DEPARTMENT OF THE NAVY

GENERAL FUNDS

REQUIRED SUPPLEMENTARY STEWARDSHIP INFORMATION

NATIONAL DEFENSE PROPERTY, PLANT, AND EQUIPMENT
For Fiscal Year Ended September 30, 1999
(Stated in Number of Systems or Items)

(a)	(b)	(c)	(d)	(e)	(f)
National Defense PP&E	As of 10/1/98	Additions	Deletions	As of 9/30/99	Condition Operational (%)
1. Aircraft					
A. Combat	2,117	36	68	2,085	80
B. Airlift	1,018	3	11	1,010	76
C. Other	965	19	26	958	91
2. Ships					
A. Submarines	123	1	7	117	68
B. Aircraft Carriers	18	-	-	18	67
C. Surface Combatants	231	8	13	226	63
D. Amphibious Warfare Ships	83	-	7	76	67
E. Mine Warfare Ships	38	1	-	39	69
F. Support Ships	228	6	33	201	70
G. Other Ships	1,147	2	54	1,095	60
H. Small Boats	2,553	53	175	2,431	79
3. Combat Vehicles					
A. Tracked	3,145	-	510	2,635	85
B. Wheeled	31,624	1,596	-	33,220	83
C. Towed	4,821	-	78	4,743	84
D. Other	12,744	829	19	13,554	79
4. Guided, Self-propelled Ordnance					
A. Missiles	56,834	2,463	1,369	57,928	96
B. Torpedoes	8,486	216	29	8,673	83
C. Other	-	-	-	-	0
5. Space Systems					
A. Satellites	17	1	-	18	100
6. Other					
A. Other Weapons Systems	-	-	-	-	0
7. Weapon Systems Support Real Property					
A. Active Ammunition Bunkers	7,958	13	462	7,509	100
B. Active Missile Silos	-	-	-	-	0
C. Active Satellite Ground Stations	-	-	-	-	0
D. Other	-	-	-	-	0

Narrative Statement

As of the date these statements were prepared, the Federal Accounting Standards Advisory Board (FASAB) had not determined the final reporting requirements for National Defense Property, Plant, and Equipment (ND PP&E). Therefore, the Department of Defense (DoD) elected to report ND PP&E in fiscal year (FY) 1999 in the same manner as ND PP&E was reported in FY 1998. For FY 1998, the DoD implemented early, as encouraged by the FASAB, then proposed amendments to the Statement of Federal Financial Accounting Standards (SFFAS) No. 6, "Accounting for Property, Plant and Equipment," and No. 8, "Supplementary Stewardship Reporting." Those amendments required ND PP&E quantities, condition and investment trends to be reported for major types of ND PP&E. Since the FASAB did not adopt the proposed amendments to SFFAS No. 6 and No. 8, in electing to report in accordance with the proposed amendments to the standards, the DoD is not in full compliance with the existing reporting requirements contained in SFFAS No. 8 (SFFAS No.8 requires the Department to report acquisition costs).

The DoD cannot fully comply with the SFFAS No. 8 reporting requirement because many of the DoD's ND PP&E accountability and logistics systems do not contain a value for all or a portion of the ND PP&E assets. These systems were designed for purposes of maintaining accountability and other logistics requirements of ND PP&E, and not for reporting on the value of ND PP&E. Consequently, many of these systems do not accumulate costs or otherwise report values for individual items of ND PP&E.

The ND PP&E cost information is captured in the DoD accounting systems and reported in the Department's "Statement of Net Costs." However, the Department's accounting systems were designed to provide appropriated fund accounting reports required by the Congress, the DoD and other applicable federal agencies. In addition, the Department's accounting systems were not designed to accumulate and retain costs for individual items of ND PP&E. Further, in many instances, even where values were recorded for some ND PP&E in some of the Department's systems, documentation (such as copies of purchase receipts) no longer is available to support such amounts. In part, such documentation is not available, because until recently, the Department was not required to maintain such documents for audit purposes. According to Title 36, Code of Federal Regulations, Chapter XII, "National Archives and Records Administration," receipts for the purchase of items such as ND PP&E are required to be retained for only 6 years and 3 months. Therefore, much of the supporting documentation that would be required to validate the reported values of ND PP&E for audit purposes no longer is available.

Due to the difficulties noted above, implementing the reporting requirements of the SFFAS No. 8 would be an enormous undertaking involving significant cost (requiring the expenditure of perhaps hundreds of millions of dollars). Given the complexity of the reporting requirements contained in the SFFAS No. 6 and SFFAS No. 8, the enormous cost of implementing those reporting requirements and the interim nature of the current reporting requirements, the Department is continuing its FY 1998 reporting display until such time as the Department has a better indication of the more permanent reporting requirements expected to be recommended by the FASAB. The Department believes that the most reasonable and responsible course of action is to report quantity information for DoD's weapons systems until such time as the FASAB adopts permanent reporting requirements for ND PP&E.

The deferred maintenance amount for ND PP&E is found in the Required Supplemental Information.

Aircraft
The beginning balance of 4,100 active aircraft does not equal the FY 1998 ending balance of 4,102. This occurred because two aircraft that should have been recorded as deletions in the FY 1998 RSSI report were not identified prior to submission of the final report. The two aircraft were subsequently removed from the FY98 ending balance.

As defined by the amendment to Statements of Federal Financial Accounting Standard (SFFAS) No. 6 "Accounting for Property, Plant and Equipment," and No. 8, "Supplementary Stewardship Reporting," there are 4,053 active aircraft used in the performance of military missions. In addition to the September 30, 1999 ending balance of 4,053 active aircraft, there are an additional 1,775 inactive aircraft stored at the Aerospace Maintenance and Regeneration Center (AMARC), Davis-Monthan Air Force Base. Of the 1,775 inactive aircraft, 42 are in the disposal cycle and 1,733 aircraft are in long-term storage. It is possible some of the inactive aircraft could be reactivated in the case of a national emergency.

The additions consisted of 6 reinstatements and the rest were procurements. The deletions consisted of 40 from AMARC and the rest due to crashes or transfers from the depots to the Defense Reutilization Management Office.

The Other category consists of training aircraft and a few experimental aircraft.

Ships

Submarines:	ADDITIONS: SSN 22. DELETIONS (Assets Disposed of): SSBN 619,624; SSN 608,664,672,678,682.
Aircraft Carriers:	ADDITIONS: None. DELETIONS (Assets Disposed of): None.
Surface Combatants:	ADDITIONS: DDG 75,76,78; DELETIONS (Assets Disposed of): CG 5,26; CGN 35; DD 942; DDG 4,6,19,40,42,43,46; FF1081,1096.
Amphibious Warfare Ships:	ADDITIONS: None. DELETIONS (Assets Disposed of): LSD 28,31,35; LST 1160,1163,1164,1165.
Mine Warfare Ships:	ADDITIONS: MHC 62 DELETIONS (Assets Disposed of): None.
Support Ships:	ADDITIONS: AKR 300, 301,311,312; AGOR 25; AR 8*. DELETIONS (Assets Dispose of): AE 22; AGDS 2; AGOR 3; AO 62,98,99,105,108,109,143-148,191; AOR 1,5,7; AOT 75; AR 5; ARS 8,38,41,43; AS 12,16,18,34; ASR 14,15,21,22.
Other Ships:	ADDITIONS: YDT 17, 18. DELETIONS (Assets Dispose of): AFDB 8; AFDM 5,8,14; IX 506, 510; YC 1275, 1521; YD 73,114,197,223; YDT 14,15; YF 866; YFN 372,642,644,651,705,796,1180,1202,1223; YFR 888; YM 33; YOGN 9; YON 81,84,96,235,259; YOS 15,16,21,28; YP 678; YR 26; YRBN 1; YSR 17,23,45; YTB 757; YWN 71; YC 1118,1450; ARD 5; six LCACs.

Other Ships includes all service craft and Landing Craft Air Cushion (LCAC).

Condition Operation (%) includes all ships with status codes **A** (Active), **I** (Military Sealift Command (MSC) Naval Fleet), **L** (Leased), **M** (MSC, in commission, Navy Crews), **O** (Stand down, start of inactivation cycle), **Q** (Navy owned), and **X** (Security Assistance Program (SAP), Loaned). In addition, status codes of **N** (Naval Reserve Force, Active) and **S** (Special, in commission) are included based on NVR status comments. Condition Operation (%) does not include ships with status of **R** (Inactive), **T** (Stricken) or **Y** (SAP Stricken).

NOTES ON ADDITIONS: Asterisk (*) in table above indicates ship was not included in the FY 1998 submission because status was disposed/sold; contractor defaulted and ships were repossessed by the Navy.

SMALL BOATS: Additions: 3 EOD RIBS, 19 NORTHPORT RIBS, 31 OTHER BOATS ADDED DURING VALIDATION/Y2K CERTIFICATION. Deletions: 156 disposals, 19 open allowance.

Combat Vehicles

Marine Corps ND PP&E assets reported for FY 1999 were extracted from the Materiel Capabilities Decision Information System (MCDIS). MSDIS interfaces with and receives file updates from other logistic systems. For the FY 1999 stewardship report, combat vehicle program managers were requested (during July) to identify vehicles for inclusion in the following categories: towed, tracked, wheeled, and “other”. Once vehicle categorization was completed, MCDIS programmers attempted to provide additional information such as fiscal year starting and ending balance, additions, deletions, assets in storage, and assets in the disposal cycle. The midyear categorization change and a definitional expansion of reportable assets to be included resulted in the inclusion of assets not reported in FY 1998. This created difficulty in obtaining accurate starting balances, additions, and deletions or producing a crosswalk between the information provided in the two fiscal years.

There are 91 combat vehicles in the disposal cycle and 11,823 in storage. Assets with low condition operational percentages are in the process of being phased-out.

Nineteen Personnel Carriers were erroneously categorized as Land Attack Vehicles in the FY 1998 Required Supplementary Stewardship Information report and reported as ND PP&E Major End Items. These vehicles are more properly categorized as personnel carriers and their value reported as personal property PP&E on the Balance Sheet. They are deleted from RSSI for FY 1999.

Guided, Self-propelled Ordnance

Conventional Missiles: Marine Corps missiles are currently stored at the Red River Army Ammunition Plant with several Maritime Propositioning Ships holding assets awaiting offload during their maintenance cycle. The decrease of 44 missiles was due to an on going reconciliation with the accountable records at Red River and Inventory Control Point (ICP) at Marine Corps Systems Command. This reconciliation was a result of a Program Manager Ammunition Management initiative. Duplicate serial numbers existed under different Department of Defense Identification Codes as a result of rework. The stockpile is awaiting custodial transfer to the Army Hawk Missile Management, Huntsville Ala. Information is gathered from the Marine Ammunition Accounting Reporting System (MAARS II).

Non-Nuclear Ordnance is a unique inventory commodity, acquired via Appropriation Purchase Account (APA) funding and issued "Free Issue" to Fleet warfighters under Defense Planning Guidance (DPG) Integrated Program Summary (IPS). There is no DON ordnance financial system that captures total ordnance life cycle costs and applies devaluation factors based on changes in the condition code. In accordance with FMR, Vol. II and NAVORDCEN INST 8010.2A, ordnance is valued at the latest acquisition cost. The number given for additions does not reflect only new production but includes numbers for rebuild and those returning to the inventory after a maintenance cycle.

Ballistic Missiles: During FY 1999, 12 Trident II D-5 missiles were added to the inventory: four D-5 missiles were expended during flight tests; thirty Trident I C-4 missiles were deleted from the inventory by disposal, and four C-4 missiles were expended during flight tests. The source of this data is the Strategic Weapons Facility, Atlantic Missile History Status Report for D-5 missiles and the Strategic Weapons Facility, Pacific Missile History Status Report for C-4 missiles.

Torpedoes: Non-Nuclear Ordnance is a unique inventory commodity, acquired via APA funding and issued "Free Issue" to Fleet war-fighters under DPG IPS. There is no DON ordnance financial system that captures total ordnance life cycle costs and applies devaluation factors based on changes in the condition code. In accordance with FMR, Vol. II and NAVORDCEN INST 8010.2A, ordnance is valued at the latest acquisition cost. The number given for additions reflects new production and includes numbers for rebuild and those returning to the inventory after a maintenance cycle.

Space Systems

Additions: UFO-9. Research and Development satellites are not included - only includes operational satellites - FLTSATS 1, 4, 7, 8, UFO 2, 3, 4, 5, 6, 7, 8, 9 OSCAR 23, 25, 27,29, 31, and 32.

NATIONAL DEFENSE PROPERTY, PLANT, AND EQUIPMENT
YEARLY INVESTMENTS
For FY 1998 and FY 1999
(In Millions of Dollars)

(a) National Defense PP&E	(b) FY98	(c) FY99
1. Aircraft		
A. Combat	$2,698	$2,897
B. Airlift	0	34
C. Other	356	2,004
D. Aircraft Support Principal End Items	2,981	722
E. Other Aircraft Support PP&E	0	974
2. Ships		
A. Submarines	1,089	1,409
B. Aircraft Carriers	1,301	823
C. Surface Combatants	2,879	3,552
D. Amphibious Warfare Ships	753	581
E. Mine Warfare Ships	89	73
F. Support Ships	0	359
G. Other Ships	575	30
H. Ship Support Principal End Items	851	852
I. Other Ship Support PP&E	0	1
3. Combat Vehicles		
A. Tracked	74	64
B. Wheeled	0	106
C. Towed	0	0
D. Other	0	0
E. Combat Vehicles Support Principal End Items	0	12
F. Other Combat Vehicles Support PP&E	0	1
4. Guided, Self-propelled Ordnance		
A. Missiles	1,351	349
B. Torpedoes	125	70
C. Guided, Self-Propelled Ordnance Support Principal End Items	414	16
D. Guided, Self-Propelled Ordnance Support PP&E	0	198
5. Space Systems		
A. Satellites	0	0
B. Space Systems Support Principal End Items	130	115
C. Other Space Systems Support PP&E	0	0

6. Other		
A. Other Weapons Systems	48	43
B. Other Weapons Systems Support Principal End Items	106	0
C. Other Weapon Systems Support PP&E	0	42
7. Weapon Systems Support Real Property		
A. Active Ammunition Bunkers	28	19
B. Active Missile Silos	0	0
C. Active Satellite Ground Stations	0	0
8. General Mission Support PP&E	1,792	1,897

Narrative Statement

Investment values included in this report are based on outlays (expenditures). Outlays are used instead of acquisition costs because current DoD systems are unable to capture and summarize procurement appropriation acquisition costs in accordance with accounting standards.

The Defense Finance Accounting Service – Cleveland Center (DFAS-CL) performed a query in Standard Accounting and Reporting System (STARS) – Funds Distribution and Departmental Reporting (FDR) which yielded the dollar amounts for the National Defense PP&E Yearly Investment Report. Before running their query, the Department of the Navy provided DFAS-CL a "map" or "schema" of which disbursements should be included on each particular line of the report. The schema identified appropriations, budget activities, sub-budget activities, and program elements.

For FY 1999 reporting, the FY 1998 schema was used as a baseline. The FY 1998 schema was updated to reflect new items as identified in the Appropriation Status, DD COMP (M) 1002 report. The proposed FY 1999 schema was then forwarded to all applicable management Commands for their review/changes/approval. Once all comments were incorporated, the schema was forwarded to DFAS-CL. DFAS-CL generated the query in STARS-FDR, and the results were sent to the management Commands for their review and approval.

Space Systems

Due to the nature of the Satellites deployment process there are no Space systems Support Principal End Items or Other Space Systems Support PP&E. Once launched, satellites are not retrieved.

General Mission Support PP&E

Includes ordnance support equipment, vehicular equipment, electronics equipment, and communications equipment.

Weapon Systems Support Real Property

Includes ammunition bunkers in use as reflected in the Navy Facility Assets Data Base.

HERITAGE ASSETS
For Fiscal Year Ended September 30, 1999

(a)	(b) Measure Quantity	(c) As of 10/1/98	(d) Additions	(e) Deletions	(f) As of 9/30/99
Collection Type					
1. Archaeological Artifacts	Cubic Feet	4,230	369	-	4,599
2. Archival	Linear Feet	98,880	2,893	1,089	100,684
3. Artwork	Items	40,048	1,111	-	41,159
4. Historical Artifacts	Items	790,213	7,832	208	797,837
Non-Collection Type					
5. Archeological Sites	Sites	22,823	597	8	23,412
6. Buildings and Structures	Items	8,920	360	716	8,564
7. Cemeteries	Sites	174	3	-	177
8. Memorials and Monuments	Items	1,246	5	31	1,220

Narrative Statement:
The Department of the Navy (DON) is required to report Heritage Assets in accordance with the following public laws:

- 10 USC 2721
- USC 483(b)
- Antiquities Act of 1906
- Historic Sites Act of 1935
- USC 470 National Historic Preservation Act of 1966
- National Environmental Policy Act of 1969
- American Indian Religious Freedom Act of 1978
- Archeological Resources Protection Act of 1979
- Native American Graves Protection & Repatriation Act of 1990
- Presidential Memorandum for Heads of Executive Departments and Agencies: Government to Government Relations with Native American Tribal Governments Act of 1994
- 36 CFR 79 – Curation of Federally Owned and Administered Archeological Collections

Currently, the DON does not maintain a central database that contains accountability data for all DON Heritage Assets. For example, there is a large amount of uncurated and undocumented material generated from the BRAC process that the DON is now beginning to evaluate and catalogue. During FY 1999, the DON Heritage Asset Non-Financial Feeder Team contracted with a firm to survey the universe of assets designated as Heritage Assets and improve the curation and accountability of these assets. During FY 2000, the DON Heritage Asset Non-Financial Feeder Team will continue to survey and develop baseline information on Heritage Assets inventory accuracy. The Team will also work to clear data entry backlogs in the historic artifacts community. The Heritage Asset community plans to select one system for maintaining accountability and reporting of Heritage Assets.

In general, the DON defines Heritage Assets as items that are unique for one or more of the following reasons: historical or natural significance; cultural, educational or artistic importance; or significant architectural characteristics. There are two major categories of Heritage Assets, known as Collections and Non-collections.

Collections

The Collections category includes items that are gathered and maintained for exhibition such as museum collections, art collections, and archival collections. The following sub-categories under Collections were reported:

- Archeological Artifacts. Unit of Measure = Cubic Feet. Archeological artifacts include items recovered as a result of archeological techniques, including surface collection and excavation on land or underwater.

- Archival. Unit of Measure = Linear Feet. Archival includes audio-visual, electronic, text, and other similar documentation containing information of historical significance or association.

- Artwork. Unit of Measure = Item. Artwork includes objects of fine art such as paintings, engravings, sculptures, etc., noted for aesthetic or representational value.

- Historical Artifacts. Unit of Measure = Item. Objects with material cultural value acquired by service, use, gift, loan, or purchase that have historical significance or association with a person, place, organization, event, and/or technology.

Process used to establish assets as Heritage Assets. Subject matter experts (archeologists, archivists, curators, military/art historians, etc.) principally determine heritage significance of "collections" type assets for purposes of stewardship reporting. The majority of this material is contained in the collections of museums, archives, or archeological repositories. Specific direction as to classification of Heritage Assets can be found in statute, regulation, and service guidance.

Data Collection Process. The DON has collections type holdings of Heritage Assets located at museums and installations. The FY 1999 data call and resulting data compilation was the most comprehensive ever performed by the DON.

In FY 2000, DON intends to begin streamlining the heritage asset data collection process by using business process reengineering methodologies throughout the components of the heritage asset community. DON intends to install standardized collections management software at the significant collections type heritage asset components throughout the United States. Software standardization will facilitate efficient and effective reporting and optimize the data collection process. DON components that have collections type Heritage Assets but are not receiving the standardized collections management software will be instructed to register their assets with the Naval Historical Center at Washington, D.C., or the Marine Corps History Museums Division at Quantico, Virginia, or other designated site(s). These locations will serve as the hubs for collections type Heritage Assets at locations without collections management software by tracking and reporting these assets as "loaned" items.

The collections type heritage asset data compiled and reported for FY 1999 includes DON components that consistently maintain tight collections type heritage asset inventory counts by automated and/or manual means. Additionally, the FY 1999 compilation includes DON components that have never conducted a collections type heritage asset inventory and therefore provided data based on estimates. During FY 2000, each DON collections type heritage asset component intends to conduct an inventory and updating their accountability systems. Thereafter, collections type heritage asset inventories will be conducted in accordance with the inventory requirements set forth in relevant Federal Government financial regulations.

The largest holder of Heritage Assets within the DON, the National Museum of Naval Aviation in Pensacola, Florida, has provided an estimated number of 500K objects including artwork and historic artifacts. This estimate is noted due to the material amount of Heritage Assets, 60% of the total, that this museum maintains in relation to the aggregate number of artwork and historic artifacts. Subsequent heritage asset reporting years may have material shifts in amounts from prior years due to the enormity of the Naval Aviation Museum's estimation and probable changes due to ongoing inventories.

The second largest holder of collections type Heritage Assets within the DON, The Naval Historical Center, has provided several estimates. There are approximately 20,000 Heritage Assets from the base realignment and closures (BRAC) that have not been catalogued by the Historical Center, and an additional 39,000 collections type Heritage Assets that are not properly accounted for.

Criteria used to determine condition. The condition assessment of collections type Heritage Assets is based on whether the collections are being cared for and safeguarded in accordance with relevant Federal Government regulations. The majority of the DON collections type Heritage Assets are being cared for and managed in accordance with relevant Federal Government regulations. The DON believes that there are some material weaknesses in the care and/or safeguarding in accordance with relevant Federal Government regulations of some collections type Heritage Assets and intends to investigate in these areas. For example, several storage facilities, including the Naval Historical Center's storage facility artifact collections, are grossly inadequate in terms of climate controls. Additionally, some sites do not have the resources necessary to properly conserve many parts of the collections. An example of this is the Heritage Assets on display outside at the Washington Navy Yard.

Non-collections

The Non-collections category includes real property type assets that exemplify the characteristics listed in the definition of Heritage Assets and/or are listed or eligible for listing on the National Register of Historic Places. The following sub-categories were reported under Non-collections:

- Archaeological Sites. Unit of Measure = Sites. Archeological sites listed on or determined eligible for listing on the National register of Historic Places. Criteria for evaluating National Register eligibility of archeological sites may be referenced at 36 CFR 60.4.

- Buildings & Structures. Unit of Measure = Item. Buildings and Structures listed on or eligible for listing on the National Register of Historic Places including multi-use Heritage Assets. This designation includes properties determined to be National Historic Landmarks.

- Cemeteries. Unit of Measure = Site. Government owned burial grounds located on DoD Installations.

- Memorials & Monuments. Unit of Measure = Item. Memorials and Monuments that have significant and/or historical value to the respective DoD Component.

Process used to establish assets as Heritage Assets. Heritage significance of "non-collections" type items for purposes of stewardship reporting varies depending on the sub-category being reported. Criteria for "archeological sites" and "buildings & structures" are predicated on the item either being listed on or eligible for listing on the National Register of Historic Places. All service owned & maintained "cemeteries" are reported. Criteria for reporting of "monuments & memorials" is principally contained in service guidance.

Data Collection Process. In FY 2000, DON intends to enhance and standardize non-collections management software at the significant non-collections type heritage asset components throughout the United States. Software standardization will facilitate efficient and effective reporting and optimize the data collection process. During FY2000, each DON non-collections type heritage asset component will be conducting inventories and updating their accountability systems. Thereafter, non-collections type heritage asset inventories will be conducted in accordance with the inventory requirements set forth in relevant Federal Government financial regulations.

Criteria used to determine condition. The condition assessment of non-collections type Heritage Assets is based on whether the assets are being cared for and safeguarded in accordance with relevant Federal Government regulations. The majority of the DON non-collections type Heritage Assets are being cared for and managed in accordance with relevant Federal Government regulations. The DON believes that an immaterial amount of non-collections type Heritage Assets are not being cared for or safeguarded in accordance with relevant Federal Government regulations and intends to investigate these areas.

STEWARDSHIP LAND
For Fiscal Year Ended September 30, 1999
(Acres in Thousands)

(a) Land Use	(b) As of 10/1/98	(c) Additions	(d) Deletions	(e) As of 9/30/99
1. Mission	2,067	-	65	2,002
2. Parks & Historic Sites	-	-	-	-
3. Wildlife Preserves	-	-	-	-
Totals	2,067	-	65	2,002

Narrative Statement

The DON followed the definition of Stewardship Land per DoD Guidance to include Public Domain, Land Set Aside, and Donated Land. The Naval Facility Assets Data Base System (NFADB) was used to derive acres for Stewardship Land. Within the definition of Stewardship Land, land can be further defined as improved, semi-improved and other categories of land.

The FY 1999 beginning balance does not reflect the ending FY 1998 balance as reported in the FY 1998 Annual Financial Report. This is due to a reclassification of one category of land, Public Domain – license or permit that was not included in Stewardship Land for FY 1998 Reporting.

NON-FEDERAL PHYSICAL PROPERTY
Yearly Investments in State and Local Governments
For Fiscal Years 1995 through 1999
(In Millions of Dollars)

The Department of the Navy does not fund this type of Activity.

INVESTMENTS IN RESEARCH AND DEVELOPMENT
Yearly Investment in Research and Development
For Fiscal Years (Preceding 4th Fiscal Year) through FY 1999
(In Millions of Dollars)

(a) Categories	(b) FY95	(c) FY96	(d) FY97	(e) FY98	(f) FY99
1. Basic Research	$545	$491	$387	$341	$344
2. Applied Research	558	535	490	496	510
3. Development					
Advanced Technology Development	284	380	468	518	532
Demonstration and Validation	3,947	2,746	2,035	2,407	2,234
Engineering and Manufacturing Development	1,386	2,262	2,114	2,125	2,019
Research, Development, Test, and Evaluation Management Support	859	751	736	695	709
Operational Systems Development	1,445	2,264	2,060	1,556	1,696
Total	$9,024	$9,429	$8,290	$8,138	$8,044

Narrative Statement

Investments in Research and Development

Investment values included in this Report are based on Research and Development (R&D) outlays (expenditures). Outlays are used because current DoD systems are unable to capture and summarize costs in accordance with the accounting standards.

A. Basic Research
Basic Research is the systematic study to gain knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.

A narrative discussion of a representative sample of major new discoveries achieved by the program during FY 1999 follows.

Defense Research Sciences.
The Navy's Defense Research Sciences program funded work across a broad spectrum of disciplines focusing on four major thrust areas: Ocean Sciences, Advanced Materials, Information Sciences and Sustaining Programs. Among hundreds of research projects undertaken were development of fouling-release coatings for marine applications, synthesis and processing of nanostructured materials, validation of maneuvering predictions for submarine configurations, brain circuit methods for real-time field applications, and auroral and ionospheric research.

B. Applied Research
Applied Research is the systematic study to gain knowledge or understanding necessary for determining the means by which a recognized and specific need may be met.

A narrative discussion of a representative sample of major new applications achieved by the program during FY 1999 follows.

Aircraft Technology.
Ongoing efforts focused on the areas of propulsion and power, integrated avionics including cockpit technologies, and Naval air vehicle technology. Examples of specific programs include: (1) Investigated feasibility of a flight control system capable of providing assisted or automated maneuvering for Naval mission tasks. (2) Development of a Fighter/Attack Phase III fan for the Joint Technology Demonstrator Engine. In addition to increasing engine efficiency, the fan promises to reduce risks to engines associated with foreign object damage. (3) Demonstration of an intelligent crew station concept capable of unobtrusively monitoring and assessing aircrew physiological functions, while assessing aircraft condition relative to escape envelopes.

C. Development
Development is the systematic use of the knowledge and understanding gained from research for the production of useful materials, devices, system or methods, including the design and development of prototypes and processes.

A narrative discussion of a representative sample of major developmental projects including the results of projects completed by the program during FY 1999 follows.

1. Advanced Technology Development

Advanced Technology Transition.
Three examples of advanced technology demonstration efforts are: (1) continued development of DNA vaccines for complex multistage organisms and other organisms; (2) continued demonstration of the use of plasma-arc pyrolysis as a method for destroying shipboard waste; and (3) reducing ship crew size by demonstrating an automated system capable of providing environmental, machinery, structural, and personnel situational awareness (reduced ships' crew by Virtual Presence (RSVP)).

2. Demonstration and Validation

Budget Activity 4.
Joint Strike Fighter Program - Concept Demonstration efforts are ongoing, including company unique technology demonstrations, completed final design and continued build of Concept Demonstrator Aircraft and continued refinement for a tri-service family of aircraft.

Environmental Protection - Shipboard Waste Management

In the area of Shipboard Waste Management, the DON accomplished the following during FY 1999:

- Completed Ozone Depleting Substances evaluation of the first submarine refrigeration plants converted to HFC-134a.
- Continued development of backfit modification fits for surface ship 125-ton & 150-ton CFC-114 air-conditioning plant designs.
- Continued development of backfit modification kits for surface ship 300-ton and 363-ton CFC-114 air-conditioning plant designs.
- Continued development and initiated qualification of backfit modifications for remaining surface ship 250-ton CFC-114 air-conditioning plants.
- Continued one-year at-sea ship test and evaluation of HFC-236fa backfit modifications in 200-ton CFC-114 air-conditioning plants.
- Completed laboratory evaluations of future fleet non-chlorofluorocarbon 200-ton centrifugal air-conditioning plant and 1.5 ton refrigeration plant prototypes to qualify systems.
- Completed development of alternative solvents and processes for oxygen systems cleaning applications.
- Completed development of Alternative Firefighting Agent Delivery System (AFFADS) for new ship construction.

Integrated Liquid Wastes. In the Integrated Liquid Wastes area, the DON accomplished the following during FY 1999:

- Continued support of rule making process with the Environmental Protection Agency in development of Uniform National Discharge Standards (UNDS) for liquid waste discharges from Navy vessels.
- Continued development of integrated liquid waste treatment system: continued development of a 10-gal/min unit Oily Waste Polishing System (OWPS)(OWS-10Polisher) and continued development of 50 gal/min OWS-50 Polisher.
- Continued development of Engineering Development Model (EDM) non-oily wastewater treatment system; continued development of advanced Oil Content Monitor (OCM).
- Continued test and evaluation of upgraded shipboard vortex sewage incinerator with emphasis on evaporation/incineration of all concentrated ship liquid wastes.
- Continued development of design fixes for compensated fuel ballast systems.
- Completed testing of Non-Seeping Grease Seal on submarine dive and steering gear.

Ship Concept Advance Design-Design Tools, Plans & Concepts-Pre-Milestone 0 Ship Concepts and Mission Need Analysis.
In the Ship Concept area, the DON:

- Developed ship concepts and performed mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship size, configuration, capabilities and rough order of magnitude (ROM) ship costs.
- Conducted pre-milestone 0 ship concept studies for joint command ship, medical capabilities afloat, and alternative potential ship concepts in support of SCN planning.
- Conducted joint command ship (JCC(X)) ship versus shore basis mission need analysis.
- Conducted Development Options Study for LHA replacement (large deck amphibious assault ship) including ship concept studies.
- Developed future surface warfare vision including mission needs and concepts.

Total Ship Technology Assessment.

During FY 1999, the DON:

- Analyzed the benefits and impacts of new ship and hull, mechanical and electrical (HM&E) concepts and technologies, and updated the HM&E technology database.
- Supported integration and transition of new technologies in total ship concepts.
- Established baseline ship concepts and technology characterization process for use in technology assessments.

BUDGET ACTIVITY 5
Engineering and Manufacturing Development
T-45 Training System.
The DON continued Navy unique courseware development and began courseware conversion.

Joint Standoff Weapon (JSOW).
The DON continued engineering and manufacturing development (E&MD) efforts, captive flight testing and Cost as an Independent Variable studies; and completed qualification of the Low Cost Guidance Electronics common to all variants of the JSOW missile.

V-22.
The DON continued MV-22 and CV-22 contract development efforts, including flight test, Government Furnished Equipment integration, logistics efforts, Power-by-the-Hour support of the engine, support equipment procurements, repair of repairable and other E&MD efforts. Drop Test Article testing was completed. The DON began development of Weapons Replaceable Assembly/Test Program Sets and began CV-22 modifications for the flight simulator and Naval Air Maintenance Trainer Suite.

Aegis Combat System Engineering. Surface Combatant Combat System Improvements: The DON began modifications to the Aegis Weapon System (AWS) computer program to allow incorporation of Anti-Aircraft Warfare (AAW) capability into the Standard Missile 2 Block IVA (SM2 BLK IVA) missile. Other accomplishments included:

- Continued with Element Test and Evaluation (ET&E) and Multi-element integration Testing (MEIT) for Baseline 6 Phase I.
- Delivered 6 Phase I program to CG 66 and 69 for testing. Continued with integration of Cooperative Engagement Capability (CEC) Baseline 2 functionality into this baseline for cruisers.
- Continued preparation for CEC Operational Evaluation (OPEVAL).
- Continued Baseline 6 Phase III computer program code, debugging, and testing.
- Conducted Critical Design Review (CDR) II.
- Began extensive ET&E and MEIT at the Combat Systems Engineering Development Sight (CSEDS).
- Continued system engineering for full integration of SPY-1D(V) advanced upgrades into new construction AEGIS Combat System in Baseline 7 Phase I.
- Conducted Preliminary Design Review (PDR) for integration of upgrades.

- Began system definition and engineering for the AEGIS cruiser conversion program to incorporate war-fighting capabilities including Theater Ballistic Missile Defense, and land attack into Baseline 3 and 4 Cruisers. This includes Phase IIIC computer program.
- Continued the AADC prototype at Sea installations in USS SHILOIH and Mt Whitney and commenced proof of concept and risk reduction testing in an operational environment employing the prototype shore capability for both operational and technical evaluation to the system developer.
- Continued to provide the RDT&E share of operations and Maintenance of the Combat Systems Engineering Development Site (CSEDS), Program Generation Center, Computer Program Test Site, and Land Based Test Site.

Engineering and Scientific Studies.
During FY 1999, in the Engineering and Scientific Studies area, the DON:

- Provided funds for labs and field activities to support forward fit baseline upgrade in order to conduct engineering and scientific studies and analysis in order to minimize the risk in the introduction of increased war fighting capability including TBMD, CEC, Evolved SEASPARROW Missile System (ESSM), and Advanced Integrated Electronic Warfare System (AIEWS) into the AEGIS Combat System. Studies produced by the Applied Physics Lab and the Naval Surface Warfare Center, Dahlgren Division (NSWC, DD) ensured effective introduction of Commercial Off-the-Shelf Technology (COTS). NSWC, DD personnel also provided on site technical support at contractor facilities during development, testing, and evaluation of upgrades to the AEGIS combat systems. Began development of open computing system architecture prototype (EDM 5A).

Virginia Class Submarine Design Development.
During FY 1999, DON:

- Continued design, manufacturing, and qualification testing of prototype technologies and components such as: ship service turbine generator (SSTG), weapons stowage, handling and launch systems, propulsor, main thrust bearing; electromagnetic signature reduction, special hull treatments; integrated low pressure electrolyzer system; ship control system; and reverse osmosis desalination unit.
- Continued shock qualification testing and analyses of various components.
- Continued system verification studies, tests, and analyses in support of ship design including signature, hydrodynamics, materials, and survivability analyses and tests.
- Provided Integrated Product and Process Development (IPPD), Design/Build team support at shipyards, Navy laboratories, and in house.
- Supported ship design and construction efforts with engineering evaluations and ship integration assessments for emergent ship design and systems development issues.
- Initiated transitions from advanced research and development projects and engineering developments of new technologies for potential insertion in the Virginia class submarine including High Frequency Remote Ahead Profiling, Conformal Acoustic Velocity Sensor (CAVES), Accelerated Electromagnetic Silencing and additional Advanced Sail Development.
- Continued effectiveness analysis and evaluations relating to force effectiveness.
- Conducted analysis in support of force effectiveness assessment and component performance tradeoffs.
- Maintained cost reducing approach to VIRGINIA Class Submarine construction through use of IPPD's concurrent engineering and design/build philosophy.
- Continued coordination of VIRGINIA Class Submarine specification at the shipbuilder.
- Continued cost estimating and validation of cost reduction ideas for VIRGINIA Class Submarine overall design development.
- Continued environmental compliance and pollution prevention efforts.

BUDGET ACTIVITY 6
Research, Development, Test, and Evaluation Management Support

Test and Evaluation Support (Weapons Division).
The DON operated core Major Range Test Facility Base capabilities required to meet acquisition program and fleet test workload. The DON also supported essential components of indirect civilian salary and contractor costs required to manage, operate, and maintain Pacific Range's Sea, Air, Ground, Electronic, Combat, Propulsion, Warhead and Environmental test facilities, operational target vehicle launch functions and aircraft maintenance.

BUDGET ACTIVITY 7
Operational Systems Development

For Operational Systems Development, the DON:

- F/A-18 - Performed follow on Variant-Continued developmental flight-testing, began and completed Developmental testing (DT)-IID (Techeval) and began DT-IIE and Operational Testing-IIC (OPEVAL).

- Tomahawk - continued Tactical Tomahawk Engineering and Manufacturing Development (E&MD) including mission planning and weapon control development.

- Surface ASW Combat System Integration - completed system design specification development for the Multi-Function Towed Array (MFTA) and processor. Also completed array Preliminary Design Review (PDR). Completed design of the MFTA processing. Began design and fabrication of MFTA array hardware and performed array mechanical critical item testing. Completed array self-noise critical item testing.

- Surface ASW System Improvements - Completed analysis of data from Towed Active Receive System (TARS) FY 1998 sea tests. Completed performance specification development for the TARS Engineering Development Model (EDM) to include active classification display upgrades to support implementation with the MFTA. Continued transition of active classification upgrade algorithms for Echo Tracker Classifier (ETC) to support implementation with the hull sensor and mid-frequency active MFTA. Evaluated feasibility of an ASW Data Link (virtual) to support multi-platform coordinated ASW. Continued support of Navy-wide towed array commonality development efforts. Completed developmental test, DT-IIIAN, and analysis on an AN/SQQ-89 (V) 6 system with adjunct processing including torpedo alertment capabilities.

- Began program planning and requirements definition for the LAMPS Mk III BLK II system. Identified critical system performance items, established new interfaces for the KuBand LAMPS Common Datalink (CDL), and explored methods of backfitting these changes to the maximum number of ships.

- MK48 Advanced Capability (ADCAP). Continued the development of Guidance and Control (G&C) Software Block Upgrade IV in preparation for Operational Testing in FY 2000. Supported follow-on test and evaluation (FOT&E) of Software Block Upgrade III. G&C Software efforts continued in order to address fleet identified priorities for MK48 ADCAP modifications (MODS). Efforts included software coding, modeling and simulation of proposed releases (including development and validation of models) and engineering tests in water for evaluation of proposed releases.

- Conducted validation of safety features for submarine crew safety. Provided for COMOPTEVFOR Block Upgrade IV DT Test support. Completed Common Broadband Advanced Sonar System (CBASS) trade studies and requirements analysis that initiated design development. Continued development of advanced wideband algorithms, signal processing, and tactical software. Performed wideband data gathering exercises and completed the fabrication of CBASS test vehicles that will support algorithm development and initial software builds.

- Industrial Preparedness (Manufacturing and Technology). With the goal of improving productivity and responsiveness within the domestic defense industrial base, Centers for Excellence funded under the MANTECH program continued research in numerous areas including processing and fabricating composites, electronics, and metals.

- Navy Meteorological and Oceanographic Sensors-Space (METOC). In support of Fleet operational requirements, ongoing efforts funded development and demonstration of technologies for Navy-unique sensors to be deployed under the Defense Meteorological Satellite and National Polar-Orbiting Operational Environment Satellite System programs.