Required Supplementary Stewardship Information

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Heritage Assets

DEPARTMENT OF DEFENSE CONSOLIDATED
HERITAGE ASSETS
For Fiscal Year Ended September 30, 2004

Categories	Unit of Measure	As of 10/01/03	Additions	Deletions	As of 9/30/04
Museums	Each	156	10		166
Monuments & Memorials	Each	1,543	544		2,087
Cemeteries & Archeological Sites	Sites	25,702		8	25,694
Buildings & Structures	Each	19,249	4,284		23,533
Major Collections	Each	11	1		12

Heritage Assets are real and personal property with national importance due to significant historical, natural, cultural, educational, artistic, or architectural value. Heritage Assets can include buildings on the National Registry of Historical Buildings, museums and/or their collections, art and other collections, archival records, cemeteries, monuments and memorials, and archeological sites.

Museums. Buildings that house collection-type items include artwork, archeological artifacts, archival materials, and other historical artifacts. The primary use of such buildings is the preservation, maintenance and display of collection-type Heritage Assets.

Monuments and Memorials. Sites and structures built to honor and preserve the memory of significant individuals, groups, and/or events in history.

Cemeteries and Archeological Sites. Land on which gravesites of prominent historical figures, honored individuals, and/or items of archeological significance are located.

Buildings and Structures. Includes buildings and structures that are listed on, or are eligible for listing on, the National Register of Historic Places, including Multi-Use Heritage Assets. For tally purposes, these buildings do not include museums.

Major Collections. Significant collections that are maintained outside of a museum.

The processes used to establish items as having heritage significance vary among categories and types of assets. Experts' opinion, criteria such as listing on the National Register of Historic Places, and Federal statutes, all play a significant role in characterizing these assets.

The Army museum system, the Navy-wide Heritage Asset Management System, and the Air Force Museums and Heritage Centers, along with historical property, are registered and displayed in numerous locations. Some of these entities also contain items of historical interest, while some are specific to the general locality.

Stewardship Land

DEPARTMENT OF DEFENSE CONSOLIDATED
STEWARDSHIP LAND
For Fiscal Year Ended September 30, 2004
(Acres in Thousands)

Land Use	As of 10/01/03	Additions	Deletions	As of 9/30/04
1. Mission	16,682	--	18	16,664
2. Parks and Historic Sites	1	--	--	1
Total	16,683			16,665

Stewardship Land is land that is not acquired for, or in connection with, items of General Property, Plant and Equipment. All land, regardless of its use, provided to the Department from the Public Domain, or at no cost, is classified as Stewardship Land. Stewardship Land is reported in physical units (acres) rather than cost or fair value.

Nonfederal Physical Property

DEPARTMENT OF DEFENSE CONSOLIDATED
NONFEDERAL PHYSICAL PROPERTY
Annual Investments in State and Local Governments
For Fiscal Years 2000 through 2004
(In Millions of Dollars)

Categories	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Transferred Assets:					
National Defense Mission Related	$5	$95	$7	$85	$54
Funded Assets:					
National Defense Mission Related	$7	$20	$21	$11	$18
Total	$12	$115	$28	$96	$72

The Department incurs investments in Nonfederal Physical Property for the purchase, construction, or major renovation of physical property owned by state and local governments, including major additions, alterations, and replacements, and the purchase of major equipment; and the purchase or improvement of other physical assets. In addition, Nonfederal Physical Property Investments include federally-owned physical property transferred to state and local governments.

Investment values included in this report are based on Nonfederal Physical Property outlays (expenditures). Outlays are used because current DoD accounting systems are unable to capture and summarize costs in accordance with Federal Accounting Standards Advisory Board requirements.

Investments in Research and Development

DEPARTMENT OF DEFENSE CONSOLIDATED
INVESTMENTS IN RESEARCH AND DEVELOPMENT
Annual Investments in Research and Development
For Fiscal Years 2000 through 2004
(In Millions of Dollars)

Categories	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
1. Basic Research	$812	$1,311	$1,356	$1,444	$1,554
2. Applied Research	3,095	3,843	4,311	4,388	4,639
3. Development					
A. Advanced Technology Development	3,753	4,383	4,604	5,080	6,178
B. Demonstration and Validation	6,557	8,166	10,525	11,928	14,779
C. Engineering and Manufacturing Development	8,353	8,831	9,500	11,234	14,633
D. Research, Development, Test & Evaluation Management Support	2,954	2,946	3,351	3,210	4,188
E. Operational Systems Development	10,124	11,000	11,804	12,289	14,906
4. Other	1,906	--	--	--	--
Total	$37,554	$40,480	$45,451	$49,573	$60,897

Investment values included in this report are based on Research, Development, Test and Evaluation (RDT&E) outlays (expenditures). Outlays are used because current DoD accounting systems are unable to capture and summarize costs in accordance with the Federal Accounting Standards Advisory Board requirements.

DoD Research and Development programs are classified in the following categories: Basic Research, Applied Research, and Development. The following table presents representative program examples for each of the major R&D categories and highlights outcomes.

Department of Defense
Investment in Research and Development

Basic Research

Systematic study to gain knowledge or understanding of the fundamental aspects of phenomena and of observable facts

- Without specific applications, processes, or products in mind

Major Program Areas	***Outcomes***
Defense Research Sciences	■ Provides new technologies for the Army's Future Force, and fosters innovation in niche areas where investment is lacking due to limited markets.
University and Industry Research Centers	■ Leverages research in the private sector through Collaborative Technology Alliances, Centers of Excellence, and the University Affiliated Research Centers. Partners with academia, entertainment and gaming industries to leverage innovation research and concepts for training and design.
Converting Waste Heat into Electricity	■ A new discovery in semiconductor technology involving the right combination of ultra pure lead, antimony, silver, and tellurium for a material (called LAST) that is significantly more efficient for high temperature power generation than existing thermoelectric materials.
Improved Semiconductor Devices	■ Enables improved electronics that can perform in harsh environments. Possible applications include: remote-sensing platforms, light-emitting diodes, laser diodes for optical data storage, solar-blind shield surveillance systems, and biological agent detectors.
Human Assisted Neural Devices	■ Detects and decodes signals in the brain so the brain's motor signals can control directly a machine; dramatically improves capabilities in prosthetics.
Photonics Research	■ A device that combines functionality of a transistor and a laser; this light-emitting transistor amplifies weak electrical signals and converts electrical signals to light.

Applied Research

Systematic study to understand the means to meet a recognized specific national security requirement

- Systematic application of knowledge to develop useful materials, devices, and system or methods

Major Program Areas	***Outcomes***
Materials Technology	■ Matures materials technology for armor and armaments lethality and survivability capabilities to be fielded in the Future Combat Systems and Future Force systems. ■ Translates new nanomaterials concepts into applications to increase performance and reduce weight of soldier support equipment, armor, armaments, aircraft, and ground combat vehicles.
Combat Vehicle and Automotive Technology	■ Improves survivability, mobility, sustainability, and maintainability of Army ground vehicles. ■ Supports transformation goals by reducing reliance on heavy passive armor using a layered approach, substituting long-rang situational awareness, multi-spectral signature reduction, active protection systems and advanced lightweight armor. ■ Advanced technologies for critical power, propulsion and electric components, including energy storage, power distribution and pulse forming networks.
Shallow-depth Phased-array Radar	■ Develops electronic components and subsystems for use in shallow-depth phased-array radar antennas, at 1/5 the cost of conventional antennas, which have direct application to advanced unmanned aerial vehicles and fighter aircraft.
Long Term Storage of Blood Products	■ Researches nature's mechanisms for protecting cells from environmental stress, such as dehydration. • Approaches found that will dramatically increase the storage life of blood platelets from 5 days of refrigeration to 2 years of dry storage. • Develops next phase approach for red blood cells, changing the paradigm of medical care at the front lines.
High Productivity Computing Systems (HPCS)	■ Provides economically-viable, highly productive computing systems for the national security and industrial user communities. ■ Demonstrates approximately 100 times more bandwidth than conventional technologies.

Development

Takes what has been discovered or learned from basic and applied research and uses it to establish:

- technological feasibility
- assessment of operability
- production capability

  - Development is comprised of five stages:
    - Advanced technology development
    - Advanced component development and prototypes
    - System development and demonstration
    - RDT&E management support
    - Operational systems development

Major Program Areas	***Outcomes***
Test Ranges and Facilities and RDT&E Management Support	■ Sustains the Department's required developmental test and evaluation capability and operates the developmental test activities required by weapons systems developers. • Operates White Sands Missile Range (NM), Aberdeen Test Center (MD), Yuma Proving Ground (AZ), Aviation Technical Test Center (AL) and Redstone Arsenal (AL). • Supports R&D efforts and includes test ranges, military construction, maintenance support of laboratories, and O&M of test aircraft and ships. • Funds the planning, improvements and modernization for three national asset test centers. o Two efforts utilizing these unique test capabilities are the Propulsion Wind Tunnel Upgrade at Arnold Engineering Development Center and the Threat Simulator Development/Low Radar Cross Section threat modeling and simulation • Provides resources for test planning and safety verification and confirmation. • Achieved successful launches of military satellites, utilizing Titan and Atlas & Delta. • Develops the Family of Advanced Beyond Line of Sight Terminals (FAB-T) to provide robust, secure, strategic and tactical global communications for nuclear and conventional forces.
Electronic Warfare Advanced Technology	■ Provides technologies for a secure, mobile, wireless network that operates in diverse and complex terrain. ■ Also matures: • Protection technologies for tactical wireless networks • Smart communication technologies to enable network and control of unmanned systems shortening the sensor-decider-engagement time to defeat critical targets.

Clearing Antennas	■ Tests a concept to reduce the number of antennas used for receiving and transmitting radio-frequency signals, mitigating interference and reducing costly support systems.
Missile and Rocket Advanced Technology	■ Emphasizes smaller, lighter weight, more affordable missiles. ■ Demonstrates advanced tactical missiles, real-time hardware-in-the-loop simulations, and multi-role seeker technology efforts. ■ Improves target location accuracy in clutter, lightweight missile launchers, precision guidance, hypervelocity missile flight, and missile communications.
Hybrids on the High Sea: Fuel Cells for Future Ships	■ Works to bring hybrid electric ships to the high seas by developing innovative propulsion systems based on fuel-cell technology for efficient generation of electrical power and greater design flexibility.
Advanced Component Development and Prototypes	■ Comprises programs of system specific advanced technology integration efforts in an operational environment. • Demonstrates Fighter Aircraft Command and Control Enhancement, providing improved, beyond-line-of-sight command and control line with fighter aircraft.
Space Based Infrared System (SBIRS)	■ Continues development for the Transformational Satellite Communications System (TSAT), the next-generation communication satellite. ■ Delivers the Counter Communications System, now operational, which is a transportable ground-based system that denies adversary satellite communications through reversible, non-destructive methods.
System Demonstration and Engineering Development (SD&ED)	■ Further develops projects which have not received approval for full production: • Space Based Infrared System Increment 1 Mission Control System (MCS), which reduces manpower by 58% and operations and maintenance costs by 25% • F/A-22 Raptor program, continuing development of the Air Force's next-generation air dominance fighter. Significant accomplishments include: o Completion of Fatigue Testing through 2.68 lifetimes o Commencement of Initial Operational Test and Evaluation o Completion of multiple supersonic AMRAAM and AIM-9 missile shots o Exceeding over 3,100 flight test missions • F-35 Joint Strike Fighter program, developing a family of strike fighter aircraft with maximum commonality among the variants to minimize life cycle costs. Significant accomplishments include: o Completion of the Air System Design Integration and Maturity Review o Pratt & Whitney F135 First Engine to Test o General Electric F136 First Engine to Test

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