continue the following materials processing initiatives: Laser Processing of Nickel Aluminum Bronze, Non-Contact High Speed Gear Inspection, Repair/Refurbishment of Fatigue/Wear Limited Navy Structures, Advanced Manufacturing Processes for the Advanced Amphibious Assault Vehicle, and Manufacturing of High Performance of Transmission Housing. Continue a joint effort with the Air Force in Metals Affordability. Continue work on the Propulsor Affordability Initiative.
- (U) \$8,000 - Advanced Manufacturing Enterprise - Continue leveraging the Best Manufacturing Practices and Acquisition Reform Initiatives. Continue efforts in shipbuilding and simulation based design. Continue efforts in Shipboard Sensors; Effective Aluminum Catamaran Structures; Chromium Primer for Aluminum Substrates; and the Environmental Resource Information Center. Continue ongoing and initiate new research efforts in support of the National Shipbuilding Research Program-Advanced Shipbuilding Enterprise. Continue work on the Pathways for Continuous Improvement Program, and Supply Chain Integration.
- (U) \$10,271 - Other - Continue projects in the repair technology arena that support the depots and shipyards such as Supercritical CO2 Parts Cleaning, Ball Valve Repair Process Improvement, Shearography System Development, and Reverse and Re-Engineering Technical Data Generation System. Continue the Ammonium Dinitramide and Composite Propellants projects in support of energetic materials. Continue Phase III of the F414 Engine Demonstration Device with General Electric. Continue technical assistant work at

R-1 Line Item 215

Budget Item Justification
(Exhibit R-2, page 4 of 8)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness PROJECT TITLE: Manufacturing Technology

the Systems Command's Program Offices and Program Executive Offices. Continue the Shipbuilding Initiative by starting three new projects.

- (U) \$15,838 - Continue the multi-center of excellence executed Surface Strike Affordability Initiative and the Joint Service Microelectrical-mechanical Sensors (MEMS) Affordability initiatives.

3. U) FY 2003 PLAN:

- The Navy MANTECH program executes a significant amount of its projects through the Centers of Excellence. The technical efforts performed are reflected throughout the following taxonomy:
 - (U) \$9,000 - Composites Processing and Fabrication - Continue work on the Rotorcraft Affordability Initiative. Continue work on the Teaching Factory; Rapid Response; Z-Direction Reinforcement for Composite Laminates; Ceramic Matrix Composites; and Resin Transfer Molding.
 - (U) 9,000 - Electronics Processing and Fabrication - Continue AEGIS Electronic Demonstration, Flexible Manufacturing of Microwave Power Module Manufacturing, Learning Center and Demonstration Factory, and the Power Electronic Building Blocks Manufacturing plan. Continue electro-optics efforts in Sapphire Domes, Manufacturing Automation of Monolithic Ring Gyros; Fiber Optic Velocity Sensors, Remote Source Lighting Technology, Radio Frequency Photonics for Multi-Function Phased Array Antennas, and Affordable Array Technology Tooling.
 - (U) \$22,000 - Metals Processing and Fabrication - Continue the following metalworking projects: Neodymium Ribbon Development, Optimized Atomization of Magnesium Powder, Titanium Alloy Hearth Melting Processing Technology, Optimized High Strength Lightweight Alloy Welding, and Thin Wall Superalloy Structural Castings. Continue the following joining projects: Weld Residual Stress and Distortion, Titanium Welding, Adhesive Bonding Integrity, Knowledge Based Ultrasonic Testing of Welds, and continue rapid response actions. Continue the following materials processing initiatives: Laser Processing of Nickel Aluminum Bronze, Non-Contact High Speed Gear Inspection, Repair/Refurbishment of Fatigue/Wear Limited Navy Structures, Advanced Manufacturing Processes for the Advanced Amphibious Assault Vehicle, and

R-1 Line Item 215

Budget Item Justification
(Exhibit R-2, page 5 of 8)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness PROJECT TITLE: Manufacturing Technology

Manufacturing of High Performance of Transmission Housing. Continue a joint effort with the Air Force in Metals Affordability. Continue work on the Propulsor Affordability Initiative.

- (U) \$8,000 - Advanced Manufacturing Enterprise - Continue leveraging the Best Manufacturing Practices and Acquisition Reform Initiatives. Continue efforts in shipbuilding and simulation based design. Continue efforts in Shipboard Sensors; Effective Aluminum Catamaran Structures; Chromium Primer for Aluminum Substrates; and the Environmental Resource Information Center. Continue ongoing and initiate new research efforts in support of the National Shipbuilding Research Program-Advanced Shipbuilding Enterprise. Continue work on the Pathways for Continuous Improvement Program, and Supply Chain Integration.
- (U) \$5,246 - Other - Continue projects in the repair technology arena that support the depots and shipyards such as Supercritical CO2 Parts Cleaning, Ball Valve Repair Process Improvement, Shearography System Development, and Reverse and Re-Engineering Technical Data Generation System. Continue the Ammonium Dinitramide and Composite Propellants projects in support of energetic materials. Continue Phase III of the F414 Engine Demonstration Device with General Electric. Continue technical assistant work at the Systems Command's Program Offices and Program Executive Offices. Continue the Shipbuilding Initiative by starting three new projects.
- (U) \$17,385 - Continue the multi-center of excellence executed Surface Strike Affordability Initiative and the Joint Service Microelectrical-mechanical Sensors (MEMS) Affordability initiatives. Initiate efforts/studies to support the Navy's Future Naval Capabilities.

B. (U) PROGRAM CHANGE SUMMARY: (U)

	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
(U) FY 2002 President's Budget:	68,987	70,605	
(U) Adjustments from FY 2002 PRESBUGD:			
(U) Small Business Innovation Research	-1,682	-	
(U) Congressional Increase	-	2,500	
(U) Section 8123 Management Reform/Initiative Reduction	-	-646	

R-1 Line Item 215

Budget Item Justification
(Exhibit R-2, page 6 of 8)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2002

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness PROJECT TITLE: Manufacturing Technology

(U) FY 2003 President's Budget Submission: 67,305 72,459 70,631

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:

(U) PE 0708011F (Industrial Preparedness)

(U) PE 0708045A (End Item Industrial Preparedness Activities)

(U) PE 0708011S (Industrial Preparedness)

D. (U) SCHEDULE PROFILE: Not applicable.

R-1 Line Item 215

Budget Item Justification
(Exhibit R-2, page 7 of 8)

UNCLASSIFIED

UNCLASSIFIED

FY 2003 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 2002

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0708011N

PROJECT NUMBER: R1050

PROGRAM ELEMENT TITLE: Industrial Preparedness

PROJECT TITLE: Manufacturing Technology

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
a. Process Development	62,079	67,059	64,631
b. Program Management Support	5,226	5,400	6,000
Total	67,305	72,459	70,631

R-1 Line Item 215

RDT&E PE/Project Cost Breakdown
(Exhibit R-3, page 8 of 8)

UNCLASSIFIED