



July 17, 2007

WALTER O'TORMEY  
VICE PRESIDENT, ENGINEERING

SUBJECT: Management Advisory — Enterprise Architecture in Postal Service  
Engineering (Report Number DA-MA-07-001)

This report presents the results of our review of the applicability of Enterprise Architecture (EA) concepts in Engineering. We conducted the review in accordance with our Value Proposition Agreement dated January 9, 2007, on technology investment capabilities (Project Number 06XG054DA000).

## **Background**

Within the federal sector, a well-defined EA is an essential tool for leveraging technology in the transformation of business and mission operations. The importance of developing, implementing, and maintaining an EA is a basic tenet of both organizational transformation and technology management. Managed properly, an EA can clarify and help optimize the interdependencies and relationships among an organization's business operations and the infrastructure and applications that support these operations. Used with other important management controls, such as portfolio-based capital planning and investment control practices, an EA can greatly increase the chances of an organization's operational and technology environments being configured to optimize mission performance. Experience with federal agencies has shown that investing in technology without defining these investments as part of an architecture often results in systems that are duplicative, not well integrated, and costly to maintain and interface. The federal sector measures agency EA maturity using a framework for assessing and improving EA management. This framework measures maturity through five different stages (see Appendix A) and emerged from research of public and private sector organizations' technology management practices.<sup>1</sup>

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<sup>1</sup> Government Accountability Office (GAO): *Enterprise Architecture Management Maturity Framework (EAMMF) (Version 1.1)* dated April 2003. Historically, architecture guidance emerged within the federal government beginning with publications by the National Institute of Standards and Technology. Subsequently, GAO issued architecture guidance and published research on successful public and private sector organizations' technology management practices, which identified the use of architectures as a factor critical to these organizations' success.

Within the Postal Service, EA is a conceptual framework for designing, developing, and operating business solutions to ensure they are closely aligned to Postal Service business goals. According to Postal Service policy,<sup>2</sup> functional organizations, employees, suppliers, and partners must comply with the Postal Service EA requirements regarding the acquisition, design, deployment, operation, and replacement or retirement of information technology. However, management uses the current Postal Service EA policy primarily to guide information technology investments, and although it has been applied to Engineering print devices, it has not been applied more broadly to include mail processing equipment (MPE) investments.

### **Enterprise Architecture Applicability**

We identified four laws that govern federal technology acquisition and management practices. These laws are the E-Government Act, the Clinger-Cohen Act, the Federal Acquisition Streamlining Act, and the Government Performance and Results Act (GPRA). Among other authorities, these four laws drive the use of Federal Enterprise Architectures (FEA). To promote federal agency compliance, the President scores agency progress and status of FEA initiatives quarterly. We also reviewed the Postal Accountability and Enhancement Act of 2006 (PAEA), and the Sarbanes-Oxley Act (SOX) because these laws apply to the Postal Service and are relevant when considering the use of EAs.

The E-Government Act, the Clinger-Cohen Act and the Federal Acquisition Streamlining Act do not specifically apply to the Postal Service. Nevertheless, the federal sector uses these laws to enhance technology acquisition management and provide authority for FEAs, and in certain cases, these laws can provide information and best practices for the Postal Service.

The following laws are relevant to the Postal Service EA efforts:

- The GPRA, Section 7, amended the Postal Reorganization Act and the requirements for annual performance measures are applicable to the Postal Service. EA concepts are useful for promoting integrated strategic performance measurement and reporting as intended by GPRA.
- The PAEA changes a number of laws that govern the operation of the Postal Service and requires specific information to be provided to the Congress. EA concepts could provide a framework for input into the technology rationalization plans called for by PAEA. Additionally, in general, federal agencies are not required to comply with SOX. However, the PAEA requires the Postal Service to comply with Section 404 of SOX, Management Assessment of Internal Control, by 2010. EA sets a foundation for internal controls over developmental activities in Engineering, as required by SOX.

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<sup>2</sup> *Administrative Support Manual*, Section 861.1, dated March 2007.

## **Objective, Scope, and Methodology**

The overall objective of our Value Proposition Agreement was to evaluate the applicability and maturity of EA processes within Engineering. We conducted this evaluation in conjunction with Postal Service employees to assist the Postal Service in establishing and improving the baseline of technology investment capabilities. The evaluation focused on the applicability of EA and measuring Engineering's maturity compared to stages 1 and 2 of an EA framework.

We reviewed six laws related to federal enterprise initiatives and their applicability to the Postal Service. Additionally, using standards set by the President's Council on Integrity and Efficiency (PCIE), we evaluated Engineering's EA status using the *Enterprise Architecture Management Maturity Framework*, Version 1.1. We met regularly with Engineering executives and formed a team to address questions, secure available documentation, identify the processes in place, and describe operations. The U.S. Postal Service Office of Inspector General (OIG) evaluated the evidence, conducted additional research, and interviewed employees.

We conducted this review from January through July 2007 in accordance with the PCIE, *Quality Standards for Inspections*. We discussed the evaluation results with Engineering executives on April 12 and May 3, 2007, and included their comments where appropriate.

## **Prior Audit Coverage**

We did not identify any prior audits or reviews related to the objective of this audit.

## **Results**

When measured against EAMMF 1.1, Postal Service Engineering is in the "awareness" category. To increase its capability for technology investment, Engineering, in conjunction with other areas of the Postal Service, must establish business processes that are consistent and effective. We worked with Engineering to highlight several opportunities to enhance baseline technology investment capabilities. A detailed evaluation worksheet is presented in Appendix B and summarized below.

### **Enterprise Architecture Management Maturity Framework 1.1 Evaluation**

At stage 1, "Creating EA Awareness," either an organization does not have plans to develop and use architecture, or it has plans that do not demonstrate an awareness of the value of having and using architecture.

At stage 2, "Building the EA Management Foundation," an organization recognizes that the EA is a corporate asset by vesting accountability for it in an executive body that represents the entire enterprise. At this stage, an organization assigns EA management roles and responsibilities and establishes plans to develop EA products

and measure program progress and product quality. It also commits the resources necessary for developing an architecture—people, processes, and tools.

Although Postal Service Engineering partially demonstrated some stage 1 attributes, such as executive support and sponsorship by the Board of Governors, plans did not demonstrate an awareness of using EA, and EA efforts were unstructured. Our evaluation noted Engineering does not possess the following key stage 1 attributes:

- An approved policy statement providing support and sponsorship to the Postal Service EA.
- The capacity to develop, maintain, and implement standardizing processes and controls that promote accountability and effective project execution prescribed under EA.
- Clear measurement of progress towards stated goals or commitments within corporate timelines.

To mature to stage 2, Engineering would need to:

- Establish and fund an MPE program office to support the Postal Service EA.
- Delegate responsibilities supporting the Postal Service chief architect.
- Incorporate the EA framework.
- Establish a sequencing plan for transitioning into desired states and reconciling open product inventory<sup>3</sup> to a sequencing plan.
- Make information security more visible in technology plans.
- Standardize tools to continuously measure risks, progress, quality, compliance, and the impact of adjustments.

Engineering was in the early stages of EA maturity because it has not recognized the benefits of using EA before our Value Proposition Agreement. We recognize the Postal Service issued a policy and management instruction<sup>4</sup> for its EA covering all Postal Service organizations and information systems, whether developed in-house or by a vendor. However, these do not clearly encompass core Postal Service business technologies, in particular, MPE.

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<sup>3</sup> Open finance codes (programs)

<sup>4</sup> *Administrative Support Manual*, Section 861.1, Management Instruction AS-861-2004-12, November 2004.

The President, through the Office of Management and Budget (OMB), measures the government's progress toward EA goals using a management scorecard.<sup>5</sup> OMB strives to link department-level EA so the value of EA is reflected in internal decision-making and used to identify government-wide solutions for improved service to citizens. The scorecard employs a traffic light grading system: green for success, yellow for mixed results, and red for unsatisfactory. Scores are based on five standards for success, defined by the President's Management Council. Under each of the five standards, an agency is green if it meets all standards for success, yellow if it meets some standards, and red if it has any serious flaw. One such flaw relates to the level of EA maturity.

Although some activities are in place at the Postal Service to mature to stage 2 of the maturity model, management would need to integrate these activities with other activities they are currently not conducting in order to satisfy the President's Management Agenda scorecard. Appendix C shows how government entities scored on the E-Government initiative, which includes criteria for EAs.

### Conclusion

The Postal Service faces increasing demands to enhance its technology investment capabilities, while balancing them with the need to control costs. Further, the Postal Service is in the midst of streamlining and optimizing its entire network. Having an EA or a "to be" blueprint for that network redesign, including the MPE component, would assist in that effort. EA practices can help with this transformation by:

- Facilitating strategic, integrated investment planning, while eliminating or reducing redundancies. For example, management could use an EA as a roadmap for how MPE technologies would function in an optimized operational network.
- Providing metrics for measuring progress, quality, and compliance for continuous risk management and means of predicting risk.
- Providing internal controls that enhance compliance with new legislative requirements for accountability.
- Enhancing the corporate visibility of security for systems.

Because the Postal Service spends a large amount of money for MPE investments deployed by Engineering, we believe Engineering should play a key role in developing and maintaining an EA. Acting on key opportunities identified would also move Engineering closer to satisfying the President's mandate to improve technology acquisition and management, and better position the Postal Service should it be scored against the President's FEA criteria.

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<sup>5</sup> The Postal Service is not measured according to the President's Management Agenda scorecard. This information is provided in order to gauge the Postal Service's EA efforts against criteria used by government agencies.

## **Suggestions**

As agreed, we jointly analyzed and evaluated areas that warranted close attention to improve baseline technology investment capabilities. To further raise awareness and in support of the Postal Service's enterprise architecture efforts, we suggest the Vice President, Engineering:

1. Consider the value of enterprise architecture opportunities identified and adopt practices to comply with the spirit of relevant and applicable laws.
2. Discuss with the Vice President, Information Technology, the incorporation of mail processing equipment technologies into the Postal Service-wide enterprise architecture.

## **Management's Comments**

Management agreed that PAEA — and its requirement that the Postal Service comply with SOX — present significant financial control and reporting challenges. Establishment of a Senior Vice President, Strategy and Transition, signals the Postal Service's understanding of and appreciation for these challenges. The new organization will implement postal law and aggressively work to assure the Postal Service's transition to the new regulatory environment is successful.

As it relates to suggestion 1, management stated the formal EA methodology and structures have merit but it would be unwise for Engineering to commit to adopting them for their technology acquisition and investment initiatives at this time. The core processes currently followed are required as part of a Postal Service corporate-wide methodology. More importantly, it may be premature to embark on changes to the technology acquisition and investment processes in advance of the findings, recommendations, and policy directives that will result from the work of the Strategy and Transition organization.

Management agreed with suggestion 2 and stated they will share the report with the Vice President, Information Technology, and forward the report findings as information to the Strategy and Transition organization for consideration as it formulates plans for meeting the Postal Service's obligations under PAEA.

## **Evaluation of Management's Comments**

We appreciate the opportunity to enhance the awareness of EA within Engineering and recognize the broader corporate-wide implications of accepting EA. We consider management actions to be prudent by sharing and considering the report findings as it formulates plans for meeting the Postal Service's obligations under PAEA. As management embarks in this endeavor, we encourage the application of technology planning concepts such as EA to the mail-processing environment to ensure the three elements of change — technology, people, and processes — maximize investment benefits.

We appreciate the courtesies presented by your staff and the cooperation provided for this joint effort. If you have any questions or need additional information, please contact Miguel A. Castillo, Director, Engineering, or me at (703) 248-2100.

E-Signed by Darrell E. Benjamin,   
VERIFY authenticity with ApproveIt

Darrell E. Benjamin Jr.  
Deputy Assistant Inspector General  
for Support Operations

### Attachments

cc: Katherine S. Banks

## APPENDIX A

### ENTERPRISE ARCHITECTURE MANAGEMENT MATURITY FRAMEWORK 1.1

	Stage 1: Creating EA awareness	Stage 2: Building the EA management foundation	Stage 3: Developing EA products	Stage 4: Completing EA products	Stage 5: Leveraging the EA to manage change
Attribute 1: Demonstrates commitment		Adequate resources exist. Committee or group representing the enterprise is responsible for directing, overseeing, or approving EA.	Written and approved organization policy exists for EA development.	Written and approved organization policy exists for EA maintenance.	Written and approved organization policy exists for IT investment compliance with EA.
Attribute 2: Provides capability to meet commitment		Program office responsible for EA development and maintenance exists. Chief architect exists. EA being developed using a framework, methodology, and automated tool.	EA products are under configuration management.	EA products and management processes undergo independent verification and validation.	Process exists to formally manage EA change. EA is integral component of IT investment management process.
Attribute 3: Demonstrates satisfaction of commitment		EA plans call for describing both the "as-is" and the "to-be" environments of the enterprise, as well as a sequencing plan for transitioning from the "as-is" to the "to-be." EA plans call for describing both the "as-is" and the "to-be" environments in terms of business, performance, information/data, application/service, and technology. EA plans call for business, performance, information/data, service, and technology descriptions to address security.	EA products describe or will describe both the "as-is" and the "to-be" environments of the enterprise, as well as a sequencing plan for transitioning from the "as-is" to the "to-be." Both the "as-is" and the "to-be" environments are described or will be described in terms of business, performance, information/data, application/service, and technology. Business, performance, information/data, application/service, and technology descriptions address or will address security.	EA products describe both the "as-is" and the "to-be" environments of the enterprise, as well as a sequencing plan for transitioning from the "as-is" to the "to-be." Both the "as-is" and the "to-be" environments are described in terms of business, performance, information/data, application/service, and technology. Business, performance, information/data, application/service, and technology descriptions address security. Organization CIO has approved current version of EA. Committee or group representing the enterprise or the investment review board has approved current version of EA.	EA products are periodically updated. IT investments comply with EA. Organization head has approved current version of EA.
Attribute 4: Verifies satisfaction of commitment		EA plans call for developing metrics for measuring EA progress, quality, compliance, and return on investment.	Progress against EA plans is measured and reported.	Quality of EA products is measured and reported.	Return on EA investment is measured and reported. Compliance with EA is measured and reported.



## APPENDIX B

### EVALUATION OF ENGINEERING ENTERPRISE ARCHITECTURE

#	Stages	Attribute	Questions/Elements Description	Evaluation Technique	Observations	Evaluation	Score
1	1	Demonstrate Commitment	Does Engineering have an approved policy statement supporting enterprise change?	Reviewed draft Engineering Technology Plan and compared to transformation plan. Compared open finance codes to Engineering Technology Plan.	A draft Engineering Technology Plan with a stated mission exists and contains short and long range goals. Policy or mission statement is not finalized and approved.		
					Draft Engineering Technology Plan supports one goal, reduced costs, out of four goals of the transformation plan.		
					Annual progress report 2006 aligns to transformation plan goals and contains 2007 priorities versus a 5 year outlook. Engineering Technology Plan contains a 5 year and beyond outlook but does not list 2007 priorities.		
					Open finance program (6-series) codes not reconciled to Engineering Technology Plan.		
					Was Executive support and sponsorship present?	Reviewed Decision Analysis Reports and approval process. Reviewed Capital Investment Plan.	
				Engineering corporate plan does not have corporate approval but individual programs receive some level of approval.			
2	1	Provides Capability to Meet Commitment	Did Engineering have adequate resources to meet commitments?	Reviewed available process guides and program management tools.	Process - Various process guidelines are available to assist in managing Engineering programs. Technology Acquisition Management Process Guide is in draft status.		
					Technology - Standard project management tools utilized. Tools not integrated to provided real-time program information on cost, risk, schedule and performance.		
				Reviewed budget process and Capital Investment Plan.	People - Budget process supports contract costs.		
3	1	Demonstrates Satisfaction of Commitment	Does Engineering demonstrate capabilities?	Reviewed Engineering webpage, e-Deploy, draft Process Guide, draft Technology Plan, previous audit reports.	Engineering production of plans and products routinely demonstrated through project plans and deployment of postal equipment and other products.		

#	Stages	Attribute	Questions/Elements Description	Evaluation Technique	Observations	Evaluation	Score
4	1	Verifies Satisfaction of Commitment	Does Engineering measure satisfaction of commitment?	Reviewed Tollgate Process slides, previous audit reports, Investment Highlights, e-Deploy, and management reports.	Engineering measures its performance, cost and schedule. Annual progress reports submitted by Engineering. Requires a process to adjust when there is deviation from planned performance, cost, schedule and 2007 goals.		Yellow
1	2	Demonstrate Commitment	Does Engineering have funding, people, tools and technology?	Reviewed Capital Investment Plan, Technology Investment Methodology diagram, Engineering webpage and Engineering organization chart.	Decision Analysis Reports and Capital Investment Plan support the funding process. Engineering organization chart and Engineering webpage show people, tools and technology.		Yellow
2	2	Demonstrate Commitment	Is committee or group responsible for directing, overseeing or approving Engineering enterprise?	Reviewed Engineering organization chart and Technology Investment Methodology diagram.	Engineering is a institution where a Vice President heads the organization and is supported by eight direct reports. Enterprise concept can be introduced if direct reports choose to make a "Steering Committee."		Yellow
3	2	Provides Capability to Meet Commitment	Is there a program office responsible for Engineering Enterprise development and maintenance?	Reviewed project timelines and interviewed the Vice President's direct reports. Reviewed Engineering organization chart.	No formal program office supporting the Postal Service enterprise architecture. Limited responsibilities assigned to software development.		Red
4	2	Provides Capability to Meet Commitment	Does Engineering have an accountable and responsible Chief Architect?	Reviewed Engineering organization chart and interviewed Vice President's direct reports.	No Chief Architect supporting the Postal Service enterprise architecture. Limited responsibilities assigned to software development.		Red
5	2	Provides Capability to Meet Commitment	Does Engineering have a framework, methodology and automated tool to develop Enterprise Architecture?	Reviewed Capital Investment Plan, Technology Investment Methodology diagram, Process Guide and Engineering organization chart.	Enterprise standardized framework not utilized within Engineering. Rather, various frameworks are independently used within the organization.		Red

#	Stages	Attribute	Questions/Elements Description	Evaluation Technique	Observations	Evaluation	Score
6	2	Demonstrates Satisfaction of Commitment	Does Engineering plan describe as-is and to-be for Engineering and a plan to transition?	Reviewed Capital Investment Plan, draft Technology Plan, Technology Investment Methodology diagram, Process Guide and Engineering organization chart.	Postal Service as an enterprise is laid out through the Capital Investment Plan with anticipated program funding for the next 5 years. Engineering also drafted a Technology Plan describing short and long term projects. Technology Plan program descriptions do not describe as-is and to-be states for various portfolios and plan to transition.		
7	2	Demonstrates Satisfaction of Commitment	Does Engineering plan describe as-is and to-be in terms of business, performance, information, service and technology?	Reviewed Capital Investment Plan, Draft Technology Plan, Technology Investment Methodology diagram, Process Guide and Engineering Organization Chart.	Postal Service as an enterprise is laid out through the Capital Investment Plan with anticipated program funding for the next 5 years. Engineering also drafted a Technology Plan describing short and long term projects. Technology plan program descriptions do not describe as-is and to-be states in terms of business, service, information, and technology.		
8	2	Demonstrates Satisfaction of Commitment	Does Engineering plan for business, performance, information, service and technology address security?	Reviewed Handbook AS-805G, Business Impact Assessments, Information Security Assessment processes, Corporate Information Security guidelines, and previous audit reports.	Business impact assessments covers business, service, information, and technology.  Independence of security testing and performance still a concern.  Enterprise security standards set by Corporate Information Security Office /IT, but enterprise monitoring segregated.  Corporate Information Security and Engineering have parallel security operations through business impact assessments and Information Security Assessment processes.  Hardening is required for Critical, Sensitive and Business Controlled Criticality only. The majority of Mail Processing Equipment systems are considered Non-Critical, Non-Sensitive, even though they are responsible for the movement of mail.		
9	2	Verifies Satisfaction of Commitment	Has Engineering developed metrics for measuring progress, quality, compliance and return on investment?	Reviewed Capital Investment Tollgate process slides, Decision Analysis Reports and backup documents, Technology Investment Methodology diagram, Investment Highlights, Annual Progress report, and previous audit reports.	Engineering measures its performance, cost and schedule. Annual progress reports submitted by Engineering. Requires a process to adjust when there is deviation from planned performance, cost, schedule and goals. Under the enterprise concept, clear metrics need to be developed to measure quality, cost and performance compliance, and a system tool may be required to measure these in an integrated manner.		

## APPENDIX C

### Executive Branch Management Scorecard

	Current Status as of March 31, 2007	Progress in Implementing the President's Management Agenda
	E-Gov	E-Gov
AGRICULTURE	●	●
COMMERCE	●	●
DEFENSE	●	●
EDUCATION	●	●
ENERGY	●	●
EPA	●	●
HHS	● ↑	●
DHS	● ↑	●
HUD	●	●
INTERIOR	●	●
JUSTICE	●	●
LABOR	●	●
STATE	●	●
DOT	●	●
TREASURY	●	●
VA	●	●
AID	●	●
CORPS	●	●
GSA	●	●
NASA	●	●
NSF	●	●
OMB	● ↓	●
OPM	● ↓	●
SBA	● ↓	●
SMITHSONIAN	● ↓↓	●
SSA	●	●

↑ ↓ Arrows indicate change in status since evaluation on Dec 31, 2006

## APPENDIX D MANAGEMENT'S COMMENTS

WALTER O'TORMEY  
VICE PRESIDENT  
ENGINEERING



July 9, 2007

TAMMY WHITCOMB  
DEPUTY ASSISTANT INSPECTOR GENERAL  
FOR CORE OPERATIONS

SUBJECT: Enterprise Architecture Value Proposition Agreement (Report Number DA-MA-07-Draft)

Thank you for your report detailing the results of the Value Proposition Agreement focusing on Enterprise Architecture (EA) and its applicability as a potential management methodology to guide USPS Engineering technology acquisition. We appreciate the opportunity we had to jointly review Engineering technology investment processes and capabilities, and we read with interest your assessment of our processes as compared to those that comprise the EA methodology. Though Engineering has a participating member on the USPS Information Technology EA council, the majority of the Engineering leadership team prior to this initiative had only a modest understanding of EA.

We are in complete agreement that the new Postal Accountability and Enhancement Act of 2006, and its requirement that the Postal Service comply with the Sarbanes-Oxley Act, present significant financial control and reporting challenges. The establishment of a Senior Vice President directed, Strategy and Transition organization signals the Postal Service's understanding of and appreciation for these challenges. This new organization is charged with managing the implementation of the postal law and is aggressively working to assure the Postal Service's transition to the new regulatory environment is successful.

### RESPONSES TO OIG REPORT SUGGESTIONS

*To support the Postal Service enterprise architecture, we suggest the Vice President, Engineering:*

1. *Consider the value of enterprise architecture opportunities identified and adopt practices to comply with the spirit of relevant and applicable laws.*

**Management Response:** We are pleased to note in this report, along with a previous audit report (Report Number DA-AR-06 Draft), you have found that Engineering:

- Has very well aligned its programs and investments with USPS corporate goals.
- Uses processes and tools to guide technology investments:
  - Transformation Plan
  - Budget process
  - Capital investment process
  - Toffgate process
  - Decision Analysis Reports (DAR)
  - Engineering project plans
  - Investment Highlights reports
  - Engineering Technology Investment Methodology

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- Is putting in place additional processes and tools to further improve the quality of technology investment.
  - Technology Acquisition Management Process Guide
  - Engineering Technologies

Though we think the formal EA methodology and structures have merit, we believe it would be unwise for Engineering to now commit to adopting them for our technology acquisition and investment initiatives. The core processes we follow are required as part of a USPS corporate-wide methodology. Adopting EA in addition to existing processes would result in duplicative work and added expense. More importantly, we think it imprudent to prematurely embark on changes to our technology acquisition and investment processes in advance of the findings, recommendations, and policy directives that will come about as a result of the work of the Strategy and Transition organization.

2. *Discuss with the Vice President, Information Technology, the incorporation of mail processing equipment technologies into Postal Service-wide enterprise architecture.*

**Management Response:** Per your suggestion, we will share your report with the Vice President, Information Technology. We will also forward your report findings as information to the Strategy and Transition organization for consideration as it formulates plans for meeting the Postal Service's obligations under the Postal Accountability and Enhancement Act of 2006.

Thank you for the opportunity to respond to your report.

  
Walter F. O'Tormey

cc: William Galligan  
Linda Kingsley with OIG report  
Robert Otto with OIG report