

**Audit**



**Report**

OFFICE OF THE INSPECTOR GENERAL

**THE NAVY VALUE ENGINEERING PROGRAM**

Report No. 97-121

April 9, 1997

**Department of Defense**

### **Additional Copies**

To obtain additional copies of this audit report, contact the Secondary Reports Distribution Unit of the Analysis, Planning, and Technical Support Directorate at (703) 604-8937 (DSN 664-8937) or FAX (703) 604-8932.

### **Suggestions for Audits**

To suggest ideas for or to request future audits, contact the Planning and Coordination Branch of the Analysis, Planning, and Technical Support Directorate at (703) 604-8939 (DSN 664-8939) or FAX (703) 604-8932. Ideas and requests can also be mailed to:

OAIG-AUD (ATTN: APTS Audit Suggestions)  
Inspector General, Department of Defense  
400 Army Navy Drive (Room 801)  
Arlington, Virginia 22202-2884

### **Defense Hotline**

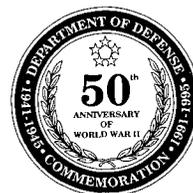
To report fraud, waste, or abuse, contact the Defense Hotline by calling (800) 424-9098; by sending an electronic message to [Hotline@DODIG.OSD.MIL](mailto:Hotline@DODIG.OSD.MIL); or by writing the Defense Hotline, The Pentagon, Washington, D.C. 20301-1900. The identity of each writer and caller is fully protected.

### **Acronyms**

FAR	Federal Acquisition Regulation
MDAP	Major Defense Acquisition Program
NAWC	Naval Air Warfare Center
NAVAIR	Naval Air Systems Command
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
OASN(RDA)	Office of the Assistant Secretary of the Navy (Research, Development, and Acquisition)
OMB	Office of Management and Budget
OUSD(A&T)	Office of the Under Secretary of Defense for Acquisition and Technology
QMB	Quality Management Board
SPAWAR	Space and Naval Warfare Systems Command
VE	Value Engineering
VECP	Value Engineering Change Proposal
VEP	Value Engineering Proposal



**INSPECTOR GENERAL**  
**DEPARTMENT OF DEFENSE**  
**400 ARMY NAVY DRIVE**  
**ARLINGTON, VIRGINIA 22202-2884**



April 9, 1997

**MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION  
AND TECHNOLOGY  
ASSISTANT SECRETARY OF THE NAVY (RESEARCH,  
DEVELOPMENT, AND ACQUISITION)**

**SUBJECT: Audit Report on The Navy Value Engineering Program  
(Report No. 97-121)**

We are providing this audit report for review and comment. Management comments on a draft of this report were considered in preparing the final report. The audit was requested by the Office of the Under Secretary of Defense for Acquisition and Technology. This is a joint audit of the Navy Value Engineering Program by the Naval Audit Service and Inspector General, DoD. In addition, the Army and Air Force Audit Agencies and the Inspector General, DoD are issuing reports on the Army, Air Force, and Defense Logistics Agency Value Engineering Programs.

DoD Directive 7650.3 requires that all recommendations be resolved promptly. As a result of management comments, we deleted Recommendation A.2. and revised Recommendation B.1. We request that the Under Secretary of Defense for Acquisition and Technology provide comments on Recommendation B.1., and that the Navy provide comments on Recommendations B.2.a., B.2.b., and B.2.c. by June 9, 1997.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Garold E. Stephenson, Audit Program Director, at (703) 604-9332 (DSN 664-9332) or Mr. John M. Gregor, Audit Project Manager, at (703) 604-9515 (DSN 664-9515). See Appendix E for the report distribution. The audit team members are listed inside the back cover.

*David K. Steensma*

David K. Steensma  
Deputy Assistant Inspector General  
for Auditing

## Office of the Inspector General, DoD

Report No. 97-121  
(Project No. 5CH-5038.01)

April 9, 1997

### The Navy Value Engineering Program

#### Executive Summary

**Introduction.** This report is the second of three reports to be issued by the Office of Inspector General, DoD, of an audit of the DoD Value Engineering (VE) Program requested by the Office of the Under Secretary of Defense for Acquisition and Technology (OUSDA&T), in accordance with Office of Management and Budget (OMB) Circular No. A-131, "Value Engineering," May 21, 1993. OMB Circular No. A-131 requires Federal agencies to use VE as a management tool, where appropriate, to ensure realistic budgets, identify and remove nonessential capital and operational costs, and improve and maintain optimum quality of program and acquisition functions. The DoD VE program involves both in-house and contractor programs. For FY 1994, the DoD claimed VE savings of \$855 million and investment costs of \$248 million. For FY 1995, DoD claimed savings and costs were \$734.4 million and \$43.9 million. The Department of the Navy portion of the reported savings and costs were \$219 million and \$23.4 million, respectively for FY 1994 and \$116.6 million and \$16.4 million, respectively for FY 1995. This report addresses the Navy VE Program and the \$130.5 million VE savings and \$18.6 million VE costs reported during FY 1994 by five Navy Systems Commands and one program office: the Naval Air Systems Command, the Naval Facilities Engineering Command, the Naval Supply Systems Command, the Space and Naval Warfare Systems Command, the Naval Sea Systems Command, and the AEGIS Shipbuilding Program Office.

**Audit Objectives.** The audit objectives were to determine whether DoD VE policies, procedures, and implementation of revised OMB Circular No. A-131 were adequate and whether Navy VE savings were valid. We also assessed how extensively the VE program was included in contracts, whether contractors believed they were encouraged to participate in the VE Program, and how VE related to other streamlining or savings initiatives. We also evaluated the adequacy of the management control program applicable to the stated objectives.

**Audit Results.** The Navy did not accurately report VE savings and cost for FY 1994. Reported savings for VE were inaccurate and did not include all investment costs associated with the generation of the savings. As a result, reported VE savings amounting to \$130.5 million for the five Navy commands were overstated by about \$102 million: \$59.8 million was because of including savings from other cost-reduction initiatives and \$42.2 million because of computing inaccuracies. Also, reported savings and cost data were not reliable for assessing program effectiveness (Finding A).

Navy Acquisition Managers considered VE a low priority and the Navy reported VE savings during FY 1994 on 2 of 36, and FY 1995 on 2 of 30 major defense acquisition programs. As a result, eligible contractors were not participating in the VE program and the Navy had no assurance that DoD acquisition costs were reduced as much as possible through the use of VE (Finding B).

Recommendations in this report, if implemented, will: improve the Navy VE program; increase VE savings; reduce incorrect, premature, and duplicate reporting practices; and eliminate the unnecessary expenditure of resources. See Appendix A for details on the management control program.

**Summary of Recommendations.** We recommend that DoD issue guidance to define and differentiate VE from other cost-reduction initiatives, and report accurate costs involved in reported VE savings. DoD should also devote sufficient resources to complete VE Strategic Plan action items. We recommend the Navy instruct program managers to develop annual plans for VE, establish performance measures to process and implement VE change proposals, and publicize information on VE Program goals through the Navy Acquisition Center of Excellence.

**Management Comments.** We received comments on the draft of this report from the Director, Test, Systems Engineering and Evaluation, OUSD(A&T), and the Principal Deputy Assistant Secretary of the Navy (Research, Development, and Acquisition) (the Navy). The OUSD(A&T) and the Navy partially agreed with the findings and recommendations. The OUSD(A&T) agreed that additional guidance was necessary to define VE and what to calculate as VE savings and costs. The OUSD(A&T) also agreed to issue guidance in the next revision of the DoD VE Strategic Plan (Strategic Plan). The OUSD(A&T) nonconcurred with a recommendation to issue guidance for assessing the potential for using VE on acquisition programs. The Navy stated that the requirement to develop an annual plan was outlined in the Strategic Plan. Navy commands were requested to respond on their implementation of the Strategic Plan. The Navy stated that establishing performance measures for processing VE change proposals was not cost effective. The Navy has a procurement management review process to review compliance with statutes and regulations by procuring organizations. The Navy also did not agree that the Navy Acquisition Center of Excellence should disseminate information on VE. See Part I for a summary of management comments and Part III for the complete text of management comments.

**Audit Response.** The OUSD(A&T) plan to issue program guidance on VE statistical data is responsive, and no further action is needed. Based on OUSD(A&T) comments, we revised the recommendation that DoD issue guidance on assessing the potential for using VE to address the Strategic Plan implementation. We believe that Navy program managers should develop annual VE plans and performance measures for processing VE change proposals. If the Navy Acquisition Center of Excellence is not the right organization to promote VE, the Navy should identify another organization to promote VE. We request that the OUSD(A&T) provide comments on the revised recommendation and the Navy reconsider its position on the recommendations and provide comments by June 9, 1997.

# Table of Contents

---

<b>Executive Summary</b>	i
<b>Part I - Audit Results</b>	
Audit Background	2
Audit Objectives	3
Finding A. Accuracy of Reported Value Engineering Savings and Costs	5
Finding B. Implementation of Value Engineering	16
<b>Part II - Additional Information</b>	
Appendix A. Scope and Methodology	
Scope	28
Methodology	29
Management Control Program	29
Appendix B. Summary of Prior Audits and Other Reviews	30
Appendix C. FY 1994 and 1995 Reported Value Engineering Savings for the Navy	32
Appendix D. Value Engineering Techniques	33
Appendix E. Report Distribution	35
<b>Part III - Management Comments</b>	
Under Secretary of Defense for Acquisition and Technology Comments	38
Department of the Navy Comments	42

## **Part I - Audit Results**

### Audit Background

**Audit Request.** The audit was requested by the Office of the Under Secretary of Defense for Acquisition and Technology (OUSD(A&T)) in accordance with the requirement in Office of Management and Budget (OMB) Circular No. A-131, "Value Engineering," May 21, 1993, that Agency heads request Inspectors General to audit agency Value Engineering (VE) Programs 2 years after issuance of the Circular. The audit of the Navy VE Program was performed jointly by the Naval Audit Service and the Inspector General, DoD. The Army and Air Force Audit Agencies and the Inspector General, DoD, are also issuing audit reports on the Army, Air Force, and Defense Logistics Agency VE programs.

This report addresses the Department of Navy VE Program. The report discusses VE program implementation and the savings and costs reported by five Navy Systems commands: the Naval Air Systems Command (NAVAIR), the Naval Facilities Engineering Command (NAVFAC), the Naval Sea Systems Command (NAVSEA), the Naval Supply Systems Command (NAVSUP), the Space and Naval Warfare Systems Command (SPAWAR), and the AEGIS Program Office.

**Policy on Use of Value Engineering.** The OMB Circular No. A-131 states that:

Federal agencies shall use VE as a management tool, where appropriate, to ensure realistic budgets, identify and remove nonessential capital operating costs, and improve and maintain optimum quality of program and acquisition functions. Senior management will establish and maintain VE programs, procedures and processes to provide for the aggressive, systemic development and maintenance of the most effective, efficient, and economical and environmentally-sound arrangements for conducting the work of agencies, and to provide a sound basis for identifying and reporting accomplishments.

The OMB Circular No. A-131 is implemented through DoD Instruction 5000.2, "Defense Acquisition Management Policies and Procedures," February 23, 1991, (reissued as DoD 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System Acquisition Programs," March 15, 1996); the Federal Acquisition Regulation (FAR) Part 48, "Value Engineering" and the Defense Federal Acquisition Regulation Supplement, Part 248, "Value Engineering". The Office of the Assistant Secretary of the Navy (Research, Development, and Acquisition) (OASN(RDA)), which was responsible for the Navy VE Program, had not issued guidance on implementing VE on Navy programs. For the Navy organizations reviewed, VE implementing guidance was included in: NAVAIR Instruction 4858.3B, "Value Engineering Program," January 13, 1994; NAVFAC Instruction 4858.1C, "Naval Facilities Engineering Command Value Engineering Program," April 4, 1983; NAVSUP Instruction 4858.52A, "Value

Engineering Program," December 14, 1988; SPAWAR Instruction 4858.5, "SPAWAR Value Engineering Program," April 24, 1987; and AEGIS Notice 9000, "Affordability Management," December 8, 1993.

**Statutory Requirement on Use of Value Engineering.** "The Federal Acquisition Reform Act of 1996," section 4306, (Public Law 104-106, "National Defense Authorization Act for Fiscal Year 1996," amended the Office of Federal Procurement Policy Act (41 U.S.C. 401 et sec.) by adding Section 36, "Value Engineering." Section 36 requires that each executive agency establish and maintain cost-effective VE procedures and processes.

**History and Definition of Value Engineering.** VE originated in industry largely as a result of material and labor shortages experienced during World War II. The initial successes in developing functional, less costly alternatives led to an analytical discipline that was structured to challenge the proposed or usual ways of doing things and to systematically search for improved and less costly alternatives. This structured approach came to be known as VE and is also referred as value analysis, value management, or value improvement. The DoD defines VE as a functional analysis methodology that identifies and selects the best value alternative for designs, materials, processes, systems, and program documentation.

**DoD Value Engineering Program.** The DoD VE program consists of two distinct parts: in-house and contractor. The in-house part relies on internal investment and manpower resources and benefits from all savings or cost avoidances generated and is implemented through value engineering proposals (VEPs). The contractor portion relies on contractor resources and savings that are generally shared with the Government and are implemented through the submission of value engineering change proposals (VECPs).

During FYs 1994 and 1995, the DoD reported total VE savings of \$855 million and \$734.4 million and total investment costs of \$248 million and \$43.9 million, respectively. The reported share of Navy VE savings were \$219 million and \$116.6 million while reported costs were \$23.4 million and \$16.4 million for FYs 1994 and 1995, respectively. Appendix C summarizes the VE savings and the costs reported for the Navy systems commands and the AEGIS Program Office during FYs 1994 and 1995. The FY 1994 VE savings reviewed during the audit are identified in Table 1.

## Audit Objectives

The audit objectives were to determine whether DoD VE policies, procedures, and implementation of OMB Circular No. A-131 were adequate and whether Navy reported VE savings were valid. We also assessed how extensively the VE program was included in contracts, whether contractors believed they were encouraged to participate in the VE program, and the relationship of VE to other streamlining or savings initiatives. In addition, we evaluated the adequacy of the management control program applicable to the stated objectives. See

## Audit Results

---

Appendix A for a discussion of the scope, methodology, and the management control program and Appendix B for a summary of prior coverage related to the audit objectives.

## Finding A. Accuracy of Reported Value Engineering Savings and Costs

The Navy did not accurately report VE savings and costs for FY 1994. Of the 85 proposals reviewed, the Navy reported savings valued at \$130.5 million during FY 1994. Twenty-six of those proposals valued at \$59.8 million were based on other non-VE cost-reduction initiatives. There were 59 proposals reported with savings of \$70.7 million that were VE, however \$42.2 million were overstated, or not supported by sufficient documentation. The reporting inaccuracies occurred because DoD and Navy guidance did not:

- o clearly define and differentiate VE from other cost-reduction initiatives, and

- o clearly explain how to compute and report savings and costs in accordance with the revised OMB Circular No. A-131.

Also, Navy managers did not thoroughly review the basis and accuracy of calculations for claimed VE savings. As a result, the reported savings and cost data for Navy VE efforts were not reliable for assessing program effectiveness.

### Navy Value Engineering Program Included Savings From Other Initiatives and Were Inaccurate

We reviewed 85 proposals with VE savings valued at \$130.5 million that five Navy commands reported during FY 1994. Table 1 shows the in-house and contractor VE savings reported by the Navy in FY 1994 that were reviewed during the audit.

**Table 1. Navy In-House and Contractor VE Savings Reviewed**  
(\$ in millions)

Command	In-House		Contractor		Total Reviewed	
	Proposals	Savings	Proposals	Savings	Proposals	Savings
AEGIS	5	\$23.3	11	\$14.9	16	\$38.2
NAVAIR	10	21.6	8	22.0	18	43.6
NAVFAC	28	45.7	17	1.8	45	47.5
NAVSUP	0	0.0	4	0.4	4	0.4
SPAWAR	0	0.0	2	0.8	2	0.8
<b>Total</b>	<b>43</b>	<b>\$90.6</b>	<b>42</b>	<b>\$39.9</b>	<b>85</b>	<b>\$130.5</b>

## Finding A. Accuracy of Reported Value Engineering Savings and Costs

---

Of the \$130.5 million reviewed, we determined that 26 proposals for \$59.8 million were because of non-VE cost-reduction initiatives, to include incentive contracting and other local cost-reduction actions. We determined that the remaining 59 proposals valued at \$70.7 million (28 proposals for \$45.7 million as in-house and 31 proposals for \$25 million as contractor) were reportable as VE, however, the savings were not accurately reported or supported. Table 2 summarizes the savings that were because of non-VE cost-reduction initiatives and savings that were reportable as VE.

**Table 2. Savings Because of Non-VE Initiatives and Savings Reportable as VE**  
(\$ in millions)

<u>Command</u>	<u>In-House</u>		<u>Contractor</u>		<u>Total Reviewed</u>	
	<u>Proposals</u>	<u>Savings</u>	<u>Proposals</u>	<u>Savings</u>	<u>Proposals</u>	<u>Savings</u>
Savings Because of Non-VE Initiatives						
AEGIS	5	\$23.3	11	\$14.9	16	\$38.2
NAVAIR	<u>10</u>	<u>21.6</u>	—	—	<u>10</u>	<u>21.6</u>
<b>Subtotal</b>	<b>15</b>	<b>44.9</b>	<b>11</b>	<b>14.9</b>	<b>26</b>	<b>59.8</b>
Savings Reportable as VE						
NAVAIR			8	22.0	8	22.0
NAVFAC	28	45.7	17	1.8	45	47.5
NAVSUP	0	0.0	4	0.4	4	0.4
SPAWAR	<u>0</u>	<u>0.0</u>	<u>2</u>	<u>0.8</u>	<u>2</u>	<u>0.8</u>
<b>Subtotal</b>	<b>28</b>	<b>45.7</b>	<b>31</b>	<b>25.0</b>	<b>59</b>	<b>70.7</b>
<b>Total</b>	<b>43</b>	<b>\$90.6</b>	<b>42</b>	<b>\$39.9</b>	<b>85</b>	<b>\$130.5</b>

**Criteria for Validating Savings.** We considered in-house savings reportable as VE savings based on the following criteria.

- o The savings resulted from a study that was identified as VE prior to the presentation of a specific proposal for decision, or there was sufficient documented evidence of the application of the elements of the VE discipline, such as a functional analysis, an evaluation of worth, or cost comparisons. Appendix D describes the elements of the VE discipline.

- o The savings were not reportable under another existing cost-reduction initiative.

- o The savings were not the result of actions expected in the routine accomplishment of duties otherwise performed at the Navy command activity.

We considered VE savings to be valid if they were based on a properly approved contractor-submitted value engineering change proposal (VECP).

## **Savings Because of Other Cost-Reduction Initiatives**

For the 34 proposals reviewed for the AEGIS Program Office and NAVAIR, 26 proposals with reported savings of \$59.8 million were not VE because the proposals related to other cost-reduction initiatives or were not supported by sufficient documentation.

**AEGIS Program Office Savings.** Of the 26 proposals that were not VE, 16 proposals with reported savings of \$38.2 million resulted from the AEGIS Program Office Affordability Management Program. The Affordability Management Program is an internal cost-reduction initiative established by the AEGIS Direct Reporting Program Manager in 1991 and savings are reported as both acquisition reform and VE. The Navy VE Program Manager stated that the implementation of in-house and contractor proposals through the Affordability Management Program incentive contracting clause ensures more timely implementation of those proposals but makes tracking of associated savings and costs very difficult. The Affordability Management Program is governed by AEGIS Notice 9000, "Affordability Management," December 8, 1993. While AEGIS Notice 9000 includes criteria for processing contractor-submitted VECPs, none of the proposals reviewed were implemented under that criteria. Also, the AEGIS Notice makes no reference to an in-house VE program.

**Reported VECF Savings.** Of the 16 proposals for the AEGIS Program that we concluded were not VE, 11 proposals with savings of \$14.9 million resulted from incentive contracting provisions incorporated in the AEGIS DDG 51 Class ship fixed-price incentive contracts. Under the DDG 51 Class ship incentive contracts, the AEGIS shipbuilding contractor prepared estimates of savings and costs. However, the estimates were not thoroughly reviewed by the Navy and actual savings and costs were never identified for purposes of sharing savings between the contractor and the Navy. AEGIS Program and NAVSEA contracting officials stated that the estimated savings reported for individual proposals were not reviewed and tracked because the contract provided for the negotiated settlement of savings and additional costs at the financial closeout of the contract. Since the savings and costs related to individual proposals were not tracked and validated, we believe that the Navy should not have reported the savings as VE. VECF savings should only be reported when validated by the Government in accordance with the provisions of FAR Part 48.

**Reported In-House VE Savings.** The AEGIS Program Office also reported five in-house proposals with savings of \$23.3 million as VE even though none of the proposals were initially identified as a VE.

o Reported savings of \$7 million on two proposals (low cost power supply and the AN/UYQ-21(V)) resulted from actions that were not VE study initiatives. On one proposal, reported savings of \$3 million was based on obtaining a new supply source because the existing source was discontinuing

## **Finding A. Accuracy of Reported Value Engineering Savings and Costs**

---

support. The reported savings of \$4 million on the second proposal was based on a contractor-performed study that concluded commercial off-the-shelf components could be used instead of military specification components.

- o Adequate documentation did not support reported savings of \$13.9 million on two proposals to eliminate final contract trials and the AN/URN-25. The supporting documentation for an \$11.4 million proposal to eliminate the final contract trials did not specify what was or would be eliminated from the final contract trials, and the computations for the savings estimate were not supported by sufficient documentation. For the AN/URN-25, AEGIS officials stated that the \$2.5 million of savings were actually realized during FY 1993 but the savings were not recognized until July 1994. However, no documentation existed to support who or how the action was initiated.

- o There was no documentation to support reported savings of \$2.4 million on a proposal related to the "ORTS Upgrade". According to AEGIS Program officials, the proposal was never implemented and was reported in error.

**Savings Reported by NAVAIR.** NAVAIR reported 10 proposals with savings of \$21.6 million that were not in-house VE. The savings resulted from other cost-reduction initiatives and program efforts implemented by the Naval Air Warfare Center (NAWC) and none of the savings estimates for the 10 proposals were adequately documented.

- o Savings of \$6.7 million were reported on seven proposals for a local NAWC cost-reduction initiative that NAWC officials did not report as VE. The proposals were not supported by adequately documented functional analyses, evaluations of worth, or cost comparisons. NAWC identified the proposals and savings in a footnote in its FY 1994 VE Report to NAVAIR headquarters and NAVAIR headquarters personnel included the \$6.7 million as VE savings in the consolidated NAVAIR VE report.

- o The other three in-house proposals with reported savings of \$14.9 million included a proposal that was based on a NAVAIR-directed feasibility study, a proposal that was originally submitted as a logistics engineering change proposal, and a proposal that was originally submitted as a beneficial suggestion. None of the proposals were initially identified as VE studies. The NAWC VE manager stated that proposals were identified as VE based on actual results and the sufficiency of documentation in support of the results.

## **Accuracy of Value Engineering Savings**

Of the \$70.7 million of reported savings for the 59 proposals that we determined were VE, savings of \$42.2 million were either partially valid or invalid. Table 3 summarizes the amounts of in-house and contractor VE savings that were either entirely or partially valid or invalid.

## Finding A. Accuracy of Reported Value Engineering Savings and Costs

---

**Table 3. Valid and Invalid VE Savings**  
(\$ in millions)

<u>Command</u>	<u>Valid or Partially Valid</u>		<u>Invalid or Partially Invalid</u>		<u>Total Reviewed</u>	
	<u>Proposals</u>	<u>Savings</u>	<u>Proposals</u>	<u>Savings</u>	<u>Proposals*</u>	<u>Savings</u>
In-House VE Savings						
NAVFAC	15	\$25.7	13	\$20.0	28	\$45.7
Contractor VE Savings						
NAVAIR	6	1.0	8	21.0	8	22.0
NAVFAC	15	0.8	16	1.0	17	1.8
NAVSUP	4	.3	1	.1	4	.4
SPAWAR	<u>2</u>	<u>.7</u>	<u>2</u>	<u>.1</u>	<u>2</u>	<u>.8</u>
<b>Subtotal</b>	<b>27</b>	<b>2.8</b>	<b>27</b>	<b>22.2</b>	<b>31</b>	<b>25.0</b>
<b>Total</b>	<b>42</b>	<b>\$28.5</b>	<b>40</b>	<b>\$42.2</b>	<b>59</b>	<b>\$70.7</b>

\*Proposals do not total because proposals that were partially valid and invalid are counted twice.

The \$42.2 million of reporting inaccuracies (invalid amounts) were because of computation errors, including savings attributable to foreign military sales, timing errors, and unsupported savings estimates.

**Computation Errors.** NAVAIR, NAVFAC, SPAWAR, and NAVSUP did not accurately or consistently compute and report VE savings. The commands based reported savings on estimated amounts from contractor proposals rather than contract modifications. Also, the reported savings reflected gross savings instead of the net savings realized by the Navy.

**Savings Based on Contractor Proposals.** The Navy reported savings amounting to \$22.5 million for 13 VECs based on savings and cost estimates included in contractor proposals instead of approved implementing contract modifications. DoD reporting instructions stated that VEC savings should be computed in accordance with FAR 52.248-1(g), which states that the calculation of net acquisition savings and the sharing of those savings with the contractor shall be based on negotiated contract amounts. The estimated costs were generally lower and the estimated savings higher in contractor proposals than in implementing contract modifications.

**Gross Rather Than Net Savings Reported.** The savings reported for 23 VECs were based on gross savings instead of net savings realized by the Navy. On five VECs, NAVAIR, NAVFAC, SPAWAR, and NAVSUP did not reduce the estimated gross savings by the investment costs paid by the Navy to implement the VEC or by the additional Government costs involved in reviewing and approving the VEC. Also, on 18 VECs, the estimated gross savings were not reduced by the amount of VEC savings shared with the contractor.

## Finding A. Accuracy of Reported Value Engineering Savings and Costs

---

For example, on NAVAIR VECP 326, "BQM-34S-Improved Fuel Pump," the reported savings of \$218,960 were not reduced by the \$98,184 of nonrecurring investment cost paid to the contractor to implement the VECP. On NAVFAC VECP 94-006, "Change Structural Substance," the Navy reported savings of \$1,010,464 were overstated because the Navy did not reduce the gross savings by \$535,755, the amount of the savings shared with the contractor.

**Reported Savings From Foreign Military Sales.** NAVAIR reported \$20.1 million of savings for two VECPs that included \$8.5 million attributable to foreign military sales requirements. NAVAIR computed the reported savings based on the planned procurement of 181 aircraft, 84 aircraft for the Navy and 97 aircraft for foreign countries. The guidance for reporting VE savings does not state whether VE savings to foreign military sales customers should be reported or excluded.

**Unsupported Estimates.** NAVAIR did not have documentation to substantiate the validity of \$4.3 million of \$20.1 million reported for two VECPs. The VECPs were for improvements to the APG 73 radar on the F-18.

**Timing Errors.** The 1994 NAVAIR VE report included savings of \$475,400 for a VECP that was implemented by NAVAIR during FY 1992. The savings were reported late because of an administrative oversight by the NAVAIR VE manager. Savings of \$368,767 for four VECPs implemented by NAVAIR and NAVFAC were reported during 1994 based on the contractor's proposal rather than during 1995 when implementing contract modifications were issued. VECP savings should be claimed in the period that the implementing contract modification is issued.

**NAVFAC In-House VE Savings Were Untimely and Not Supported.** We reviewed 28 in-house VE proposals with reported savings of \$45.7 million and determined that savings of \$20 million on 13 proposals was not valid. The designs for nine proposals with total savings of \$16.4 million were deleted from the final design in their entirety. Portions of the designs for the other four proposals were significantly altered or deleted and did not adequately support the \$3.6 million of savings subsequently reported. NAVFAC reported in-house VE savings based on the approved results of VE team studies that were usually conducted at the 10 to 35 percent design review stage. For the 28 proposals reviewed, the VE study results were approved from 4 to 21 months before designs were finalized and NAVFAC awarded the construction contracts. NAVFAC should only report VE savings on proposals actually implemented.

## Reporting Investment Costs

None of the five Navy commands that had reported VE savings accurately accumulated and reported the costs associated with VE, and supporting documentation, when available, generally did not explain the rationale for cost estimates that were identified. For example, NAVFAC did not report

## Finding A. Accuracy of Reported Value Engineering Savings and Costs

---

investment costs of \$12,765 for the purchase of a crane that was needed to implement VECP 94-203, "Tri-Modular Service Club." NAVAIR did not report estimated investment costs of \$110,897 for nonrecurring contractor expenses on VECP 176R1, "Deletion of A5A Board" on the BQM-74E Aerial Target. Also, on eleven VECPs with reported savings of \$22.9 million, NAVAIR, NAVSUP, and SPAWAR did not report any Government costs to develop, test, review, and implement the VECPs even though it was evident that such costs would be incurred.

We concluded that the investment costs reported by the Navy during FY 1994 for VE did not accurately reflect the true costs to implement VE and that the Navy should give additional emphasis to the collection of VE cost data.

### Value Engineering Reporting Guidance

The Navy did not accurately report the savings and costs for VE because DoD and Navy guidance was not clear on how to compute and report savings and costs in accordance with OMB Circular No. A-131.

**OMB Circular No. A-131.** OMB Circular No. A-131 requires agencies to annually report the net life-cycle cost savings achieved from using VE by December 31 of each year. The Circular requires the disclosure of net life-cycle cost savings achieved through VE broken out by cost savings and cost avoidances, agency VE expenditures (dollars invested in VE during the year), and the dollar share of savings provided to contractors and provides a three-part format for the reporting of required VE results. The Circular does not define or specify a methodology for computing "net life-cycle savings", and does not clearly describe the specific expenditure and savings elements to disclose in the report. Also, the Circular was not clear on when and for how long savings and costs should be recognized.

**DoD and FAR Guidance.** In an October 21, 1994, memorandum, the Assistant Secretary of Defense (Economic Security) [superseded by the Under Secretary of Defense for Acquisition and Technology] requested the Military Departments and the Defense Agencies to submit their FY 1994 VE report in accordance with the format outlined in DoD 5000.2-M, Part 13, "Value Engineering Report." The guidance requested the Navy and other DoD components to report VE savings for the current and two subsequent years (three-year period) and to provide a one-line estimate of the costs and of the savings for both in-house and contractor generated VE savings. The reporting instructions stated that procurement savings resulting from VE efforts should be calculated in accordance with FAR 52.248-1(g), "Calculating Net Acquisition Savings," which states that:

Acquisition savings are realized when (i) the cost or price is reduced on the instant contract, (ii) reductions are negotiated in concurrent contracts, (iii) future contracts are awarded, or (iv) agreement is reached on a lump-sum payment for future contract savings . . . Net

## Finding A. Accuracy of Reported Value Engineering Savings and Costs

---

acquisition savings are first realized, and the contractor shall be paid a share, when Government cost and any negative instant contract savings have been fully offset against acquisition savings.

The DoD guidance differed from the OMB guidance in that it only requested savings and costs be reported for the initial 3 years that a VEP or VECP is implemented whereas OMB guidance asks for net savings over the life of the system. The DoD guidance did not state whether the reported savings should be "gross" (i.e. total Government and contractor savings per unit of production) or "net" (i.e. gross savings less all Government costs). The guidance also did not state whether the contractor's share of acquisition savings should be considered a cost to the Government and reported as funds invested or considered part of net acquisition savings and reported as current FY savings.

**Navy Guidance.** The OASN(RDA) did not issue any guidance for implementing or reporting VE by Navy activities. VE officials in the OASN(RDA) stated that since DoD did not issue any guidance to implement the revised OMB Circular No. A-131, the Navy continued to manage and report on its VE program in accordance with DoD Instruction 5000.2 and the FAR.

**DoD VE Strategic Plan.** On August 13, 1996, the Under Secretary of Defense for Acquisition and Technology approved the FY 1996-1997 DoD VE Strategic Plan, which establishes goals and objectives for the DoD VE Program. The Plan was developed under the authority of the DoD VE Executive Steering Group, which consists of Senior Executive Service and Flag-rank representatives of the OUSD(A&T), the Military Departments, and the Defense agencies. Implementation of the plan is the responsibility of the DoD VE Quality Management Board (QMB), which consists of the VE Program Managers for OSD, the Military Departments, and the Defense agencies. Each Military Department and Defense agency is responsible for developing and implementing their own strategic plan in alignment with the goals and objectives of the DoD VE Strategic Plan. The DoD VE Strategic Plan includes three goals:

- o Develop consistent DoD VE results-oriented focus,
- o Increase VE benefits, and
- o Increase VE expertise.

The first goal includes an objective to improve VE assessment tools and assigns responsibility for implementation to the QMB with no specific due date. For the QMB to achieve significant progress on the objective, the DoD VE Executive Steering Group must issue guidance that differentiates VE processes and results from other cost-reduction initiatives.

## **Management Oversight and Usefulness of Reported Value Engineering Data**

VE officials in the OASN(RDA), NAVAIR, NAVFAC, and the AEGIS Program Office, who were involved in consolidating and reporting VE results, did not validate the accuracy and completeness of VE savings and costs reported to them by subordinate activities. The officials stated that the guidance on computing and documenting the savings was not clear on what should be included and excluded, the data being reported was only useful for fulfilling the reporting requirement of OMB Circular No. A-131, and that no internal Navy management need for the data existed. NAVFAC VE officials stated that the reporting of out-year life cycle savings was not worthwhile because costs and savings were not readily predictable. NAVFAC stated that the true usefulness of VE savings estimates was in evaluating and prioritizing options for current decision making purposes. Other VE managers who reported savings over a 3-year period as required by DoD Instruction 5000.2-M, stated that out-year VE savings estimates were subject to change based on contract price changes, budget, or production increases and decreases. However, they believed that it was not worthwhile to establish a system to track and subsequently adjust reported savings based on actual results.

We concluded that additional guidance on computing methodologies and reporting practices with additional emphasis on oversight of reported information are needed for consistent and accurate reporting of VE results. The development of the guidance on methods and practices should be undertaken by the DoD VE Executive Steering Group to ensure consistency in reporting of VE savings by Navy and other DoD components.

## **Conclusion**

DoD and the Navy have not clearly differentiated VE savings from savings generated through other cost-reduction initiatives. The Navy needs to improve methods of reporting VE savings and costs. Navy managers did not believe the reporting of VE savings and costs served any useful management need within the Navy. The DoD VE Strategic Plan issued in August 1996 includes an objective to improve the quality of VE annual reports and guidelines for identifying VE investment costs. The successful achievement of the objective depends on timely issuance and implementation of additional clarifying guidance. Until savings and related investment costs are accurately reported, the data is unreliable to senior DoD officials and other users of the data at OMB and in the Congress to assess program effectiveness.

## **Finding A. Accuracy of Reported Value Engineering Savings and Costs**

---

### **Management Comments on the Finding and Audit Response**

**Comments on the Finding.** The Director, Test, Systems Engineering and Evaluation, OUSD(A&T), partially concurred with the finding. The Director agreed that DoD guidance did not clearly define and differentiate VE from other cost-reduction initiatives, and that DoD guidance did not clearly explain how to compute and report savings and costs in accordance with revised OMB Circular No. A-131. However, the Director did not agree that proposals based on non-VE cost reduction initiatives were necessarily invalid VE savings. The Director stated that the auditors used a narrow interpretation and assessment of what constitutes VE and what should be reported as such, whereas DoD uses a broader interpretation. The Director stated that the AEGIS Affordability Management Program is an acceptable VE approach that integrates VE with a number of other improvement tools using a Government-industry integrated product team to facilitate the processing of value improving proposals that are implemented as engineering change proposals with savings shared on an across-the-contract basis with a share line incentive.

The Principal Deputy Assistant Secretary of the Navy (Research, Development and Acquisition) agreed that the current definitions for what constitutes VE, VEPs, and VECPs lack clear, specific wording, and that the directions on how, when, and what to calculate as VE savings and costs and return-on-investment are confusing.

**Audit Response.** We considered the existing reporting guidance during the review of reported VE savings and costs. The guidance did not state that DoD managers should interpret VE broadly or that they should include savings and costs related to other cost-reduction initiatives when preparing the annual VE reports. In the AEGIS Program, the guidance on the Affordability Management Program stated that contractors may process savings proposals as VECPs in accordance with provisions in the FAR. None of the savings reviewed were based on proposals that were processed as VECPs or that included VECP sharing arrangements.

### **Recommendations, Management Comments, and Audit Response**

**Deleted Recommendation.** As a result of management comments, we deleted draft report Recommendation A.2. because the DoD VE Strategic Plan provides guidance that will improve the reporting of VE investment costs. We renumbered draft report Recommendation A.3. as Recommendation A.2.

## Finding A. Accuracy of Reported Value Engineering Savings and Costs

---

**A. We recommend that the Under Secretary of Defense for Acquisition and Technology task the DoD Value Engineering Executive Steering Group to develop guidance by a specific date on the DoD Value Engineering Program that:**

**1. Differentiates the application of value engineering techniques and the reporting of value engineering savings from other cost-reduction initiatives, such as the Navy's AEGIS Affordability Management Program, directed feasibility studies, logistics engineering change proposals, suggestions, and value engineering savings realized by foreign military sales customers, and recent acquisition reform programs.**

**2. Require savings be reported after in-house value engineering proposals or contractor value engineering change proposals are approved and implemented by contracts, contract modifications or revised procedures.**

**Management Comments.** The Director, Test, Systems Engineering and Evaluation, OUSD(A&T), concurred with the recommendations to issue guidelines that differentiate VE from other cost-reduction initiatives for VE reporting purposes and that require savings to be reported after in-house VEPs or VECPs are approved and implemented by contracts, contract modifications, or revised procedures. The guidelines will be included in a revision to the DoD VE Strategic Plan to be issued in August 1997. The Director nonconcurred with draft report recommendations to charter an integrated policy team to develop VE clarifying guidance and to issue clarifying guidance on VE investment costs. The Under Secretary of Defense for Acquisition and Technology has already chartered the DoD VE Executive Steering Group responsible for VE policy and procedures. The FY 1996-97 DoD VE Strategic Plan, August 1996 included guidance to improve the reporting of VE investment costs.

The Principal Deputy Assistant Secretary of the Navy (Research, Development and Acquisition) also concurred with the basic recommendation to develop specific guidance on reporting VE savings.

**Audit Response.** The OUSD(A&T) comments and corrective actions were fully responsive. Based on the comments, we deleted the recommendation to establish an integrated policy team to develop VE guidance and the recommendation to issue clarifying guidance on VE investment costs.

---

## **Finding B. Implementation of Value Engineering**

The Navy reported the use of VE to reduce costs on only two major acquisition programs and on its military construction projects, during FYs 1994 and 1995. The two programs constituted \$89.5 billion of the \$411 billion of procurement funding programmed for Navy major defense acquisition programs active during either FYs 1994 or 1995, or both. Except for NAVFAC, Navy systems commands and program offices had not established criteria for identifying acquisition programs with the most potential for VE and had not developed annual goals and plans for the use of VE on their programs. A contractor identified three contracts awarded for the Naval Surface Warfare Center, NAVSEA, and the David Taylor Research Center that did not include VE incentive clauses as required by the FAR. Also, NAVAIR, NAVFAC, NAVSUP, and SPAWAR took up to 492 days to approve contractor VECs and up to 903 days to incorporate approved VECs in contracts. Those conditions occurred because program managers and contracting officials viewed VE as a low priority. As a result, the Navy has lost opportunities to use VE to reduce procurement and maintenance costs on its acquisition programs and the Navy has not motivated contractors to submit VECs.

### **Participation in Value Engineering Programs**

The Navy did not make effective use of VE to reduce costs on many of its acquisition programs, as evidenced by reported VE savings and costs.

**Reported Value Engineering Savings on Navy Major Defense Acquisition Programs Was Limited.** The Navy reported VE savings on only two major defense acquisition programs (MDAPs) during FYs 1994 and 1995, although the Navy had 36 and 30 Category 1D and 1C MDAPs during that period. A MDAP is defined as an acquisition program that is not a highly sensitive classified program; that is estimated to require eventual expenditures for research, development, test, and evaluation of more than \$300 million or expenditures for procurement of more than \$1.8 billion; or that has high Congressional or OSD interest. Table 4 summarizes program data and reported VE savings data for MDAPs that were classified Category 1D or 1C during either FYs 1994 or 1995, or both.

## Finding B. Implementation of Value Engineering

**Table 4. FY 1994 and FY 1995 MDAP Program Data**  
(\$ in millions)

<u>Command</u> <sup>1</sup>	<u>Number of MDAPS</u> <sup>2</sup>	<u>Total Program Dollars</u> <sup>3</sup>	<u>Total Procurement Dollars</u> <sup>3</sup>	<u>Reported FY 1994/1995 VE Savings</u>
Marine Corps	2	\$ 934.1	\$ 0	0
NAVAIR	12	206,143.5	186,521.4	\$ 20.1
NAVSEA	19	233,105.7	188,481.1	84.5
SPAWAR	4	6,279.8	4,016.2	0
SSPO	2	42,426.9	32,008.7	0
<b>Total</b>		<b>\$488,890.0</b>	<b>\$411,027.4</b>	<b>\$104.6</b>

<sup>1</sup>The host command shown does not always have management responsibility for the number of MDAPs listed. Various program executive officers and direct reporting program managers have management responsibility for many of those MDAPs.

<sup>2</sup>Reflects the number of Category 1D or 1C MDAPs active during either FY 1994 (36) or FY 1995 (30), or both. Nine MDAPs were dropped and three MDAPs were added to the FY 1994 MDAP listing.

<sup>3</sup>As of January 26, 1996.

As shown, total estimated program authority for FYs 1994 and 1995 MDAPs was \$488.9 billion, to include \$411 billion for procurement. However, only \$104.6 million of VE savings were reported for those MDAPs during FYs 1994 and 1995. The VE savings reported for NAVAIR was for the F/A-18 Hornet Program and for NAVSEA was for the AEGIS Program Office Guided Missile Destroyer (DDG-51) Program. The \$20.1 million reported by NAVAIR during FY 1994 for two proposals was inaccurate because of computation errors, including savings attributable to foreign military sales, and unsupported estimates. Also, we did not consider \$38.2 million reported by AEGIS during FY 1994 for 16 proposals reviewed as valid VE savings. The reasons for the inaccuracies and the invalid savings are discussed in Finding A.

**MDAPs Without Value Engineering Savings.** NAVSEA and NAVAIR program officials considered VE a low priority. We judgmentally selected four NAVSEA MDAPs and one NAVAIR MDAP that did not have VE savings reported during FY 1994. The five MDAPs have estimated total program authority of \$90.6 billion and FY 1994 obligation authority of \$915.3 million. The program officials for:

- o Four MDAPs stated they used other cost-reduction initiatives to control costs;

- o Two MDAPs stated that sufficient funding was not available to implement recommended changes;

## **Finding B. Implementation of Value Engineering**

---

- o Two MDAPs stated the program was in the design phase and improvements made during the design phase were not readily quantifiable;

- o Five MDAPs did not have any formal plans to use or promote VE; and

- o One MDAP stated that NAVSEA did not encourage contractors to submit VECs.

**Contractor Participation in Value Engineering.** Navy contractors viewed VE as a low priority within the Navy. We judgmentally selected seven prime contractors for one or more Navy MDAP programs to interview regarding Navy VE efforts. Officials for:

- o Five contractors stated that NAVSEA did not have a VE manager or point-of-contact who could respond to their questions and that they did not believe NAVSEA was interested in contractor participation in VE;

- o Three contractors stated that VEC proposals were implemented and funded as normal engineering change proposals by NAVAIR, NAVSEA, and the AEGIS Program Office;

- o Two contractors stated that participation would improve if the Navy would review and approve VECs in a more timely manner; and

- o One contractor stated that VE was a good cost saving measure but did not believe NAVSEA really understood the potential benefits of VE.

Additional emphasis of VE by Navy program offices would result in increased contractor participation in the Navy VE Program and associated reductions in acquisition and maintenance costs.

## **Criteria For Implementing Value Engineering**

Except for facility construction projects, the Navy had not established criteria for identifying circumstances where VE could beneficially be employed on programs and projects by in-house and contractor personnel. As a result, the Navy commands and program offices were inconsistent in the implementation and use of VE. They had not developed and documented plans for the use of VE or other cost-reduction measures and did not always timely process contractor VECs. Also, three contracts awarded to a Navy contractor did not include a VE incentive clause.

**Criteria for Using VE.** VE is a technique that should be employed only when a benefit is expected. Except for NAVFAC, which was responsible for contracting for facility construction projects, Navy commands had not developed criteria for identifying programs or projects with the greatest potential to yield savings through VE or through other cost-reduction initiatives.

## Finding B. Implementation of Value Engineering

---

NAVFAC had an unwritten practice to screen planned construction projects with an estimated cost exceeding \$1 million against a database that contained historical information on the results of prior VE studies for projects that both NAVFAC and the Army Corps of Engineers constructed. The data base considered factors such as complexity, uniqueness, and cost, and was used to estimate whether or not a return-on-investment of 10 to 1 was possible. The screening results for projects with a return-on-investment of less than 10 to 1 formed the basis for waiver of a VE study.

**DoD VE Strategic Plan.** The DoD VE Strategic Plan, issued in August 1996, recognizes that many DoD acquisition programs have not benefited from VE. The plan includes a goal to increase VE benefits resulting from contractor developed VECs and in-house VEPs on MDAPs and from activities applied to facilities design and construction. The plan states that component acquisition executives, program executive officers, and program managers should encourage and facilitate MDAP programs to adapt VE. The plan establishes a goal of documented VE activity in 100 percent of the MDAP programs by September 1997. The plan also establishes savings goals of 1 percent of total obligation authority for VECs and 1 percent of total obligation authority for VEPs on MDAPs, and 6 percent of the total estimated cost of facilities design and construction projects with VE studies. A September 4, 1996, Executive Director, Acquisition and Business Management, OASN(RDA) memorandum directed Navy acquisition activities to implement the plan.

While the plan encourages program managers to use VE on MDAPs and establishes savings goals, the plan does not provide guidelines for assessing when and how VE can be successfully implemented on acquisition programs. The Plan includes an objective to improve support to VE implementers and six action items. The action items are:

- o update DoD VE Handbook by March 1997;
  - o establish an electronic VE mailbox within 90 days after issuance of the Strategic Plan;
  - o develop a DoD VE Homepage by March 1997;
  - o sponsor a DoD VE Conference in March 1997;
  - o develop program and contractor VE facilitation teams by March 1997;
- and
- o develop, provide, and promote VE tools starting 90 days after issuance of the Strategic Plan and continuing.

These action items are significant because they will provide criteria, guidelines, and best practices for beneficially using VE on Navy and other military department acquisition programs. Several items, including issuance of an updated DoD VE Handbook, have completion dates of March 1997, but are slipping because of resource constraints. Accordingly, we believe the Under

## Finding B. Implementation of Value Engineering

---

Secretary of Defense for Acquisition and Technology should task the VE Executive Steering Group to devote sufficient resources for the timely completion of the action items.

**Documenting VE Plans on Acquisition Programs.** None of the Navy organizations visited had documented plans for employing VE on their acquisition programs. The development and maintenance of a VE plan would ensure managers are committed to using VE and lessen the probability that opportunities for VE are lost. Procurement situations vary by acquisition program and a range of conditions will affect the benefits to be derived by VE. For example, benefits to be derived by VE for programs using performance based contracting may be different than programs that use material and process specifications. Also, the use of other cost-reduction initiatives may be more appropriate in certain circumstances. An analysis of acquisition programs that are in research and development, initial production, and reprourement may identify criteria and examples illustrating how to decide when use of VE or other cost-reduction initiatives should pay off. Accordingly, we believe that the Navy Acquisition Center for Excellence, established in March 1996 to assist in accomplishing acquisition program objectives and developing and assessing new process concepts, could provide valuable assistance by disseminating information on the appropriate uses of VE and savings goals on Navy acquisition programs.

**VE Incentive Clauses.** One contractor that we interviewed identified three contracts for engineering and technical services support that did not have the required VE incentive clause. The issuing contract office, contract number, and estimated award amount are listed in Table 5.

**Table 5. Contracts Without Required VE Incentive Clause**

<u>Issuing Contract Office</u>	<u>Contract Number</u>	<u>Amount</u>
Naval Sea Systems Command	N00024-89-C-4111	\$ 2,660,390
Naval Surface Warfare Center, Carderock	N00167-93-D-0054	\$18,129,972
Small Business Administration*	SB9 89 1 3007	\$10,708,049

\*Contracted for and administered by the David Taylor Naval Research Center.

The required incentive clause is FAR 52.248-1, "Value Engineering," and is intended to provide contractors a financial incentive to develop and submit VECPs. Savings identified by contractors are shared based on a predefined sharing arrangement in the FAR. FAR 48.201, "Clauses for Supply or Service Contracts," exempts certain contracts for research and development, engineering services from nonprofit organizations, personal services, product or component improvement, and commercial products that do not involve packing specifications from that requirement. The contracting officers for the contracts listed in Table 5 did not know whether any of the exemptions applied to those contracts. Without the VE incentive clause, contractors are not motivated to submit cost savings proposals and are unable to share in potential savings under

## Finding B. Implementation of Value Engineering

---

the VE program. Accordingly, we believe that the Navy should remind contracting officers of the importance of including VE clauses in contracts not exempted by FAR 48.201.

### Processing VECPs

Navy contracting officers often did not document notifications to contractors on the status of VECPs and several VECPs were not implemented in a timely manner.

**Processing and Monitoring VECPs.** NAVAIR, NAVFAC, NAVSUP, and SPAWAR VE program officials and contracting officers did not always document that contractors were notified of the status of VECPs within 45 days as required by FAR 48.103, "Processing Value Engineering Change Proposals." FAR 48.103(b) states:

The contracting officer is responsible for accepting or rejecting the VECP within 45 days from its receipt by the Government. If the Government will need more time to evaluate the VECP, the contracting officer shall notify the contractor promptly in writing, giving the reasons and the anticipated decision date.

Of the 31 VECPs with reported savings during FY 1994, 11 were approved within the prescribed 45-day timeframe. Of the remaining 20 VECPs, we were unable to determine the approval date from available documentation for 13 VECPs, and the approval date for the other 7 VECPs ranged from 98 to 492 days after submission. NAVAIR, NAVFAC, NAVSUP, and SPAWAR did not have an information system for monitoring and coordinating VECP status. The VE program and contracting officials in those commands believed that either the VE managers or the procuring or administering contracting officers notified contractors of the status of their VECPs within the required 45 days, but there was no documentation to support such action.

While the AEGIS Program Office did not have any VECPs with reported savings during FYs 1994 or 1995, they maintained an information system under its Affordability Management Program that provided for monitoring the status of VECPs. The system provided for tracking of the status of the technical approval or rejection of a VECP and the coordination of the VECP status with contract officials for notification of the submitting contractor.

Without implementing instructions or documentation of contacts made, NAVAIR, NAVFAC, NAVSUP, and SPAWAR have no assurance that its organizations actually made the required notifications.

**Implementing and Settling VECPs.** Navy commands took an average of 267 days to incorporate VECPs into formal contract actions. The commands did not have performance measures or standards for the time to review,

## Finding B. Implementation of Value Engineering

---

approve, and implement VECPs. Table 6 identifies the time that each Navy command took to process VECPs that had VE savings reported during FY 1994.

**Table 6. Processing Times for VECPs**

<u>Command</u>	Number of VECPs*	Average Days to Implement	<u>Range of Days</u>	
			<u>Low</u>	<u>High</u>
NAVAIR	8	420	38	903
NAVFAC	17	110	35	356
NAVSUP	4	558	225	891
SPAWAR	2	386	198	573
<b>Navy Total</b>	<b>31</b>	<b>267</b>	<b>35</b>	<b>903</b>

\*Average days to implement and range of days were computed based on the number of VECPs for which both the submission date and the modification date were available. Those were: NAVAIR (8); NAVFAC (13); NAVSUP (2); and SPAWAR (2).

Processing delays increase the possibility that the Navy will not realize the full amount of estimated VE savings. Also, delays could reduce contractor participation because contractors may lose interest if payments and actions are not completed in a timely manner. DoD has performance measures for other similar events. For example, DoD contracting activities are required to definitize unpriced contractual actions within 180 days of receipt of a qualifying proposal. We believe that the Navy should develop a performance measure for the VECP decision and implementation cycle.

## Management Support for Value Engineering

In December 1993, the Under Secretary of Defense for Acquisition and Technology sent a memorandum to the Secretaries of the Military Departments and Directors of the Defense Agencies recognizing the issuance of the revised OMB Circular No. A-131 in May 1993. The Under Secretary stated that he wanted to increase emphasis on the DoD VE Program by establishing a DoD VE Executive Steering Group to develop a comprehensive, coordinated, but realistic DoD VE program to reduce nonessential program and acquisition costs. The DoD VE Executive Steering Group would provide direction to and oversee the DoD VE QMB. The memorandum requested each Military Department and Defense Agency to identify an individual to participate as a member of the VE Executive Steering Group.

**Navy Emphasis on Value Engineering.** Representatives of the OASN(RDA) have participated in the efforts of the DoD VE Executive Steering Group and

## Finding B. Implementation of Value Engineering

---

VE QMB to develop the DoD VE Strategic Plan, to plan and conduct annual VE award ceremonies, and to monitor VE accomplishments. However, the OASN(RDA) did not communicate an increased emphasis of VE to Navy program and contracting personnel or take any actions to promote a consistent and coordinated VE program within the Navy. In a January 19, 1996, memorandum to the Director, Test, Systems Engineering and Evaluation, OUSD(A&T), the Executive Director, Acquisition and Business Management, OASN(RDA), addressed the Department of the Navy views on the use of VE. The Executive Director stated that since DoD has never issued implementing direction on the revised OMB Circular No. A-131, the Navy has continued to manage its VE program in accordance with provisions of DoD Instruction 5000.2 and the FAR. Accordingly, the Navy policy is that VE was just one of many cost-reduction initiatives available to Weapons System Acquisition Program Managers and that those managers have the option to use VE where it is appropriate. The Executive Director further stated that the Navy policy was in line with OMB guidance and with current DoD emphasis on increasing program manager's authority and flexibility to manage their programs based on the unique requirements of those programs.

The OASN(RDA) memorandum was issued after we began the audit, with the intent of documenting that Navy participation in the VE program was voluntary and that DoD, not Navy, was responsible for not issuing implementing guidance on the revised OMB Circular A-131. The memorandum recognized that the revised circular needed an increased commitment of resources to fully comply, but offered no explanation why Navy leadership had not independently increased emphasis of the VE program.

## Conclusion

The Navy has not implemented an effective VE program for many of its acquisition programs. As a result, the Navy has lost opportunities to use VE to reduce acquisition and maintenance costs and to improve system and operational capabilities.

## Management Comments on the Finding and Audit Response

**Management Comments.** The Principal Deputy Assistant Secretary of the Navy (Research, Development and Acquisition) stated that DoD did not issue its revised OMB Circular No. A-131 VE guidance until August 1996. During the audit period, the Navy practiced VE in accordance with DoD Instruction 5000.2/2.M and the FAR. The Deputy Assistant Secretary agreed that Navy acquisition programs did not use VE thoroughly, that Navy acquisition managers viewed VE as a low priority, and that Navy commands did not use VE to its full potential. VE is considered extra work by the program and its direct value added to the program is considered minimal because of the limited

## **Finding B. Implementation of Value Engineering**

---

benefit the program receives from the savings generated. Also, program managers have discretion in deciding whether VE or one of the other DoD cost-reduction programs are appropriate for their programs. A "one-size-fits-all" approach mandating the use of VE on all programs would be inappropriate. A VECP is reviewed and technically evaluated the same as any other technical change on a complex, sophisticated weapon system.

**Audit Response.** Budget constraints require that DoD make use of VE whenever possible. Although VE is extra work for the program office, the cost avoidances identified by VE benefit the Navy by reducing the risk of cost escalation and meeting budget limits on the Navy acquisition programs.

## **Recommendations, Management Comments, and Audit Response**

**Revised Recommendation.** As a result of management comments, we revised Recommendation B.1. to focus on the implementation of DoD VE Strategic Plan initiatives to support VE implementers.

**B.1. We recommend that the Under Secretary of Defense for Acquisition and Technology task the DoD Value Engineering Executive Steering Group to devote sufficient resources for the timely completion of the action items in the Strategic Plan that would provide value engineering implementers with criteria, guidelines, and best practices for beneficially using value engineering on acquisition programs.**

**Management Comments.** The Director, Test, Systems Engineering and Evaluation, OUSD(A&T), nonconcurred with the draft report recommendation that the DoD VE QMB establish criteria and guidelines for assessing the potential for beneficially using VE on DoD acquisition programs. The Director stated that criteria and guidelines for assessing the potential for beneficially using VE on DoD acquisition programs were established in the FY 1996-97 DoD VE Strategic Plan, August 13, 1996.

The Principal Deputy Assistant Secretary of the Navy (Research, Development and Acquisition) stated that recommendation is basically addressed in the DoD VE Strategic Plan and that the DoD Executive Steering Group, not the QMB, is the DoD VE policy and procedures body.

**Audit Response.** Based on the comments, we revised the recommendation to address the implementation of the DoD VE Strategic Plan objective of improving support to VE implementers. The DoD VE Strategic Plan identifies specific action items that will provide criteria and guidance to VE implementers for effective use of VE. Several items, including issuance of an updated DoD VE Handbook, have completion dates of March 1997, but are slipping because of resource constraints. The Executive Steering Group should ensure adequate

## Finding B. Implementation of Value Engineering

---

resources are devoted for timely implementation of action items. We request the OUSD(A&T) to provide comments on the revised recommendation in response to the final report.

### **B.2. We recommend that the Assistant Secretary of the Navy (Research, Development, and Acquisition):**

**a. Require each Department of the Navy major command, to include the Marine Corps, the program executive officers, the direct reporting program managers, and the major defense acquisition program managers to develop and maintain an annual plan for value engineering. The plan should identify the acquisition programs and facilities projects subject to value engineering, actions to be taken to achieve value engineering savings goals, and activities to promote the use of value engineering.**

**Management Comments.** The Principal Deputy Assistant Secretary of the Navy (Research, Development and Acquisition) stated that the recommendation is basically addressed in the DoD VE Strategic Plan. A September 4, 1996, memorandum issued by the Executive Director, Acquisition and Business Management, OASN(RDA), forwarded the Strategic Plan to Navy systems commands and program offices and requested they identify VE focal points and report their VE Program implementation efforts to his office by November 8, 1996.

**Audit Response.** The Strategic Plan requires the Services and agencies to maintain files on projects, programs, systems, and products that meet agency criteria for requiring the use of VE techniques, and to submit annual statistical data on their VE efforts. However, it does not specifically require the development of annual plans for VE. The respondents to the September 4, 1996, OASN(RDA) memorandum identified organizational responsibilities for VE and several identified actions taken to encourage use of VE. None of the respondents developed and submitted formal plans for their programs. We believe the recommendation to develop an annual plan is viable because the process would help organizations to establish accountability, and encourage innovation, as well as develop, justify, and carry out their VE activities. An annual plan would require commands and organizations to identify VE savings goals and describe how they will be achieved; to estimate resource and funding requirements for VE studies, training, and administration; and to establish target dates for completing actions. The annual VE report documents the culmination of the VE efforts; thus its perspective is different than a plan. We request the Navy to reconsider its position on the recommendation and provide additional comments in response to the final report.

**b. Establish performance measures for contracting officers, program executive officers, direct reporting program managers, and the major acquisition program managers on the 45 day standard for notifying contractors of the status of value engineering change proposals, the cycle time to incorporate value engineering change proposals in contracts, and the requirement to include value engineering clauses in all contracts not exempted by Federal Acquisition Regulation 48.201.**

## **Finding B. Implementation of Value Engineering**

---

**Management Comments.** The Navy nonconcluded with the recommendation as written. The Navy has a procurement management review process that periodically reviews procuring organizations for compliance with statutes and regulations, and a separate effort for VE compliance would not be cost effective. A memorandum to the Navy acquisition community reiterating the FAR VE requirements should be sufficient.

**Audit Response.** The comments are partially responsive. Issuing a memorandum reiterating the FAR VE requirements is an acceptable alternative for ensuring VE clauses are appropriately included in contracts. However, we believe that the procurement management review process is not an acceptable alternative to the recommendation to establish performance measures for the VECIP decision cycle. Most VECIPs have required more than 45 days for the Navy to process and implement contractually. We believe that a performance measure would establish accountability for more timely decisions and efficient processing of VECIPs, and encourage program managers to reduce cycle time on VECIPs through the use of program-level integrated product teams. As stated in the finding, inefficient and untimely review, approval, and implementation of VECIPs can result in lost savings and additional costs to DoD, and discourage contractors from investing resources to develop VECIPs or participate in the VE program. Based on the comments, we revised the recommendation to clarify that the Navy should also establish a performance measure for processing VECIPs. We request the Navy provide comments on the revised recommendation in its comments to the final report.

**c. Task the Navy Acquisition Center of Excellence to disseminate information on the appropriate uses of value engineering and value engineering savings goals on Navy acquisition programs.**

**Management Comments.** The Navy nonconcluded, stating the Navy Acquisition Center for Excellence has neither the technical expertise nor acquisition program management responsibility to disseminate information on the appropriate use of VE and VE savings goals on Navy acquisition programs.

**Audit Response.** The mission of the Navy Acquisition Center of Excellence is to reduce Navy acquisition costs by providing program managers, program executive officers, and system command teams an enhanced capability to test, evaluate, and apply world class acquisition strategies. Its responsibilities include assessing acquisition reform performance, serving as a focal point and providing feedback for Navy business process reengineering and deploying the Navy acquisition reform message. Unless the Navy can identify another more appropriate organization to promote VE, then we are left with the Navy Acquisition Center of Excellence as the organization to promote VE as a cost-reduction tool. We request that the Navy reconsider its position on the recommendation and provide additional comments in its response to the final report.

## **Part II - Additional Information**

---

## Appendix A. Scope and Methodology

### Scope

The audit covered the policies and procedures the Navy used to implement, monitor, and report the results of value engineering (VE) efforts. We reviewed actions by the Naval Air Systems Command (NAVAIR), the Naval Facilities Engineering Command (NAVFAC), the Naval Sea Systems Command (NAVSEA), the Naval Supply Systems Commands (NAVSUP), the Space and Naval Warfare System Command (SPAWAR), and the AEGIS Program Office (AEGIS) to promote VE by defense contractors.

**Universe and Sample Information.** We obtained audit universe information on VE savings proposals from the Navy commands that reported VE savings during FY 1994. During FY 1994, the Navy reported \$219 million of in-house and contractor VE savings. Those savings were derived from 2,062 projects and involved \$23.4 million of reported costs. To review the accuracy of VE savings reported by the Navy, we reviewed a total of 85 VE proposals involving \$130.5 million (59.5 percent) of the total savings reported in the FY 1994 by NAVAIR, NAVFAC, NAVSUP, SPAWAR, and AEGIS. We judgmentally selected higher valued proposals but did include some lower valued proposals to ensure adequate coverage where necessary. We included NAVSEA in our audit because it was a major Navy command that did not report any VE actions. Table 1 (page 6) summarizes the VE proposals and savings reviewed at the Navy commands that reported VE savings during FY 1994. Appendix C summarizes the VE savings and costs reported for FYs 1994 and 1995. We identified the estimated program funding for Navy MDAPs that were active during FY 1994 or FY 1995, or both. We randomly sampled and reviewed 190 contracts awarded during FY 1994 by NAVAIR, NAVFAC, NAVSEA, SPAWAR and AEGIS. We also reviewed three contracts awarded to the same contractor during FYs 1989 and 1993 that did not have the required VE incentive clause. Additionally, we did not use computer-processed data to perform this audit.

**Audit Period, Standards and Locations.** We performed this economy and efficiency audit from June 1995 through September 1996 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Office of the Inspector General, DoD. Accordingly, we included tests of management controls considered necessary.

**Organizations and Individuals Visited or Contacted.** We visited or contacted individuals and organizations within the DoD and various contractors. Further details are available on request.

## Methodology

We interviewed personnel responsible for implementing and monitoring VE from the Navy, the Office of the Under Secretary of Defense for Acquisition and Technology, and the Office of Management and Budget. We also interviewed seven Defense contractors concerning their participation in the Navy VE program. We visited six major Navy command activities to evaluate their use and reporting of VE and also to evaluate their efforts to promote VE to Defense contractors. We evaluated VE plans, VE proposals, technical data, VE savings computations, and applicable contract files.

## Management Control Program

DoD Directive 5010.38, "Management Control Program," August 26, 1996, requires DoD organizations to implement a comprehensive strategy of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

**Scope of Review of Management Control Program.** We reviewed the adequacy of Navy management controls over the use of VE and the computing and reporting of VE savings. We assessed the Navy's self-evaluation of those controls.

**Adequacy of Management Controls.** Navy management controls were not adequate to ensure that VE savings were accurately computed and reported and that VE was used on those programs, projects, or systems with the most potential for savings. Recommendations A.1., A.2., B.1., and B.2., if implemented, will assist in correcting the material weaknesses. If management implements those recommendations, then the use of VE should improve and potential monetary benefits could be realized. However, we could not determine the amount because the amount depends on the number of VE actions initiated and the VE savings realized on those initiated VE actions.

**Adequacy of Management's Self-Evaluation.** Navy officials did not identify VE as an assessable unit and therefore, did not identify the material management control weaknesses identified by the audit.

---

## **Appendix B. Summary of Prior Audits and Other Reviews**

### **President's Council on Integrity and Efficiency**

**"Value Engineering Project Summary Report," August 5, 1991.** The report, which was based on audits and reviews performed by the Inspectors General of the Departments of Transportation, Justice, Health and Human Services, Interior, and the General Services Administration, stated that Federal Agencies had not maximized the use of VE to reduce costs, including the use of VE in grant programs. The report recommended that OMB revise and reissue Circular A-131 to strengthen and provide more definitive guidance for the implementation of VE. Additionally, the report recommended that an ad hoc committee be created, composed of representatives from OMB and applicable agencies, to share information among agencies for their mutual benefit and to support legislation requiring the appropriate use of VE in all Federal programs. OMB Circular No. A-131 was revised to clarify agency implementation responsibilities and was reissued May 21, 1993.

### **General Accounting Office**

**Report No. T-GUIDE-92-55, "Value Engineering: Usefulness Well Established When Applied Appropriately," June 1992.** The General Accounting Office testified before the Subcommittee on Legislation and National Security, House Committee on Government Operations, that VE has proven to be a cost-saving technique. The General Accounting Office stated that appropriate use of VE can result in providing indisputable benefits in construction, weapons, and system programs. The General Accounting Office further stated that VE is one of many useful techniques for improving productivity and reducing costs, but may not be useful in all cases reviewed. Accordingly, a VE program should promote the effective use of VE, but resources should be carefully allocated to prevent them from being wasted on unnecessary or inappropriate reviews.

## Inspector General, DoD

**Report No. 97-003, "Defense Logistics Agency Value Engineering Program," October 9, 1996.** The report stated that three Defense Logistics Agency buying centers included savings from other cost-reduction initiatives in reported VE savings and that reported savings and costs were inaccurate. Of \$19 million of reported VE savings reviewed, \$17.7 were overstated. The report also stated that the Defense Logistics Agency could better motivate contractors to participate in the DoD VE Program and that required VE incentive clauses were not always included in contracts. The Defense Logistics Agency nonconcurred with the recommendation to differentiate VE from other cost-reduction initiatives. The Defense Logistics Agency agreed with recommendations to improve the reporting of indirect VE costs, to emphasize the importance of VE and encourage contractor participation in VE, to include VE clauses in contracts, and to provide VE statistical data to the Military Departments and the DoD VE program managers.

**Report No. 88-195, "DoD In-House Value Engineering Program," August 22, 1988.** The report stated that the DoD In-House Value Engineering Program served primarily as a vehicle for reporting savings accomplished by other initiatives rather than through the application of VE techniques. Of the \$987 million in program savings claimed in FY 1986, \$705 million was the result of other cost-reduction or savings initiatives. The report also stated that another \$192 million of VE reported savings were incorrectly reported. The reported problems were attributed to the lack of definitive guidance and resulted in ineffective program performance and reporting of misleading program results.

The report recommended that DoD Directive 4245.8, "DoD Value Engineering Program," (now cancelled) and DoD 4245.8-H, "DoD Value Engineering Handbook," be revised to provide more precise criteria for defining in-house VE proposals and savings and to establish documented savings goals through annual plans. The report also recommended that the DoD VE committee review goal-setting processes within DoD Components along with the annual review of VE plans. The report further recommended reporting in-house savings only in the fiscal year the proposal is implemented and clarifying the elements of cost to report as VE. Finally, the report recommended that the DoD VE Program Manager be directed to develop and implement procedures for critiquing the validity of DoD Components' savings reports and to implement the DoD Directive 4245.8 requirement for management reviews of VE proposals with savings of \$100,000 or more. DoD initiated actions to implement the recommendations through DoD Directive 4245.8. However, DoD Directive 4245.8 was cancelled February 23, 1991, as a result of the Defense Management Review and no replacement guidance was issued.

## Appendix C. FY 1994 and 1995 Reported Value Engineering Savings for the Navy

### In-House VEPs Reported Savings (millions)

	FY 1994		FY 1995	
	<u>Savings</u>	<u>Investment</u>	<u>Savings</u>	<u>Investment</u>
AEGIS	\$ 27.960	\$ .284	\$32.320	\$ 6.333
NAVAIR	21.600	.024	16.000	.110
NAVFAC	126.900	2.563	60.880	2.269
NAVSUP	.290	.009	.000	.017
SPAWAR	.000	.006	.000	.000
<b>Subtotal</b>	<b>\$176.750</b>	<b>\$2.886</b>	<b>\$109.200</b>	<b>\$8.726</b>

### Contractors VECs Reported Savings (millions)

	FY 1994		FY 1995	
	<u>Savings</u>	<u>Investment</u>	<u>Savings</u>	<u>Investment</u>
AEGIS	\$ 15.158	\$8.030	\$ .000	\$ .000
NAVAIR	22.000	11.700	5.700	7.400
NAVFAC	4.200	.712	.632	.200
NAVSUP	.077	.036	1.027	.038
SPAWAR	.790	.046	.000	.000
<b>Subtotal</b>	<b>\$42.225</b>	<b>\$20.524</b>	<b>\$7.359</b>	<b>\$7.638</b>
<b>Total</b>	<b>\$218.975</b>	<b>\$23.410</b>	<b>\$116.559</b>	<b>\$16.367</b>

---

## Appendix D. Value Engineering Techniques

The DoD 4245.8-H, "DoD Value Engineering Handbook," March 1986, describes value engineering as a purposeful, planned approach to cost-reduction that uses the best tools of science, engineering, and industrial management. Rather than relying on unplanned efforts and undisciplined ingenuity, the handbook describes VE in terms of a well-defined, seven-phase VE job plan for each project.

VE is distinguished from other cost-reduction techniques by the analyses performed early in the process as described below.

**Functional Analysis.** The primary objective of functional analysis is to facilitate the discovery of alternative means of achieving the desired performance. In analyzing the functions of a large system, the system is commonly divided into major areas. Each major area may then be evaluated through functional analysis as an element of the next larger assembly, in terms of its own components, or as an identifiable, nondivisible item. Function is defined as the specific purpose or intended use and describes what must be achieved. A two-word, verb-noun description is used to describe function in a simple and accurate manner. For example, the function of an electrical wire may be described as "conduct current." Functions are first categorized as basic or secondary functions. An item's basic function is the function required to provide the essential utility needed by the user. Secondary functions play an enabling role and merely make the basic function achievable. Since secondary functions add directly to cost but do not contribute to worth, VE attempts to minimize the number of secondary functions. Secondary functions are assigned a value of zero, as discussed below.

**Analysis of Worth.** Once the basic and secondary functions of an item have been identified, each basic function is assigned a worth. Worth is the least expenditure required to provide a basic function needed by the user and is established by comparison. One method of approximating worth is by determining the cost of a functional equivalent. For example, the worth of a bolt used to fasten a wing to an airplane may be based on the cost of glue that would accomplish the same purpose. Worth is not affected by the consequence of a failure. If the bolt supporting the aircraft wing failed, the plane might crash, but the bolt's worth is still the lowest cost necessary to provide a reliable fastener.

**Cost.** Once the function and worth are determined, costs are assigned to each basic and secondary function. Cost is the total funds required to acquire, use, and maintain the specified functions. For the seller, cost is the total expense of producing a product. For DoD, the total cost includes not only the seller's cost, but also the cost of introducing it into the DoD inventory, operating it, supporting it throughout its usable life, and disposing of it when it no longer serves a functional purpose. Total cost also includes a proportionate share of in-house expenditures for development, engineering, testing, spare parts, and various categories of overhead expenses.

## Appendix D. Value Engineering Techniques

---

**Value Analysis.** Using the information gathered above, the VE team makes a "go" or "no-go" decision on whether to continue the VE study. This decision is based on a value index representing the ratio of worth to cost. Assemblies, components, or items having a low ratio of worth to cost are candidates for further pursuit under the VE process.

---

## **Appendix E. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition and Technology  
  Director, Defense Logistics Studies Information Exchange  
  Deputy Under Secretary of Defense (Acquisition Reform)  
  Director, Test Systems Engineering and Evaluation  
  Director, Defense Procurement  
Under Secretary of Defense (Comptroller)  
  Deputy Chief Financial Officer  
  Deputy Comptroller (Program/Budget)  
Assistant Secretary of Defense (Public Affairs)

### **Department of the Army**

Auditor General, Department of the Army

### **Department of the Navy**

Assistant Secretary of the Navy (Financial Management and Comptroller)  
Assistant Secretary of the Navy (Research, Development, and Acquisition)  
Auditor General, Department of the Navy  
Commander, AEGIS Shipbuilding Program  
Commander, Naval Air Systems Command  
Commander, Naval Facilities and Engineering Command  
Commander, Naval Sea Systems Command  
Commander, Naval Supply Systems Command  
Commander, Space and Naval Warfare Systems Command

### **Department of the Air Force**

Assistant Secretary of the Air Force (Financial Management and Comptroller)  
Auditor General, Department of the Air Force

### **Other Defense Organizations**

Director, Defense Contract Audit Agency  
Director, Defense Logistics Agency  
Director, National Security Agency  
  Inspector General, National Security Agency  
Inspector General, Defense Intelligence Agency

## **Non-Defense Federal Organizations and Individuals**

Office of Management and Budget  
Technical Information Center, National Security and International Affairs Division,  
General Accounting Office

Chairman and ranking minority member of each of the following congressional committees and subcommittees:

Senate Committee on Appropriations  
Senate Subcommittee on Defense, Committee on Appropriations  
Senate Committee on Armed Services  
Senate Committee on Governmental Affairs  
House Committee on Appropriations  
House Subcommittee on National Security, Committee on Appropriations  
House Committee on Government Reform and Oversight  
House Subcommittee on Government Management Information and Technology,  
Committee on Government Reform and Oversight  
House Subcommittee on National Security, International Affairs, and Criminal  
Justice, Committee on Government Reform and Oversight  
House Committee on National Security

## **Part III - Management Comments**

# Office of the Under Secretary of Defense for Acquisition and Technology Comments



ACQUISITION AND  
TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON DC 20301-3000



4 FEB 1997

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING,  
DEPARTMENT OF DEFENSE

THRU: CAIR

SUBJECT: Audit Report on The Navy Value Engineering Program (Project No. 5CH-5038.01)

We have reviewed the subject draft report and our comments are attached. If you have any questions, please contact my action officer, Larry Paulson, DoD VE Program Manager, 681-4535, e-mail: paulsolw@acq.osd.mil.

Patricia Sanders  
Director, Test, Systems  
Engineering and Evaluation

Attachment



**AUDIT TITLE:** The Navy Value Engineering Program, 5CH-5038.01

**IG FINDING A:** Accuracy of Reported Value Engineering Savings and Costs

The Navy did not accurately report VE savings and costs for FY 1994. Of the 85 proposals reviewed, the Navy reported savings valued at \$130.5 million during 1994. Twenty-six of those proposals valued at \$59.8 million were based on other non-VE cost reduction initiatives. There were 59 proposals reported with savings of \$70.7 million that were VE, however \$42.2 million were overstated, or not supported by sufficient documentation. The reporting inaccuracies occurred because DoD and Navy guidance did not:

- clearly define and differentiate VE from other cost-reduction initiatives, and
- clearly explain how to compute and report savings and costs in accordance with the revised OMB Circular A-131.

Also, Navy managers did not thoroughly review the basis and accuracy of the calculations for claimed VE savings.

As a result, the reported savings and cost data were not reliable for assessing program effectiveness.

**DOD COMMENTS:**

The DoD partially concurs with these findings. The DoD does not concur that proposals based on other non-VE cost reduction initiatives are necessarily not valid VE savings. The DoD IG used a narrow interpretation and assessment of what should be and was reported by the Navy, in particular the AEGIS Program Office, as VE savings and investment costs. The DoD uses a broad interpretation of what constitutes VE program activities and accomplishments and what should be reported as such. The inherent objective of the VE program is to identify ways to reduce cost and improve products and processes. To that end, DoD encourages innovative approaches and integration of VE with other cost reduction initiatives. The Navy's AEGIS Affordability Management Program integrates VE with a number of other improvement tools using a government-industry integrated product team to facilitate the processing of value improving proposals (essentially VEPs) that are implemented as Engineering Change Proposals with sharing of savings on an across the contract basis with a share line incentive. The DoD finds this to be an acceptable VE approach. The DoD does concur that DoD guidance did not clearly define and differentiate VE from other cost-reduction initiatives. The DoD does concur that DoD guidance did not clearly explain how to compute and report savings and costs in accordance with the revised OMB Circular A-131.

**IG RECOMMENDATION A:**

- A. We recommend that the USD(A&T) charter an integrated policy team to support the DoD VE Quality Management Board (QMB) in developing guidance by a specific date on the DoD VE Program that;

Office of the Under Secretary of Defense for Acquisition and Technology  
Comments

---

Final Report  
Reference

Deleted

Renumbered  
as Recommendation  
A.2.

1. Differentiates the application of VE techniques and the reporting of VE savings from other cost reduction initiatives such as the Navy's AEGIS Affordability Management Program, directed feasibility studies, logistics engineering change proposals, suggestions, and VE savings realized by foreign military sales customers, and recent acquisition reform programs.
2. Stipulate what costs are considered VE investment costs that will be documented and reported in the calculation of reported savings.
3. Require savings be reported after in-house VE proposals (VEPs) or contractor VE change proposals (VECPS) are approved and implemented by contracts, contract modification or revised procedures.

**DOD COMMENTS:**

The DoD does not concur with Recommendation A. The USD(A&T) has already chartered the DoD VE Executive Steering Group (ESG) as the DoD VE group responsible for VE policy and procedures. The USD(A&T) issued guidance in the FY 1996-97 DoD VE Strategic Plan, August 13, 1996.

The DoD concurs with Recommendation A.1. The DoD VE ESG will develop DoD guidelines that differentiates VE from other cost-reduction initiatives as appropriate for VE reporting purposes. These guidelines will be included in the next annual revision (August 1997) to the DoD VE Strategic Plan.

The DoD does not concur with Recommendation A.2. The USD(A&T) established guidelines that stipulate what costs are considered VE investment costs that will be documented and reported in the calculation of reported savings when the FY 1996-97 DoD VE Strategic Plan was issued August 13, 1996. The Plan states, "Estimates should include salaries and overhead expenses of value engineering employees, value engineering training costs, costs for contracting for value engineering services, VEP or VECPS development and implementation costs, and any other costs directly associated with your value engineering program. Overhead may be estimated at 50% of salaries."

The DoD concurs with Recommendation A.3. The DoD VE ESG will develop DoD guidelines that require savings be reported after in-house VE proposals (VEPs) or contractor VE change proposals (VECPS) are approved and implemented by contracts, contract modification or revised procedures. These guidelines will be included in the next annual revision (August 1997) to the DoD VE Strategic Plan.

**IG FINDING B: Implementation of Value Engineering.**

The Navy reported the use of VE to reduce costs on only two major acquisition programs and on its military construction projects, during FYs 1994 and 1995. The two programs constituted \$89.5 billion of the \$411 billion of procurement funding programmed for Navy major defense acquisition programs (MDAPs) active during either FYs 1994 or 1995 or both. Except for

ignvrzx, 01/31/97 1:15 PM

2/3

NAVFAC, Navy systems commands and programs offices had not established criteria for identifying acquisition programs with the most potential for VE and had not developed annual goals and plans for the use of VE on their programs. A contractor identified three contracts awarded for the Naval Surface Warfare Center, NAVSEA and the David Taylor Research Center that did not include VE incentive clauses as required by the FAR. Also, NAVAIR, NAVFAC, NAVSUP and SPAWAR took up to 492 days to approve contractor VECs and up to 903 days to incorporate approved VECs in contracts. Those conditions occurred because program managers (PMs) and contracting officials (PCOs) viewed VE as a low priority. As a result, the Navy has lost opportunities to use VE to reduce procurement and maintenance costs on its acquisition programs and the Navy has not motivated contractors to submit VECs.

**IG RECOMMENDATION B.1:**

B.1. We recommend that USD(A&T) task the DoD VE QMB to establish criteria and guidelines for assessing the potential for beneficially using VE on DoD acquisition programs.

**DOD COMMENTS:**

The DoD does not concur with Recommendation B.1. The USD(A&T) established criteria and guidelines for assessing the potential for beneficially using VE on DoD acquisition programs when the FY 1996-97 DoD VE Strategic Plan was issued August 13, 1996. The Plan states, "Selection criteria shall include as a minimum programs/projects/procurements: designated ACAT I/II programs per DoD 5000.2-R in Engineering and Manufacturing Development (EMD) and Production; exceeding 0.1% of Service/Agency Total Obligation Authorities (TOAs) for categories of Procurement, O&M, and MILCON; and/or deemed a complex system or using advancing technology; or included by management direction."

Revised

# Department of the Navy Comments



DEPARTMENT OF THE NAVY  
OFFICE OF THE ASSISTANT SECRETARY  
(Research, Development and Acquisition)  
WASHINGTON, D.C. 20350-1000

FEB 5 1997

MEMORANDUM FOR THE DEPARTMENT OF DEFENSE ASSISTANT INSPECTOR  
GENERAL FOR AUDITING

Subj: DRAFT REPORT ON THE AUDIT OF THE DEPARTMENT OF THE NAVY  
(DON) VALUE ENGINEERING (VE) PROGRAM (PROJECT NO. 5CH-  
5038.1) ACTION MEMORANDUM

Ref: (a) DoDIG Memo of 20 Nov 1996  
(b) OASN(RDA)/ABM Memo of 19 Jan 1996

Encl: (1) DON Response to Draft Audit Report

I am responding to the draft audit report forwarded by reference (a) concerning the DON VE Programs implementation of Office of Management and Budget (OMB) circular A-131 "Value Engineering". As stated in reference (b), the DON continued to manage their VE Program in accordance with DODI 5000.2/2M and the FAR VE Clause pending the issue of DoD/OSD direction on the DoD implementation of OMB A-131. This direction was issued by USD(A&T) memo of 13 August 1996 as the "1996-97 DoD VE Strategic Plan", after the subject audit took place. This Plan was developed by the USD(A&T) Chartered DoD VE Executive Steering Group (ESG) and represents the DoD adaptation of the policies and procedures called out in OMB A-131.

The DON partially concurs with the findings of the report and its recommendations. The general comments of enclosure (1) discuss these areas, while the detailed comments of its attachments from the various organizations audited address their specific issues.

  
M. P. Sullivan  
RADM, SC, USN  
Principal Deputy

Copy to:  
FMO-31  
NAVINGEN

Department of the Navy Response

to

DODIG Draft Report of 20 November 1996

on

DON VE Program

Finding A. Accuracy of Reported Value Engineering Savings and Costs.

The Navy did not accurately report VE savings and costs for FY 1994. Of the 85 proposals reviewed, the Navy reported savings valued at \$130.5 million during 1994. Twenty-six of those proposals valued at \$59.8 million were based on other non-VE cost reduction initiatives. There were 59 proposals reported with savings of \$70.7 million that were VE, however \$42.2 million were overstated, or not supported by sufficient documentation. The reporting inaccuracies occurred because DoD and Navy guidance did not:

- clearly define and differentiate VE from other cost-reduction initiatives, and
- clearly explain how to compute and report savings and costs in accordance with the revised OMB Circular A-131.

Also, Navy managers did not thoroughly review the basis and accuracy of the calculations for claimed VE savings. As a result, the reported savings and cost data were not reliable for assessing program effectiveness.

Recommendations A. A.1, A.2, and A.3.

A. We recommend that the USD(A&T) charter an integrated policy team to support the DoD VE Quality Management Board (QMB) in developing guidance by a specific date on the DoD VE Program that;

1. Differentiates the application of VE techniques and the reporting of VE savings from other cost reduction initiatives such as the Navy's AEGIS Affordability Management Program, directed feasibility studies, logistics engineering change proposals, suggestions, and VE savings realized by foreign military sales customers, and recent acquisition reform programs.
2. Stipulate what costs are considered VE investment costs that will be documented and reported in the calculation of reported savings.
3. Require savings be reported after in-house VE proposals (VEPs) or contractor VE change proposals (VECPS) are approved and implemented by contracts, contract modification or revised procedures.

DON Position:

Partially concur. As stated by the Audit Report the current "Definitions" for what constitutes VE, VEPs, VECPS, etc., lack clear, specific wording. Further, the "Directions" on how, when and what to calculate as VE savings/costs and return on investment are confusing, requiring two or three references in different documents to perform. As a result, even among regular VE practitioners, there are differences of opinions/interpretations on the

**ENCLOSURE(1)**

Deleted

Renumbered  
as Recommendation  
A.2.

Final Report  
Reference

VE "Envelope" and VE savings/costs calculations. This has resulted in "Apples"/"Oranges" reporting of the VE savings and costs, and some of the reported overstatements and inaccuracies. The use of estimates of outyear VE savings has further complicated this problem due to changing of actual outyear procurement quantities from those stated in the planning documents used at the time the estimates were made. There are cases where the outyear quantities were zeroed out or the program terminated shortly after VECF approval and contract implementation. DON agrees with the basic recommendation to USD(A&T) on the development of specific guidance regarding these areas. However, USD(A&T) has already chartered a DoD VE group responsible for VE policy and procedures, the DoD VE Executive Steering Group. USD(A&T) should assign this task to them.

Finding B. Implementation of Value Engineering.

The Navy reported the use of VE to reduce costs on only two major acquisition programs and on its military construction projects, during FYs 1994 and 1995. The two programs constituted \$89.5 billion of the \$411 billion of procurement funding programmed for Navy major defense acquisition programs (MDAPs) active during either FYs 1994 or 1995 or both. Except for NAVFAC, Navy systems commands and programs offices had not established criteria for identifying acquisition programs with the most potential for VE and had not developed annual goals and plans for the use of VE on their programs. A contractor identified three contracts awarded for the Naval Surface Warfare Center, NAVSEA and the David Taylor Research Center that did not include VE incentive clauses as required by the FAR. Also, NAVAIR, NAVFAC, NAVSUP and SPAWAR took up to 492 days to approve contractor VECFs and up to 903 days to incorporate approved VECFs in contracts. Those conditions occurred because program managers (PMs) and contracting officials (PCOs) viewed VE as a low priority. As a result, the Navy has lost opportunities to use VE to reduce procurement and maintenance costs on its acquisition programs and the Navy has not motivated contractors to submit VECFs.

Recommendations B.1, B.2, B.2.1, B.2.2 and B.2.3.

B.1. We recommend that USD(A&T) task the DoD VE QMB to establish criteria and guidelines for assessing the potential for beneficially using VE on DoD acquisition programs.

B.2. We recommend that the Assistant Secretary of the Navy (Research, Acquisition & Technology) (ASN(RDA)):

B.2.1. Require each DON major command, to include the Marine Corps, the program executive officers (PEOs), the direct reporting program managers (DRPMs) and the MDAP managers to document and maintain an annual plan for the use of VE. The plan should identify the acquisition programs and facilities projects and the actions that the command plans to take to further promote the use of VE both in-house and to contractors on those acquisition programs and facilities projects.

B.2.2. Establish performance measures for PCOs, PEOs, DRPMs and MDAP managers on the 45-day standard for notifying contractors of the status of VECFs and the requirement to include VE clauses in all contracts not exempted by FAR 48.201.

B.2.3. Task the Navy Acquisition Center for Excellence to disseminate information on the appropriate uses of VE and VE savings goals on Navy acquisition Programs.

DON Position:

Again, partially concur. DoD did not issue its revised OMB A-131, VE, guidance until August of 1996, therefore, as previously stated, DON practiced VE in accordance with DODI 5000.2/2.M and the FAR during the time covered by the audit. It is conceded that VE is not used across the board by DON acquisition programs and has not been exploited to its full potential, however, two points must be considered in this context. The first is both the current revision of A-131 and its predecessor state in their "Purpose" paragraph that VE is required, as

Revised

appropriate. The second is that VE is only one of many competing DoD cost-reduction programs such as Design-to-Cost, Cost as an Independent Variable (CAIV), Life-Cycle Costing, Total Quality Management, and now, all the various new initiatives under Acquisition Reform. In many cases VE is not the most appropriate cost-reduction program for a particular programs/projects phase, technology or business strategy. For example, many of the DON's current MDAP programs are currently in one of the research and development (R&D) phases of the weapon system acquisition process. During R&D, other cost-reduction programs are more appropriate than VE, such as Design-to-Cost or CAIV. As the PM is the one person best able to determine the most appropriate cost-reduction effort for their program, a "One-size-fits-All" approach mandating the use of VE on all programs across the board would be most inappropriate. Concur that VE is viewed as a low priority by PEOs, PCOs, DRPMS and PMs, partially concur that VECF processing times impact potential VE savings. It must be understood that there is an "ECP", an engineering change associated with most submitted VECFs. On a complex, sophisticated weapon system program, this engineering change is reviewed and technically evaluated the same as any other technical change to the system. VECF processing times tend to be 1/3 technical evaluation and 2/3 contractual implementation/negotiation, with the implementation costs and savings determination negotiations adversely impacting the process time. Also, and not addressed directly in the audit, VE is considered "Extra" work by the program and it's direct value added to the program is considered minimal due to the limited benefit the program itself receives from the savings generated. Recommendation B.1 is basically addressed in the DoD VE Strategic Plan, however, again, the DoD VE policy and procedures body is the DoD VE ESG and not the DoD VE QMB. B.2.1. is also addressed in the DoD VE Strategic Plan which was sent to the DON Acquisition Management Community, implementing memorandum attached. Do not concur with B.2.2. as written. The DON has a Procurement Management Review (PMR) process, that periodically reviews procuring organizations for compliance with procurement statutes and regulations, a separate effort dedicated to specific VE compliance alone is not cost effective. A memorandum to the DON Acquisition distribution list reiterating the FAR VE requirements should be sufficient. Do not concur on recommendation B.2.3., the Navy Center for Acquisition Excellence has neither the technical expertise nor acquisition program management responsibility to perform this function.

## **Audit Team Members**

This report was prepared by the Contract Management Directorate, Office of the Assistant Inspector General for Auditing, DoD.

Paul J. Granetto  
Garold E. Stephenson  
John M. Gregor  
Hoa H. Pham  
Robert S. Silverstein  
Rhonda L. Ragsdale  
Robert M. Sacks

Naval Audit Service

Teren F. Crawford  
Tanya L. Boone  
Theodore Koslow