AN INVESTIGATION OF CERTAIN U.S. GOVERNMENT "LESSONS LEARNED" PROCESSES AND THEIR APPLICATION TO USAF RESEARCH, DEVELOPMENT, AND ACQUISITION PROJECT MANAGERS

THESIS

Mark W. McNabb, Captain, USAF

AFIT/GSM/LSY/91S-19

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

AFIT/GSM/LSY/91S-19

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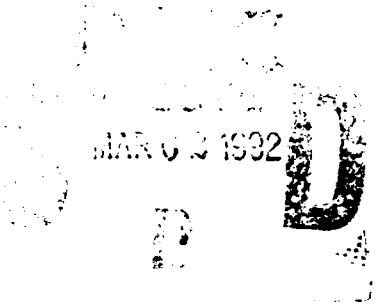

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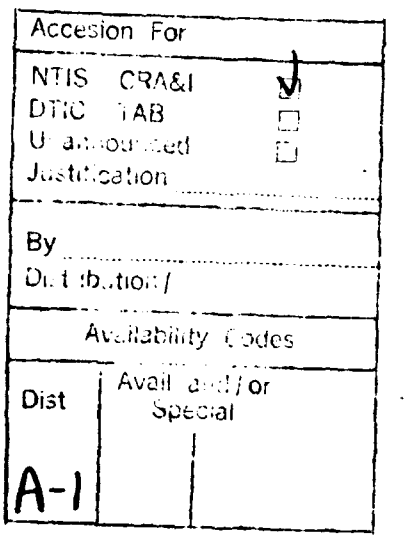

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THESIS

Presented to the Faculty of the School of Systems and Logistics
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Master of Science in Systems Management

Mark W. McNabb, B.S.M.E.
Captain, USAF

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In developing the concepts and approach for this investigation, I was inspired by my own past experiences in the research, development and acquisition community, and by the famous quote from philosopher George Santayana: "Those who fail to learn from history are doomed to repeat it."

In performing the investigation and writing this thesis, I have received invaluable help from many people. I am very indebted to my thesis adviser, Robert Bergseth, and my thesis "reader", Richard Andrews, for their unending patience and encouragement. I also wish to thank all of my "contacts" in the surveyed agencies, without whose full cooperation this investigation would have been infeasible. My special thanks go to the following individuals, who I believe went "above and beyond" to help me obtain the information I needed: Matthew Mongin and Robert Kissel of the GAO; Capt Bradley Cawthon and Maj Michael Larson of Air Force Systems Command; Lt Col James Bowen, formerly of the Air Force Inspection and Safety Center; and Maj Richard Caltabellotta, of the Air Force Program Executive Office for Tactical Strike. Finally, I wish to thank my wife Carolyn for her unfailing support.

Mark W. McNabb

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Abstract

This study investigated the types of processes used by certain U.S. government agencies to provide "lessons learned" that could be used by USAF research, development and acquisition project managers. Areas of interest include the types of agencies that could provide "lessons learned;" the sources, methods, and techniques these agencies use to process (acquire, maintain, and disseminate) management information such as lessons learned; and the measurement criteria the agencies use to evaluate the effectiveness of these processes. A general literature search helped to identify eleven candidate agencies; eight were chosen for full investigation. A survey of each "sample" agency was conducted. The survey obtained "agency description" information/materials for review, then used follow-up interviews to clarify/update that information. Final information was analyzed using nominal sorting and scoring techniques. Results indicated "information gatherer" and "resource provider" agencies tended to have "lessons learned" programs, while "evaluator" and "oversight/management" agencies did not. A similar pattern was seen regarding the use of "information/lessons learned" process "metrics." Several changes to improve "lessons learned" processes were suggested.

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I. Introduction

General Issue

As a result of reduced tensions between the United States (U.S.) and the Soviet Union, the U.S. Air Force (USAF) is faced with shrinking budgets in the 1990s. As the resources provided by those budgets also shrink, the USAF is reorganizing its existing research, development, and acquisition (RD&A) structures. For example, July 1, 1992 is the officially scheduled activation date for the Air Force Materiel Command (AFMC). This new agency will be responsible for the RD&A functions currently performed by Air Force Systems Command (AFSC) and the logistics support functions currently accomplished by Air Force Logistics Command (AFLC). The AFMC "will combine AFSC's expertise in science, technology, research, development, and testing with AFLC's expertise in life-cycle acquisition and supportability to create one organization for weapon systems management" (1:76). The current RD&A organizations and personnel shall have to learn how to perform their functions

more effectively and efficiently, or face the discontinuance of their operations. The skills and knowledge of the USAF RD&A personnel shall be key factors in these reorganization efforts.

In a 19 March 1990 letter to the Assistant Secretary of the Air Force for Acquisition, General Bernard Randolph (then Commander of AFSC) stated "...we know that improved training at all levels is going to be essential as we enter an environment of reduced resources" (2). Personnel need to understand the responsibilities of their duties, to improve the productivity and quality of their efforts.

In October 1989, Gen. Randolph had established the Acquisition Process Excellence (APEX) Team. The APEX Team was to examine the existing acquisition system, identify unnecessary subsystems or procedures that could be improved, and recommend appropriate changes. Two "improvable" areas identified by the APEX Team were training and streamlining (3). In the training area, all types of training are to be reviewed and revised (as needed) to effectively support providing the required knowledge and skills to RD&A personnel. In the streamlining area, the existing Total Quality Management (TQM) approach will provide for, among other things, "unity of action (do it once, report it once)" in various tasks such as "consolidating the lessons learned process" (3). Therefore, the existing "lessons learned" procedures and processes should be reviewed and revised, to

reduce duplication of efforts and to improve the training and professional development of RD&A personnel.

Problem Statement

There is no coordination between those organizations inside (and outside) the Air Force, that possess "lessons learned" information, regarding the most effective methods to process this information such that RD&A project managers can use it to enhance their skills and capabilities. The purpose of this study is to identify possible improvements to the current "lessons learned" processes. Such improvements would enable RD&A project managers (particularly those that are new to the RD&A career fields) to more effectively gain knowledge from the "lessons learned" by others in those fields.

Research Questions

1. What agencies do (or can) obtain information that is (or can be) used in "lessons learned" that are pertinent to the responsibilities of RD&A project managers?

2. What sources, methods, and techniques do these agencies use to "process" (acquire, maintain, and disseminate) this information?

3. What criteria do these agencies use to judge the effectiveness and efficiency of their information processing efforts (particularly with respect to "lessons learned" and the needs/desires of information "customers")?

4. Based upon these criteria (and other criteria, such as suggested by customers perhaps), what possible procedures and techniques could be used to improve these agencies' current methods, such that the support of RD&A project managers would be enhanced?

Scope

Agencies to be investigated during this study shall be limited to those whose missions allow them to manage/direct, or provide resources/support, or evaluate/advise, or consolidate project information obtained from, USAF RD&A organizations or programs. Therefore, those numerous RD&A agencies at or below System Program Office or equivalent levels (including education and training agencies such as the Air Force Institute of Technology, the Defense Systems Management College, the Systems Acquisition School at Brooks AFB TX, and others) which would usually create or use (rather than process) "lessons learned" information, will generally be excluded from direct investigation (unless "creator/user" data is required). Rather, those types of agencies shall be considered as the "customers" (as well as sources) for such information. Also excluded from direct investigation are most non-USAF agencies, except those with missions as described above.

The specific agencies to be investigated will be identified in Chapter III, Methodology.

Definitions

A list of definitions of certain terms used throughout this study is provided below. In those instances where other agencies define these terms differently, their specific definitions will be provided in the context of the relevant subject matter.

Lessons Learned: Knowledge acquired by individuals or groups, regarding positive or negative aspects of efforts performed by themselves or others. A simple example of a "positive lesson learned" would be "Use of colorful charts can often improve the clarity of a project briefing." A simple example of a "negative lesson learned" would be "Mislabelled charts can often cause delays or disruptions of a project briefing."

RD&A Project Managers: Any individuals in an organization who are responsible for managing all (or most) of the RD&A activities relating to (a) specific system(s), subsystem(s), or component(s) intended for one or more programs/projects. Examples would include: the director of a "regular" (single program) or a "basket" (multiple program) System(s) Program Office (SPO); the chief of the project management directorate in a SPO; a subsystems development manager in a SPO's project management directorate; a project engineer acting as the program manager for a technology development program in a Laboratory; a logistics specialist acting as the project

manager for systems support equipment in a SPO (or an Air Logistics Center); and many others.

Electronic Database System: an information storage/ management system, normally hosted on a large capacity "mainframe" computer, where access to the system is achieved through electronic links (telephone signals, direct electric wiring, and so forth) with a "remote" computer terminal.

Summary

This chapter has discussed: the general issue of the need for improvements in the RD&A organizational effectiveness; the problem of lack of coordination for the "lessons learned" processes, and the purpose of this study, to identify possible improvements to those processes; and the research questions that, when answered, will suggest such improvements.

Chapter II shall discuss a general review of the literature pertaining to the USAF's "lessons learned" processes. Chapter III shall describe the methodology for obtaining the data needed to answer the research questions, including an outline of the data-gathering methods and a definition of "sample" organizations. Chapter IV shall provide a detailed description of the findings gathered from the samples, and an analysis of the findings with respect to the original problem. Chapter V will discuss conclusions that can be drawn from the findings and analysis, and provide recommendations for subsequent actions.

II. Literature Review

Introduction

This literature review shall discuss the general literature discovered that addresses USAF "lessons learned" processes, particularly those documents that identify the organizations responsible for "lessons learned" and the procedures and techniques they use to obtain, format, and distribute "lessons learned" information. It shall also address the limitations encountered in the literature review, and conclusions about the methods needed to gather data for this study.

Literature Sources

Information sources initially utilized for this general literature review included the Air Force Institute of Technology (AFIT) Library, the Wright State University Library, the AFIT Systems Acquisition Department (AFIT/LSY), and the Advanced Tactical Fighter System Program Office.

General Literature

The Defense Technical Information Center (DTIC) is one identified source for certain types of "lessons learned" information. This organization accepts most technical reports generated by Department of Defense (DOD) agencies, including those reports that contain "lessons learned." An individual can, through his local DOD-affiliated technical library (this researcher used the AFIT Library), request a

Technical Report Summaries listing from DTIC. The form used to make this request requires several key "identifier" or "descriptor" phrases or words be provided, for use by the computerized search program software. This software looks for the same key words or phrases in the "identifier" and "descriptor" blocks utilized in the beginning of all DOD technical reports. If "lessons learned" is one of a researcher's key phrases, and is also associated with a specific report, that report will be identified in the Technical Report Summaries Listing; the title, an abstract, and the descriptor and identifier words are shown. If the researcher also uses key phrases such as "acquisition management," "research and development management," and "systems management," plus other identifiers (such as "contracts management," for example), then the DTIC search program can also find reports that utilize those phrases as descriptors or identifiers. Once the DTIC report number and title is known, the desired reports can be ordered from DTIC through the technical library.

The major difficulty with using the DTIC system as a source for RD&A project management "lessons learned" appears to be the perception of DTIC by the users. DTIC is generally regarded as a reliable source for specific technical information (such as reports explaining various technical achievements on various programs) rather than "non-technical" managerial information. As such,

management-specific information is apparently not frequently submitted to DTIC.

This conclusion arises from an examination of this researcher's Technical Report Summaries Listing (which used all previously mentioned descriptors and identifiers); only 13 reports contained any of these descriptors other than "lessons learned."

The Acquisition Logistics Division - an organization within the Air Force Logistics Command - at Wright-Patterson Air Force Base in Ohio, contains an office responsible for "lessons learned" information. A pamphlet published by ALD/LSL identifies that office as "the Air Force focal point for Lessons Learned" (4). The pamphlet provides Autovon telephone numbers for verbal or computer contact, and describes procedures and formats for providing "Lessons Learned" to that office, for inclusion into their database. The pamphlet highly encourages readers to furnish "lessons learned" to that office, and to obtain "lessons learned" information from the office, as well.

Other agencies responsible for "lessons learned" information include the General Accounting Office (GAO), and the AFSC and USAF Inspector General (IG) offices. As profiled in "Project Management" (SMGT 646), a graduate level course taught in the AFIT School of Systems and Logistics, one of the many functions performed by "auditing and evaluation" agencies, such as the GAO, the Air Force Audit Agency (AFAA), and the AFSC and USAF IGs, is to

acquire "lessons learned" information from the various programs or organizations they visit (5). Much of this information concerns RD&A program management activities. For example, the Air Force Inspection and Safety Center, Directorate of Inspection (AFISC/IG), at Norton Air Force Base in California, "assists the Inspector General of the Air Force" to "examine and analyze" and to "report on" the Air Force's "operational readiness ... and systems management effectiveness" (6:100). Also, the AFAA's Acquisition and Logistics Audit Directorate (AFAA/QL), at Wright-Patterson Air Force Base, Ohio, "directs the development and management of multisite audits related to acquisition, weapon systems, ..." (7:108).

Acquisition program "oversight" agencies, such as the Air Force Program Executive Offices (AFPEOs), also have access to information suitable for project management "lessons learned." This access is due to the fact that the six Program Executive Officers (PEOs) act as the "general managers for clusters of major programs" and therefore can obtain (and review) detailed programmatic information from their various programs' managers (8:13).

Headquarters organizations such as HQ Air Force Systems Command - at Andrews Air Force Base, Maryland - are also regarded as agencies responsible for "lessons learned." The Acquisition Process Excellence (APEX) study briefing charts addressed the important role that HQ AFSC would have to play

in providing knowledge and resources to support the change to a smaller, more efficient acquisition system (3).

In addition, there are several agencies within the various "product-oriented" Systems Divisions in AFSC, that have the capabilities to obtain "lessons learned" information. For instance, three such organizations in the Aeronautical Systems Division (ASD) at Wright-Patterson Air Force Base in Ohio are: the Total Quality Management office (ASD/TQ), the History Office (ASD/HO), and the Deputy Chief of Staff (DCS) for Program Management (ASD/CY). The HO and TQ offices can obtain various program-related information from the SPOs and other agencies, to use as part of historical records (HO) or quality improvement efforts (TQ). The CY office, which is structured similarly to the other "functional support" offices (such as the Comptroller, Contracting, and the Integrated Engineering & Technical Management DCS offices), would be expected to obtain the management information needed to provide well-trained, knowledgeable project management personnel to the ASD SPOs (9).

An R&D oversight agency at ASD, Wright Laboratories, would also be expected to have access to information for "lessons learned." The Wright Laboratories office is the management focal point for the efforts of six formerly separate Air Force laboratories; it is expected to coordinate the development of the various flight dynamics, materials, avionics, aero-propulsion, electronic, and

armament technologies which in turn support the development of aircraft/munition weapon systems (10).

Limitations

While the aforementioned references are very useful in focusing this study, it is readily apparent that this literature review did not account for all the documentation (that is assuredly available) that would address information for "lessons learned" (for project managers), directly or indirectly. In fact, most of the references cited would not be obtainable using a "standard" literature search as described in Emory's "Research Methods" text or in AFIT Library's instructional pamphlet concerning searches for data & information.

Conclusions

Additional documentation describing the information and "lessons learned" processes used in several of the organizations cited should be available from those particular organizations. Such documentation could include mission statements, operating instructions, policy letters, newcomer introduction presentations, regulations, program review reports, project briefings, and several other types of documents not normally available from a "standard" literature search. It would therefore be expected that additional documents would be obtained, once these organizations were contacted and such documentation became accessible. Information obtained from documents provided by

the contacted organizations shall be discussed in Chapter IV, Findings and Analysis.

Summary

This chapter described the results of a general literature review, limitations of that review, and conclusions drawn based on that review. Chapter III will discuss the methodology for obtaining needed data.

III. Methodology

Introduction

This chapter shall discuss the general methods of survey and observation that were used to gather the data needed for this study. Justification for the use of these methods shall involve describing the disadvantages of purely observational methods and the advantages of the "survey plus observation" methods. The population and samples of interest shall be defined in terms of universe, population, sampling subdivisions and supporting assumptions. The survey steps - initial contact, information gathering, and "follow-up" interviews - and the survey instrument - an interview "topic checklist" - shall be discussed, in terms of purpose, sequence and reliability. A "topic checklist" format, that discusses the basis for deriving the interview questions, shall be presented (the actual topic checklist, along with an "initial contact guidelines" sheet, will be in appendices). An administrative plan, which will describe data gathering and grouping procedures, shall be outlined.

General Methods To Be Used:

Data needed for this study were gathered using a combination of survey and observational methods. The specific survey techniques used were personal interviews and telephone interviews. Observational methods were employed before and during the survey process.

Justification of Chosen Methods:

The detailed aspects of the USAF's various "lessons learned" efforts are not specifically described in the journals, reports, and other documents available from a general literature search. Such descriptive data must be gathered, primarily from the agencies that are responsible for "lessons learned" processes. Interviewing individuals within these agencies offers opportunities to locate and obtain documents and other information that can be reviewed using observational methods. In addition, interviewing allows the researcher to obtain detailed information, give (or receive) clarification regarding specific details, and pursue areas of interest newly identified during the document reviews or interviews.

Population/Sample

The universe of interest consists of those organizations that can provide "lessons learned" information that could be useful to Air Force RD&A project managers. This would include any agencies that support the development of technologies and acquisition of systems that the Department of Defense (DOD), and the USAF in particular, needs to perform its missions.

The population of interest consists of those agencies (from the universe of interest) that oversee/manage many RD&A projects/organizations, provide resources/support to RD&A programs, evaluate the progress/status of RD&A

projects, or gather/maintain information about RD&A efforts. The samples of interest shall be taken from each of four subdivisions of the population of interest. Those subdivisions are: agencies which have oversight/management responsibility for RD&A programs; agencies which have "support provider" responsibility for RD&A programs, but which do not have oversight responsibility; agencies which have evaluation responsibility for RD&A programs, but which do not have oversight or support responsibilities; agencies which have responsibilities to acquire RD&A program information, but which do not have oversight, support, or evaluation responsibilities.

The selection of the population/sample characteristics is based on the following assumptions:

1. The purpose of RD&A project managers is (primarily) to plan, organize, coordinate, direct, and control the activities in particular projects such that the desired end product is successfully obtained;

2. "Oversight" agencies require accurate, detailed information concerning the status of the project, especially specifics about necessary actions regarding management of costs, schedules, performances and reliability & maintainability of the items under development;

3. "Provider" agencies also require accurate and detailed information, particularly specifics about necessary actions regarding the furnishing of facilities, resources

and personnel (to support/accomplish the required program tasks/mission);

4. "Evaluator" agencies need similar (but usually somewhat "broader") information, in order to judge the effectiveness of the project management actions and the project in general;

5. "Information-gathering" agencies have the capability to collect "management actions" data, in addition to general program information or specific technical details about the product development.

At least two samples have been taken from each of the four population subdivisions. The agencies chosen as initial samples, by subdivision category, were: the Air Force Program Executive Office for Tactical/Airlift - AFPEO/TA - and the AFPEO for Tactical Strike - AFPEO/TS - as "overseers;" Headquarters AFSC and Aeronautical Systems Division's DCS for Program Management office - as "providers;" General Accounting Office and Air Force Inspection and Safety Center's Directorate for Inspection - as "evaluators;" Acquisition Logistics Division's "Lessons Learned" office and ASD's Total Quality Management office - as "gatherers." These agencies were assigned to the specific subdivisions based on the similarities between their generally understood purposes and the definitions of the population subdivisions. These particular agencies were selected as samples because each agency has the responsibility (as required by regulation or mission needs)

to interface with substantial numbers of RD&A organizations inside (and outside) their parent command/agency and/or the USAF in general. For example, the AFPEO/TA office oversees the C-17 advanced airlifter program and the Advanced Tactical Fighter (ATF) program, both of which have other service users (Army for C-17, Navy for ATF) in addition to the USAF; the AFPEO/TS office oversees the Advanced Medium Range Air to Air Missile (AMRAAM) and the Joint Surveillance and Target Attack Radar System (JSTARS) programs, which will benefit the USAF and Navy (AMRAAM) and the Army (JSTARS) (11:119-120).

Other agencies that have been included (to some degree) in the investigation (in order to act as additional samples or "replacements" for initial samples, if needed) were the AFAA/QL and the AFSC IG (as evaluators), the ASD/HO (as a gatherer), and the Wright Laboratories management office (as an overseer). These "reserve samples" were needed in case insufficient (or unusable) information was obtained from a "primary" sample agency, or to provide for those instances where an initial sample agency might be composed of smaller agencies (some of which would more accurately reflect the sampling subdivisions) such that the smaller organizations should be used as the samples. Such a situation would possibly call for other samples to be added, to maintain a rough symmetry in the number of samples taken from each sampling subdivision. The investigation of "reserve" sample agencies was performed using only survey steps 1 and 2; step

3 would be taken only if "new" samples were required. These steps are described in the following subsection.

Survey Steps

The first step in conducting the survey (of each sample agency) is to "make initial contact." This contact is intended to locate (and gain the cooperation of) the office(s) and individual(s) within that agency most likely to possess the desired information. The actions involved in "initial contact" are introduction and explanation.

Introduction involves identifying the researcher and describing the purpose of the contact. Providing the name, organization, and "job description" of the researcher establishes that this person is also a "member" of the U.S. Government, and therefore may be allowed access to U.S. Government offices, workers, and information.

Explaining the thesis research in clear terms - "what information do I want, why do I want it, and 'who' am I trying to get that information from" - enables the contacted individuals to determine whether or not they (or someone else in their offices) are able to assist the researcher. If they cannot help, those "contactees" are often able to refer the researcher to other individuals/offices that "might be of more help."

Once the researcher has located the "suitable" offices/individuals, then a "survey procedures explanation" is required. The researcher (re)explains the purpose for

the survey (if needed), then describes the intended methods for obtaining the desired information. These descriptions are summaries of the survey steps 2 and 3, which are discussed in the following paragraph.

The second step in surveying each sample agency is to "begin gathering the information." In this step, the researcher:

(a) requests detailed information about the agency and its operations - "what does your organization do, and how does it do it?;"

(b) (re)specifies the primary areas of interest - information processing, lessons learned, support for RD&A project managers;

(c) provides examples of the types of sources that could contain such information - agency briefings, policy letters, program review presentations, "newcomer orientation" charts/reports, operating instructions, and other similar sources;

(d) emphasizes the desirability of this information being provided to the researcher in document form (if feasible) - documents help minimize the individuals' "time away from their regular job," and allow the researcher to fully review (and re-review as needed) areas of interest, and also would aid the researcher in focusing the next step in the survey, the "follow-up" interviews;

(e) explains that information not contained in these sources (or source information that is not "clearly"

understood by the researcher) will be the major concern(s) of the "follow-up" interviews;

(f) makes arrangements to obtain and review the information (and to identify the "interviewees" for the "follow-up" sessions).

The third step involved in conducting each survey is done after the "initial source" information has been reviewed. This third step is "conduct the follow-up interviews." In this step the researcher:

(a) contacts the individual interviewee(s) and arranges interview sessions;

(b) starts the interview by (re)explaining the reasons for the interview(s) - to confirm/modify previously obtained information, to clarify such information as was "unclear," and to obtain any information that was previously unavailable;

(c) states the interview questions (which were derived from the "topic checklist"). The topic checklist is described in detail in the following section, Checklist Survey Instrument.

(d) if the researcher has data that appears to answer the question(s), that data is described to the interviewee; that individual is requested to confirm/correct that data;

(e) if the researcher's "question answering" data is "unclear," the researcher explains the data and the reasons why the data appear unclear, then requests clarification;

(f) if the researcher has no "answer" data for the question(s), the researcher states that "the previous information did not appear to have addressed this issue."

Once the interviewee has answered the questions, the researcher briefly reviews the answers with the interviewee, to insure the interviewee was properly understood. The researcher also arranges to contact the interviewee at a later date, in case more questions or issues arise.

Checklist Survey Instrument

The topic checklist is based on the requirement to answer the research questions, and reflects the sample subdivisions in the population of interest. The sequence of topics are structured such that topics relating to Research Question 1 are addressed first, followed by topics relating to Research Question 2, and so forth until all Research Question categories have been dealt with.

Each person contacted in the "follow-up" interviews is asked questions derived from the same topic checklist. This condition is intended to promote the reliability of the topic checklist as a survey instrument; use of the same checklist should eliminate the bias that could be produced by interviewer alteration of discussion topics (and subsequent gaps or changes in answers from different respondents). Although the exact wording of the interview questions can be tailored to reflect the nature of the specific agency/individual, the questions are required to

make clear the nature of the topic under discussion and the types of information desired (through use of examples, scenarios, or other descriptive mechanisms).

The basic format of the topic checklist is shown as follows:

Topic #X: Topic Subject (generally a derivative of a key phrase or subject in the relevant Research Question).

Purpose of Interview Questions: Describes in general terms the information sought by the questions, and what overall "picture" should be provided by the answers.

Objective Y: Specific types of topic-oriented information "goals" that the researcher must address.

--- Prompting Phrases/Examples: These words act as clarifying reminders of the additional level of detail needed (in the answers) to properly satisfy the objectives.

The actual topic checklist is shown in Appendix A.

Data Collection Plan

Personal contact procedures were used to gather data from all sample agencies located in the Wright Patterson AFB, OH area. If the researcher's travel authorization was obtained, data from other organizations was also gathered using personal contact methods. If travel authorizations were unavailable, those organizations were contacted by

telephone, and data gathered using verbal communication (pertinent documents were gathered by mail; "telefaxes" or couriers were options to be used if needed). This plan did not preclude data gathering from prospective sources who had already traveled to the Wright-Patterson AFB area (for meetings, assignment changes, or other purposes).

Data from these sources was to be nominally sorted, on the basis of common features as identified (using the research questions to focus the categories of interest). The data was to be scored based upon the nominal breakout, and a consolidated criteria list derived from each agency's performance evaluation criteria (as those criteria pertain to the "lessons learned" efforts performed by those agencies).

This data collection plan depended on a key assumption: that the surveyed agencies do indeed have some form of performance measurement criteria that can be readily used (and are reliable and valid) to evaluate "lessons learned" performance. If not, the "lacking agency" could have been excluded from analysis, or that agency's data would have to have been analyzed using measurement criteria derived from other agencies' criteria, or some sort of "draft/initial" performance measurement criteria would have to have been constructed, as a product of the investigation. Chapters IV and V discuss the actions that were required.

Summary

This chapter has identified the general methods to be used to gather data (survey, interviews and observation). It has discussed the justification for these methods (lack of observable documents). It has defined the population and samples of interest, explained how the sample agencies were selected, described the three steps involved in conducting the survey, and discussed the "topic checklist" survey instrument (the basis for interview questions concerning specific research-question-related categories). It has also outlined the data collection plan, explaining how the data will be gathered and grouped. Chapter IV will deal with the detailed survey findings, and analysis of the findings.

IV. Findings and Analysis

Introduction

This chapter shall describe the detailed findings about the sample agencies (as derived from the literature review and agency investigations), and shall discuss the analysis of their characteristics. The findings shall be presented by sampling subdivision, and shall describe each agency's various attributes as they relate to the topic checklist and the research questions. Then the analysis of these agencies shall be discussed in terms of the nominal characteristics identified, the values assigned to those characteristics (as based upon the research questions), and the "scores" for the agencies as determined from those values.

Conclusions drawn from the analysis, suggested actions based on those conclusions, and issues requiring future research shall be discussed in Chapter 5, Conclusions and Recommendations.

Findings

The findings by sampling subdivisions, are presented in the following order:

(a) "Gatherer" agencies

(b) "Provider" agencies

(c) "Evaluator" agencies

(d) "Oversight" agencies

Within each subdivision, each agency's characteristics shall be described in detail, before moving on to the next set of agency (or subdivision) descriptions. These arrangements are intended to provide the reader with an appreciation of the differences and similarities between the agencies within the same sampling subdivision. The arrangements should also allow for clearer understanding of the "cross-sample-subdivision" relationships between certain of the profiled agencies.

Gatherer Agencies: The "gatherer" agencies described are: the Acquisition Logistics Division's Directorate for Support Equipment and Lessons Learned (ALD/LSE), and the Aeronautical Systems Division's Total Quality Management Office (ASD/TQ).

ALD/LSE: This agency is the Office of Primary Responsibility (OPR) for the Air Force Lessons Learned Program (which was formerly controlled by the Directorate for Lessons Learned and Systems Support, ALD/LSL) and is ALD's functional support that deals with support equipment issues (for acquisition programs). For purposes of this study only, the Air Force Lessons Learned Program (AFLLP) shall be considered LSE's main responsibility.

The mission of the AFLLP, as stated in a 1991 AFLLP "educational" packet, is (12):

(a) "Gather experiences from all Air Force Major Commands and Army and Navy lessons learned programs;"

(b) "Validate these experiences;"

(c) "Maintain a corporate memory bank of experiences as lessons learned;"

(d) "Make the lessons available to both government and industry personnel through on-line access, tailored lessons learned packages and the Abstract."

The AFLLP considers a "lesson learned" to be a "recorded experience of value in conducting current or future programs or modifications," where such an experience can be positive or negative in nature (13). Therefore, any experience that can indicate a more efficient or effective way of accomplishing a task (that is related to the acquisition of DOD weapons systems or supporting systems) is a potential AFLLP "lesson learned."

For many of its approximately fourteen years of existence (13), the AFLLP had acquired "lessons learned" primarily from "logistics-oriented" USAF agencies, such as the Air Logistics Centers (ALCs). This is not unexpected, given the orientation of ALD and its parent, AFLC. However,in recent years, it has become clear that "lessons learned" from system developers (both government and contractor) and users such as Tactical Air Command, or TAC, could be used "up front" to improve the development, acquisition, and deployment of future weapon and support systems. So, as discussed in a 1991 AFLLP background paper, one of the objectives of the current AFLLP is to document "the experiences of users and maintainers of systems and equipment" and to feed "this information back to the

designers" (13). Therefore, ALD/LSE interfaces with "user" agencies, "developer" agencies, "acquisition" agencies, and "logistics" agencies, as part of the AFLLP.

The AFLLP is currently authorized by a joint regulation, AFLC/AFSC 800-37, dated 7 August 1981. This regulation can be supplemented by the various AFSC and AFLC agencies; for example, Aeronautical Systems Division (in AFSC) has a supplement dated 15 Apr 1988. The regulation (and the supplements) describe the general responsibilities of the various organizations at the "command staff" or "product division" level (or "ASD staff" or "two letter" level, in the ASD supplement) to support the AFLLP (14, 15).

One area outlined in the regulation/supplement concerns the "interfaces" between the AFLLP OPR (now ALD/LSE) and the various AFLC and AFSC agencies. In order to promote awareness and implementation of the AFLLP within the "lower level" organizations, each acquisition-related program office is expected to have a "Lessons Learned" focal point. The appointed individual is supposed to encourage development of "lessons learned" from within his or her agency, and to support his or her program co-workers by helping them to obtain "lessons learned" relevant to their efforts (14, 15). Such focal points are now also being established at various non-AFLC/AFSC agencies, such as Strategic Air Command (SAC) and Air Training Command (ATC) (16).

The AFLLP OPR assists the focal points (and their organizations) by providing detailed explanations of the AFLLP mission, AFLLP information "needs" and the procedures for submitting (and obtaining) "lessons learned." Educational packets, brochures, posters, office supplies (labelled with the phrase "Lessons Learned" and the "name and phone #" of the AFLLP program), and similar materials are provided by ALD/LSE to the "focal points", and other interested individuals and agencies. In addition, the program manager for AFLLP often travels to various agencies to brief current (or prospective) AFLLP participants about the program (17). The LSE staff also write articles describing the program, for various periodicals such as the CSERIAC GATEWAY (for information analysts) (18).

The AFLLP "cycle" for "lessons learned" can be looked at as having three phases: submission of potential lessons learned, validation of those potential lessons and "acquisition" from the AFLLP OPR's database.

In the submission phase, potential "lessons learned" are created, using as references the formats and "tips" provided in the AFLLP Lessons Learned Writing Guide (or other AFLLP educational material with similar information). The format required is the same as shown on AF Form 1521, "Potential Lessons Learned Submittal Record," Jan 90 (See Appendix B), although the form itself is optional (19). The "addressee" is ALD/LSE, while the "sender" is the submitting agency; the name of the individual submitter, his or her

telephone number, and the date submitted are to be shown, in case more information on the subject is desired (either by ALD/LSE, the validators, or later lesson "customers" who wish to know more "background" (17).

The "layout" of the actual "information" sections is as follows (19):

Topic:

Lesson Learned:

Problem:

Discussion:

Recommended Action:

The "topic" describes the subject of the lesson (usually two lines maximum). The "Lesson Learned" is supposed to describe in one or two sentences the "single most important finding," which must exhibit "a cause and effect relationship" such that a reader can understand the "driver" and "results" of the "scenario" depicted in the lesson (19). The "Problem" is supposed to describe the actual circumstances of "what went wrong" in one or two succinct sentences; if the lesson is positive, this is "None" (19). The "Discussion" provides the background and supporting information, usually one to three paragraphs needed to explain the situation(s) that had "brought about the findings." The "Recommended Action" is supposed to identify "what" should be done, "who" should be doing it, and "when" during the phases of an acquisition program the action should be done (19). Assuming that this potential

lesson is "beneficial" - someone reading would indeed follow a positive action and avoid a negative action, "valid" - the result of a real experience and not just a theoretical possibility, and "applicable" - does not require infeasible or unclear actions - then it is submitted to ALD/LSE, normally in a "paper" copy (19) or through the electronic "on-line" access to the AFLLP database (20). Any supporting documents that are used to substantiate the potential "lessons learned" are also supposed to be sent (usually on paper copies) to ALD/LSE, along with the potential Lesson Learned (21).

In the second phase of the AFLLP cycle, the ALD/LSE staff attempt to "validate" the potential lessons learned. In this phase, "validation" refers to (22):

(a) The determination of whether or not the potential "lesson learned" is already adequately described in the AFLLP database or some other "readily accessible" information source (such as "Military Standards", DOD or USAF regulations, and similar items), and if not, then

(b) The review and revision (as needed) of the potential "lesson learned," to meet format/content requirements or to "improve the clarity" of the specific lesson (and sometimes other lessons as well).

Since many potential "lessons learned" concern subjects for which the ALD/LSE staff are not the "cognizant experts," the staff obtains the assistance of other agencies to validate potential "lessons learned." These agencies

include user, developer, acquisition and logistics agencies, each of which provides a "validator" to support the LSE staff in certain specified subject areas (23). These validators use the "Lessons Learned Validator's Guide" (provided by the LSE staff) as their reference in reviewing potential lessons. The "Validator's Guide" explains the format and criteria for "lessons learned" and provides the "Lessons Learned Validation Worksheet" (AFLC Form 8015, Aug 90) and instructions for completing that form, plus a checklist for confirming the proper completion of the validation review (22).

The validator is expected to provide one of three recommendations (22):

"Lesson Learned" - approved "as is,"

"No Lesson Learned" - not suitable,

"Lesson Rewrite" - required revision.

Each recommendation must be explained in detail on the Form 8015 (and a revised Lesson attached, if applicable), so that the LSE staff will understand the reasons for the decisions. In all cases, the validator's name is included on the form, so that additional information can be obtained if needed (22). Approved and rewritten "potential" lessons learned are now actual "Lessons Learned" and are placed in the databases (17).

In the third phase of the AFLLP "cycle," prospective users of lessons learned interface with the AFLLP staff and database to acquire the desired information.

Dealing through the AFLLP staff is the first step in this phase. The staff must check the affiliation of the "Lessons Learned" requester to determine if that requester is eligible for access to the AFLLP "Lessons Learned." This check is necessary because (although unclassified) many of the "lessons learned" contain information that is sensitive, or subject to the various "export control" laws such as those in Public Law 98-94 (24). If the requester is confirmed to be a U.S. Government employee, eligibility is granted (17). Non-government agencies or individuals, such as DOD contractors, must file a Militarily Critical Technical Data Agreement (DD Form 2345) with the Defense Logistics Agency (DLA). Once the contractor has forwarded a copy of the DLA-certified DD Form 2345 to ALD/LSE, that contractor is considered eligible for the AFLLP (24).

Once the eligibility of the requester is established, the requester can make written or verbal requests to the staff. These requests can ask for a paper copy of the Abstract of Lessons Learned volume (published yearly by ALD/LSE), or for a Lessons Learned search about the appropriate subjects of interest. The requests can also ask for a password and account for the AFLLP's electronic database, so that the requester may perform his or her own Lessons Learned search (17). Staff-performed searches are probably most useful for requesters who don't have access to "electronic mail & Defense Data Network" systems (25) or computer/modem systems, or for those who don't mind waiting

several days for their lessons (since the search results are sent via the mail). However, many "would-be" Lessons Learned users apparently prefer to try the "on-line," self-search option (21).

Once the "on-line" searcher has gotten into the AFLLP database, the software offers three main methods for locating Lessons Learned. These methods are as follows (20):

(a) 2 or 3 word string search; if this method is chosen, the searcher must designate the "impact area" and "program phase" of the subject of interest, then the 2 or 3 words denoting the desired subject. The "impact areas" are currently 67 in number and reflect various categories of interest (such as program management, reliability, and others), while the "program phase" refers to the stage in the acquisition life cycle of a weapon system (concept exploration, demonstration/validation, and so forth). The word string is supposed to be the specific topic of interest; it must be in words in consecutive order, and excludes certain words (such as "of," for instance);

(b) Retrieve by Lesson; this method uses the indexing Lesson numbers, and can allow the searcher to review the whole lesson or just certain parts (such as the abstract);

(c) Independent Word Search; this method works similarly to the "string" search, except that the 1, 2, or 3 words sought for can be located anywhere within the lesson.

The search software is designed to record the identity of the searcher, as well as the number of searches performed and the specific Lessons Learned that were found/retrieved (21). The AFLLP staff are thus able to use certain "quantitative" measurements of their AFLLP activities, such as the total number of LL requests over a specific period of time (26). In addition, certain "qualitative" measurements, such as the identities of specific searchers and the lessons they found, can be shown - if a staff member manually reviews and interprets the recorded information (21).

Another qualitative measurement "metric" used for the AFLLP is "customer feedback." This feedback ranges from informal comments made to ALD/LSE during "education" briefings, to detailed comments provided by "on-line" searchers - a section of the AFLLP database software allows the searcher to provide comments for the staff prior to logout (20). In addition, the staff sends out a short questionnaire with mailed Lessons Learned packages; the questionnaire asks the customer to rate the staff service and lessons learned (Excellent-Good-Fair-Poor), and requests the customer provide specific comments concerning the helpfulness and usefulness (or lack thereof) of the lessons (27). The questionnaire is not currently available to "on-line" searchers (20, 21).

The AFLLP staff is currently considering several changes aimed at improving the program; some are in active development. For example, ALD/LSE personnel have held

discussions with the various Army and Navy Lessons Learned personnel, to discuss possible options for improved integration of the different service databases (21, 25). Second, the AFLLP is pursuing development of a "personal computer" version of the AFLLP database system, which is desirable to many agencies (among them classified programs) who find the telephone-linked, "on-line" system impractical. Third, ALD/LSE staff are attempting to obtain an improved version of their Oracle "search and retrieve" software (currently part of the AFLLP database system), to provide such features as "phrase search" (21).

ASD/TQ: The mission of ASD/TQ is - basically - to "promote Total Quality (TQ) throughout ASD" by "assisting leaders in developing TQ attitudes and initiatives with ASD customers and suppliers" and acting as "catalysts for cultural change" to encourage TQ adoption (28). Total Quality is defined by ASD as "a leadership philosophy that creates a working environment which promotes trust, teamwork, and the quest for continuous improvement," and has as its overall objective "(the) deliver(y) (to) the user (of) a product that consistently performs to correctly defined requirements that satisfies his needs and expectations" (28).

In order to accomplish this mission, ASD/TQ works with all USAF agencies in ASD, as well as with the contractors who support ASD programs (the "suppliers"), and the "users" of ASD's products (the "customers"), such as TAC and MAC.

ASD's TQ plan was approved in 1988, by the ASD Commander, then Lieutenant General John Loh (29); it was based upon promising results obtained in 1987 from projects initiated by two ASD agencies, the Propulsion and Training Systems SPOs (30). A contractor, the Cumberland Group, was "brought on board" to train and advise ASD agencies in the proper development of TQ structures, tools and techniques (29).

Each organization within ASD has adopted a "TQ structure;" that structure contains the following groups (31):

(a) a Steering Committee, made up of "upper management" within the organization;

(b) a TQ Team, made up of "a cross section" of organization members, who "establish and operate" four subteams needed to implement TQ. There are subteams for: Education (of the organizations, to support TQ); "Search for Opportunities (SFOs)," which "capitalizes on employee-generated ideas for improvements;" Corrective Action (which "uses Corrective Action Teams to solve problems identified by the employees"); and Measurement ("to gauge progress");

(c) Corrective Action Teams (CATs), which are commissioned by a CA subteam, or the Steering Committee, to "work specific problems within an organization;"

(d) Critical Process Teams (CPTs), which are "chartered" by the Steering Committee to "investigate high

level, cross-organizational processes which have a critical impact on satisfying the customers' requirement."

At the ASD level, there is an ASD Executive Steering Committee (ESC), "chaired by the ASD Commander" (or Vice Commander) and "with a cross section of ASD top management as its membership" (31) that addresses TQ issues and policies at "ASD-wide" or "outside ASD" levels. For example, Category III - "outside a program office applicability" (32) - SFOs must be reviewed and "prioritized" by the ASD ESC; another of the ASD ESC's responsibilities is to "Provide a Forum for Lessons Learned/Cross Talk" (28).

The ASD/TQ office acts as a "facilitator" for many of the "ASD-wide" or "outside ASD" actions dealt with by the individual organizations and the ASD ESC. For example, each cognizant "subteam" facilitator within ASD/TQ chairs the periodic meetings of the four subcommittees - whose members are the individual organization "focal points" for that particular type of subteam - all SPO Education subteam focal points would attend a monthly Education subcommittee Forum, for instance (33).

In these "specific" Forums, the focal points discuss their agency's TQ activities, and in particular the activities they feel would have relevancy outside their specific program office/other agency. Most activities concern "quality of life" issues - such as workplace

environment - or, increasingly, "process issues" - such as shortening Statement of Work coordination time (33).

ASD/TQ also "facilitates" the TQ Open Forum, in which "anyone" (usually members from the four Subcommittees) can discuss or "find out about" various types of TQ issues (33).

ASD/TQ does have a specifically identified type of "lessons learned" effort, which is known as "Wins." ASD/TQ considers a "Win" to be any "proven to work" course of action or accomplishment that should (have), when properly implemented, result(ed) in an improved, successful "way of doing business" (33, 34); this is essentially a "positive-oriented" analog to "lessons learned." Currently, the "Wins" effort is basically an informal method of furnishing "success" stories to different groups within ASD. The "Wins" process works as follows (33):

(a) ASD/TQ is provided descriptions of potential "Wins," along with supporting information (to explain why the specific action/process/accomplishment should be considered a "Win");

(b) If the cognizant ASD/TQ "facilitators" agree with the rationale, the submitter is notified that he or she can "brief" that item, as a "Win," at the appropriate Forums (as determined by the facilitators). In certain cases ASD Executive Steering Committee approval may be required, if the "potential Win" deals with issues outside "normal" program office cognizance (such as Category III SFOs, for example);

(c) The submitting agency describes and explains the "Win," during a presentation given at the appropriate Forums. Copies of the briefing charts (or other media) are provided to ASD/TQ and/or kept by the "Win" submitter.

ASD/TQ obtains most of its information about ASD TQ activities from the subteam focal points, the ASD/ESC, different contractor agencies (the Cumberland Group, for example, is still providing information on basic TQ methods and techniques), and the many CAT and CPT teams. ASD/TQ requests for information are often handled using telephone or personal contact procedures, or written letters; responses are usually provided in a similar matter. Any SFO, CAT, or CPT inputs are provided in written paper form (33). The "SFO" writeups are supposed to be one page "summaries" of the proposed idea, while CAT results are generally short, "background paper" submittals, and CPT findings are usually equivalent to "Technical Reports" in their level of detail (34).

ASD/TQ personnel usually make few (or no) changes to the submitted material - this practice is intended to discourage the "filtering" of information that may result from the information "passing through many hands" (34).

The ASD/TQ office maintains certain types of this information "on file" - such as educational or informative material, "self-generated" SFOs, "current issues in work" documents, and similar types of data - but in many cases the "documented" information is kept by other organizations

(quite often the submitter or the "responsible" agency). If maintained by ASD/TQ, it is often kept on "paper," magnetic computer disks, or personal memories; reports, working notes, and briefing charts are the most common types of "documents" used (33, 34).

ASD/TQ does keep track of the type and disposition of "Category III" SFOs; they use a "status" list, which describes the SFOs by title, key word, log number, organization, and short (ten words or less) status and "resolved" comments (35). This list is maintained on magnetic disk and in written paper form, and can be reviewed by other agencies through communication with ASD/TQ. The specific SFO can be retrieved from the "list" using "key word" search or log number if reviewing on a computer, or by those and title if reviewing paper copies (34).

When ASD/TQ disseminates information, it uses different methods and forms, depending upon the "audience" and the subject matter of the information. For example, when ASD management decided ASD should compete for the 1990 Quality Improvement Prototype (QIP) award, inputs from each "two-letter" organization were reviewed - by a multi-organization "tiger team" lead by ASD/TQ (36) - reformatted, edited, and put into a "booklet" entitled: "TQ: A Journey to Excellence," which described ASD and explained its accomplishments in implementing TQ principles and practices (37). This "booklet," as well as an earlier "booklet" created for the 1989 QIP competition, were designed to be

read by the "public at large," and were widely disseminated (34).

When ASD/TQ provides information in "education workshops" with government or industry agencies, the form is often personal discussions, with paper charts and/or audiovisual presentations, and is usually confined to the use of the "workshop" participants, until they return to their agencies (33).

Most TQ information can be provided to requesting industry or government representatives, although in many cases (such as SFO review) information is not released outside ASD until a decision (concerning the issue in question) has been announced (33).

Metrics are always a concern in ASD/TQ - hence the concentration on Measurement subteam activities for each TQ issue. The specific types of metrics are dependent upon the specific situation, although many metrics that attempt to measure "results" are "quantitative" in nature. One such example is measuring the number of clarification requests given to contractors (about their responses to a Request for Proposal) before and after TQ tools and information have been provided to the contractors (28). Another "quantitative" example is the analysis of "critiques" answered by participants in "ASD-Industry Total Quality Seminars," measuring numbers of critics and their responses to standardized "scaled" questions (28). One simpler metric

involves measuring the time taken from "issue introduction" to resolution, to compare "old" and "new" processes (28).

Many changes are currently planned or "in process" at ASD/TQ. Some of them include:

(a) An ASD-wide "TQ Newsletter," which would profile TQ "issues of interest" and ASD's "TQ progress" (being implemented) (32, 28);

(b) Formalizing the "Wins" process, through development of explicit criteria (for deciding what a "Win" is) and the use of an electronic database to access, store, and retrieve "Wins" descriptions (project in "concept exploration" stage) (33);

(c) "Gearing up" to develop a "booklet" for the 1991 QIP competition (34);

(d) Developing a cataloging system for CAT/CPT paper reports (and maybe SFOs) (under consideration) (34).

Provider Agencies: The agencies in this sample subdivision are the Headquarters Air Force Systems Command, Deputy Chief of Staff for Requirements, Directorate of Program Management (HQ AFSC/XRM) and the Aeronautical Systems Division, Deputy Chief of Staff for Program Management (ASD/CY).

HQ AFSC/XRM: The mission of HQ AFSC/XRM, as stated in a 1990 XR internal planning paper, is "to create, develop and integrate acquisition policy and procedures; to support the program manager by providing professional development, acquisition tools and expert counsel; and to

enhance the program management environment by continually improving the acquisition process, fostering teamwork and eliminating unnecessary requirements" (38).

To support such a mission, this XRM office is able to work with a variety of organizations inside and outside HQ AFSC, among them the Systems (sometimes called "Product") Divisions, the Test Centers, AFLC agencies, "functional" offices such as HQ AFSC/EN (DCS for Engineering) and HQ AFSC/PK (DCS for Contracting), the Program Executive Officers (PEOs), and SAF/AQ, the support office for the Assistant Secretary of the Air Force for Acquisition (39).

HQ AFSC believes the "Lessons learned" phrase is generally more closely associated with "experiences to avoid repeating," and therefore has related AFSC's definition of "Lessons Learned" to "past mistakes" (39, 40). Positive experiences, particularly those with the potential to "significantly" improve the acquisition process, are considered to be "best practices" (41). The XRM office is a focal point for HQ AFSC programs dealing with both "Lessons Learned" and "best practices." The "Lessons Learned" efforts are generally handled within XRMA, while the "best practices" projects are handled within XRMP; XRMA focuses on the goal of continuously improving the program management process, while XRMP focuses on the goal of continuously improving acquisition policy (38).

XRMA: This organization acts as the HQ AFSC focal point for the AFSC Program Management Lessons Learned

Process (PMLLP). The process is intended to "tap" the knowledge, experience and insights of current acquisition program managers (and other acquisition "sources of expertise"), provide that information to other acquisition managers on a "realtime" basis, and provide a database of "lessons learned" for program directors and others to use (39).

The PMLLP was begun in early 1991, in response to concerns expressed during the October 1990 Program Directors (PDs) Conference (42). It is outlined in written and diagram form in AFSCR 550-19, dated 28 June 1991 (which is shown in Appendix B).

The key features of the PMLLP are as follows:

(a) HQ AFSC/XR has created a set of electronic "information networks," or INFONETS, and have made them available for use by the various SPO program directors, HQ AFSC functional offices, and the AFPEO and SAF/AQ agencies. One of these networks is the monthly Program Directors (PD) INFONET, which is intended primarily to pass current "IG" and management information of interest from PDs/AFSC to AFSC/PDs (43). The other is the Program Management Lessons Learned INFONET, which is intended to provide "Lessons Learned" by individual PDs (and AFSC offices, PEOs and SAF/AQ agencies) to the rest of their fellows in the acquisition field, on a "current" timeline (42).

(b) The PM Lessons Learned are to be submitted to XRMA in a format similar to that used for the Air Force Lessons

Learned Program (AFLLP) - one or two page(s), main "Lesson," brief explanation and recommendation (44) - except that no editing (by AFSC) or validation is required (39).

(c) AFSC/XRMA retransmits these "Lessons" (minus only the "originator" ID) over the PMLL INFONET, and sends the "Lessons" into the Program Directors "impact area" of the AFLLP database (39).

(d) The Systems Divisions are tasked to set up "face-to-face meetings between program offices," to provide for other avenues to distribute "Lessons Learned" (40).

(e) The PMLL INFONET or "face-to-face" meetings should be used to disseminate key information, such as "lessons" resulting from major program events, or the performance of contractors that are "common" to multiple program offices, or similar important knowledge (40).

(f) The AFSC PMLLP is intended primarily for "executive-level" Lessons Learned (45); lower level management is encouraged to "support the Air Force Lessons Learned Program" (40).

In support of this PMLLP, AFSC/XRMA has been performing several activities. One is drafting a revision to the Air Force's "program management" regulation, AFR 800-2. This revision would add a "Section H" to Part 5 of that regulation, dealing with "Air Force Lessons Learned," that would outline the "policy and procedures to identify, document, and publish acquisition and operational lessons learned;" this section would also identify ALD/LSE as the

OPR for the AFLLP, and would define "lessons learned" in the broader "positive and negative" sense currently used by ALD/LSE (46).

A significant concern about the PMLLP is "metrics." Currently, XRMA is able to review the number (and source agency) of "PM Lessons Learned" submitted, and the number and identity of "addresses" for the PMLL INFONET. XRMA has requested support for and feedback about the PMLLP, using both the PD and PMLL INFONETS (43, 45). Any comments or feedback (and quantitative measures such as number of searchers) obtained about the "Program Directors' impact area Lessons Learned" can be provided to XRMA from ALD/LSE, upon request (47).

One set of concerns expressed by certain agencies was that the PMLLP should be expanded to include "other...disciplines" besides program management (48). In response, XRMA has been investigating the "ET-NET" engineering and technology electronic information database - run by AFSC/EN; the "TEC-NET" joint test and evaluation electronic database - run by the Navy at Patuxent Naval Air Station in Maryland; the Navy Lessons Learned program; and the various Army Lessons Learned efforts (39).

Initial findings from those investigations indicate:

(a) The "functional" databases (ET-NET and TECH-NET) currently have no provisions for "lessons learned" inputs (or outputs) (49);

(b) The Army efforts are very fragmented at present, with different commands (and a number of different agencies within those commands) having responsibility for different types of "subject" databases (50);

(c) The Navy Lessons Learned program bears many similarities to the Air Force program as heretofore run by ALD/LSE - "primarily consists of a database," Lessons "appear to focus on one area" (systems engineering), format is "almost identical to the AF" - except that the Naval Air Systems Command personnel responsible for the program actually write the "lessons learned" (based upon inputs from "field units") and validate it at the same time (51);

(d) Although the Navy currently does provide some of its "lessons learned" to the ALD/LSE database, there is not yet the sufficient hardware and software "network stability" needed to shift to a joint ALD-housed common database - although coordination efforts are continuing (25).

Another change XRMA has recently made is in the format requirements for the PM "lessons learned;" in an effort to encourage more submittals, the PDs and others may now provide "lessons" to XRMA in whatever form they feel appropriate, and XRMA will retransmit the LL in that form over the PMLL INFONET. As for the transmittal into the AFLLP database, XRMA will rewrite the "Lessons" to conform with the AFLLP format (52).

The XRMA office is also considering new metrics, such as a "customer" survey or questionnaire, to get a better

idea of what users of the PMLLP (and perhaps AFLLP) "really think" (47).

The PMLLP program is scheduled for review at the Fall 91 PDs Conference, to determine what additional changes should be made (to encourage greater participation or discontinue the project if appropriate) (52).

In addition, one major "Lessons Learned" change is currently scheduled for July 1992: the transfer of responsibility for the AFLLP, from ALD/LSE to the new AFMC/XR (52).

XRMP: This office acts as a focal point for multiple acquisition process improvement projects, many of which are derived from Acquisition Process Excellence II - which was chartered in June 1990 by Lieutenant General David Teal, the Vice Commander of AFSC, as a "follow-on" to the original APEX project (53). One of these efforts is the "best practices" set of processes.

This "best practices" set of processes consists of the APEX II Best Practice Process (APEX II BPP) and the AFSC Best Practice Process (AFSC BPP). The APEX II BPP was the "first" of the two BPPs - the initial version is described in a January 1991 AFSC/XR White Paper (53), and has since been modified to become a part of the "broader" AFSC BPP - which is described in detail in AFSC/XR's 19 June 1991 White Paper and APEX II Meeting charts (54, 55).

The basic features of the AFSC BPP are as follows:

(a) AFSC/XR's APEX II team creates a "pool/repository" (54:22) of "neat/tested neat/proven neat" ideas (55) which were "developed throughout the command" (54:24) and other acquisition-related sources such as SAF/AQ, schools, and other services (55).

(b) The HQ AFSC "functional leads (the owners) cull" from the pool of ideas a list of "potential best practices" (54:22). The following are the "top level" criteria used (54:22):

-- "Must add significant/quantified value to the acquisition process;"

-- "Must be universally applicable (capable of being applied 'across programs' as well as 'to major and component programs' and must apply to a large number of programs;"

-- "Must be trackable/measurable;"

-- "Must be implementable within product (systems) division/program resources (manpower/money);"

-- "Must not require additional ('net') manpower."

(c) The "potential best practices" are prioritized by product (systems) divisions/program offices (which may add additional "best practices"), and separately by the HQ AFSC functional offices (55);

(d) An HQ AFSC Steering Group selects which of the "potentials" will be developed into "best practices," and determines whether the APEX II BPP or a "Functional Process" should be used to develop them (55);

(e) If the APEX II BPP is selected, then the "owners" are expected to "champion" their would-be "best practices" during a briefing to a Process Improvement Plan (PIP) Steering Group; once a "potential" is "accepted," the PIP Steering Group advises and guides the owners in developing PIPs and helps them determine when the "best practices" are ready for implementation (55).

(f) Once the "best practices" have completed their APEX II BPP (or functional process), they are implemented in parts (or all) of the command; policies, processes, tools and training are all altered to support the "best practices" (55).

(g) As these "best practices" are developed and distributed to the various acquisition agencies, metrics (for judging purposes) for each "best practice" are also developed, as well as "command standards" (or "benchmarks"). The "benchmarks" are used to "evaluate current operations and measure the success of...implementation" (54:23) of the "best practice(s)" within (an) organization(s); the "benchmarks" are developed by the same "organization(s) which developed the associated best practices (to take advantage of the expertise obtained in working with that process" (54:23-24).

(h) Results of these steps (the "best practices" and their effects) are identified and used in the development and/or updating of the relevant acquisition process "model(s)" and database(s) (55);

(i) The AFSC functionals "will continue to collect" the various types of "neat" ideas, and "enter them into the repository," while "the APEX II team will develop mechanisms to make this information available to the field" (54:24).

Two examples of "best practices" that have gone through the first "cycle" of the BP process are the "Request for Proposal (RFP) Support Organizations" (the "prototype best practice") and the "Acquisition Security Course" (54:23); the "RFPSOs" are intended to be groups of "RFP-experienced" individuals, who assist SPOs in the efficient "processing" of RFPs (41), while the "ASC" is intended to "define the role and function of acquisition security" in the acquisition process (54:15).

HQ AFSC uses various metrics to measure these efforts at acquisition process improvement streamlining. One such metric is the quarterly tracking of PIPs - number of new PIPs, number of open PIPs, number of completed PIPs, and the "significant accomplishments associated with these PIPs" (54:10-11). Another metric, "development schedules" - planned compared to actual - is used to "measure the efficiency of the execution" of the AFSC Best Practices (and other) efforts (54:10). HQ AFSC also tracks the different "streamlining" initiatives, by subject, command level, and status (54:12-16).

XRMP is continually attempting to improve the "best practices" and other efforts; several changes are planned or are being implemented. One such change "being worked" is

the development of the Acceptable Practices Management System (APMS). The APMS is intended to support the "best practices" database/repository by providing a means of acquiring, maintaining, and distributing the various types of "neat ideas," which are also known as "acceptable practices" (56).

The key features of the APMS are as follows:

(a) "Candidate acceptable practices" are submitted to HQ AFSC/XRM (57);

(b) XRM uses an APMS software package to create a two-paragraph "synopsis" and a one-page "detailed writeup" describing each candidate; "submitter information" (name, agency, phone number, address) and "tracking information" (subject category, control numbers and "suspense" schedules)are included in the "package" (57).

(c) Each "candidate package" is routed to the HQ AFSC functional office that is the cognizant "reviewer" for that particular category of interest (57);

(d) The cognizant "reviewer" is expected to evaluate its candidate, and to provide a detailed "rationale for acceptance or rejection of idea as Acceptable Practice" to XRM, by the preassigned suspense date (57);

(e) If the reviewer approves the idea, XRM sends the submitter a letter which explains that the idea is now an "acceptable practice" (if the idea is rejected, an alternate letter - with a "rejection explanation" - is sent to the submitter) (57);

(f) The "packages" for the new "acceptable practices" are then placed in the database (or "databank") (57);

(g) XRMP would insure that "the databank would be accessible to the field for their use as desired" (57) - this is currently planned to be accomplished by periodically distributing/collecting magnetic computer disks containing the "acceptable practices" - for use with personal computer (PC) systems - to/from the "field units" (56);

(h) XRMP (and other AFSC offices) would "periodically review" the collected acceptable practices, to determine if any of these "effective methods for accomplishing a specific task or series of tasks" might be effective enough to qualify as a "best practice," which is "command's 'preferred' way of accomplishing a task" (57). "Promising" acceptable practices would be written up as "potential best practices," and would enter the AFSC BPP (56).

XRMP is considering which of many types of metrics would be appropriate for the APMS. One quantitative metric under consideration would use the software on each "field unit" disk to record the number of times the different categories (or specific identity) of acceptable practices were reviewed by the "field users." A "qualitative" metric being considered is "user responses," where users would provide feedback about APMS and/or specific "acceptable practices" (56).

Another improvement being planned by XRM is the integration of best practices, "lessons learned" and other

"acquisition references (such as Federal Acquisition Regulations) like FARs" into the databases for the AFSC Acquisition Model and Database (AAM&D) (54:3). The AAM&D is the second major acquisition process improvement project derived from the APEX II team; it is intended to be a "tool to help AFSC/AFMC manage acquisition process improvement and to aid program offices in planning/managing their programs" (54:3). The AAM&D design will be based primarily on the recently completed Defense Science Board Acquisition Streamlining Task Force (DSBTF) simulation model, but will be altered to accommodate AFSC-specific characteristics and acquisition task descriptions derived from the original APEX effort. The eventual goal is to provide a refined AAM&D package (with current databases) for users "in the field" to utilize on "high-capacity" personal computer (PC) hardware; an AFSC-based "center of expertise" would provide updated AAM&D packages and other "computer support" to "user" agencies (54:3).

ASD/CY: The purpose of ASD/CY is, simply put, to "serve" as a "full fledged, functional office" for the "program management, test and evaluation management, configuration and data management, and administrative support of these functions" (58:1). ASD/CY is expected to act "as the ASD focal point for acquisition management policy," as well as for policies for "T&E," and "CM/DM," and as "home office for acquisition management personnel, both military and civilian" (58:5).

In the "program management/acquisition management" area, ASD/CY's duties include:

(a) Establishment of ASD's Request for Proposal Preparation and Source Selection Office (58:1);

(b) "Support (for) ASD organizations in obtaining acquisition management information in order for them to achieve/expedite their mission requirements" (58:8);

(c) "Acting as focal point for exchange of acquisition management related information between ASD and other government and civilian organizations" (58:9);

(d) "Maintaining professional expertise in acquisition functional areas to provide advice to the Program Executive Officer, Designated Acquisition Commander, and Program Directors" (58:8).

ASD/CY is also a member of the AFSC Program Management Board of Directors - whose "underlying goal" is "to implement acquisition process improvements in a way that insures consistency across the command" (58:10).

As ASD's board member, ASD/CY's responsibilities include (58:10):

(a) "making available the lessons learned from around the defense acquisition community" - such as "program management lessons learned and best practices"- to "ASD SPOs in a timely and useful way;"

(b) "to encourage and sponsor improvement initiatives identified by people in ASD..."

In order to accomplish these many duties, ASD/CY may (at any given time) need to interface with HQ AFSC, ASD SPOs, other ASD functional offices, and possibly PEOs, contractors and others.

The "justification" for this new agency was: ASD/CY was formed in order to address DOD and Congressional concerns about program manager support for the PEOs, and to deal with new requirements to train and provide experienced acquisition management personnel to support an "Acquisition Corps" (59).

ASD/CY has no "formal" lessons learned program of its own; it does, however, support the AFSC Program Management Lessons Learned Program at the ASD level. This is done primarily through ASD/CY's coordination of the ASD's bimonthly Program Management Seminars. These seminars are attended by the Program Directors (and their deputies) from ASD's various program offices; presentations are given by representatives from selected SPOs, describing certain experiences and useful knowledge - such as lessons learned - gained during program cycles (59). These seminars appear to be ASD/CY's means of complying with the "face to face meetings between SPOs" requirement of AFSCR 550-19.

ASD/CY also supports "information transfers" (such as lessons learned) at quarterly meetings between the "product" division SPOs, functional offices, and the PEO offices (and sometimes also HQ AFSC agencies). Such meetings are usually attended by "staff level" personnel, and offer relatively

informal avenues for obtaining or providing "lessons learned" to/from the attendees (59).

ASD/CY obtains much of its "functional" information from HQ AFSC/XR - which provides policies and guidance on program management matters - and HQ AFSC/DR (for test and evaluation policies) and HQ AFSC/EN - for configuration management policies (58:2). Information about "local" activities comes mainly from the ASD functional "chiefs," the various program directors, and the ASD Commander; this information is often provided at weekly "staff meetings" (59).

ASD/CY's information "needs" are usually expressed informally, through telephone conversations, personal contact, or written memos; their "subjects of interest" are generally oriented by functional specialty/program, or special interests (59).

Information provided to ASD/CY may range from "summary" information - such as bulletins provided via "electronic mail" - to "Technical Report" level - such as written "paper" programming plans (59).

Much information is furnished to ASD/CY using telephone conversations and personal contact at meetings, in addition to written and electronic means. The information may be maintained in a medium or document type similar to that in which it was furnished (such as paper reports) or "transferred" to another medium/form - such as telephone

conversations summarized on an individual's computer disk file memos or placed in personal memories (59).

Depending upon the specific "subject matter" supported by the provided information, CY might make few changes (such as in "lessons learned" furnished by other agencies) or many comments (such as when providing "consulting" services to program directors - about whatever program management matters are of concern to the PDs). Any such "modified" information can generally be retrieved using the subject matter as the index, when using magnetic disk directories - paper files may be indexed by functional "specialty," program or the "special interest" subject (59).

ASD/CY disseminates information in different mediums and forms, depending upon the type of "subject matter" and the intended "receivers;" the ASD Commander might receive a written paper "summary" or "background paper" describing a CY response to a staff meeting action item, or a multi-organizational "meeting" might be conducted using "videoteleconferencing" and information would be provided via "personal" contact - or any videotapes kept as records of the meeting (59). Most "receivers" are agencies that "work with" ASD/CY on a "regular" basis, although obviously requests for information from "higher level" individuals or organizations (such as the Program Executive Officers) would be answered accordingly. As such, most ASD/CY information is normally "seen" only by USAF (and some contractor) agencies (59).

Metrics are a concern in ASD/CY; quantitative types are favored. For example, RFP processing schedules (actual compared to predicted) are used to measure time savings achieved from "up front" advice from CY's RFP Support Organization (as opposed to "normal" RFP processing time) (59).

Since it is a new organization - formation began in early 1990 (59), the official "implementation" plan was approved by ASD/CC in May 1991 (60) - and is organized according to TQ principles - streamlined management structure, minimum staff support, and so forth (58:3), ASD/CY is "in the midst" of adopting or considering many changes to its "way of doing business." Examples include:

(a) Using the Defense Systems Management College (DSMC) Alumni Association (Dayton Chapter) meetings as an "alternate" forum for disseminating (and obtaining) generally useful (and unclassified/nonsensitive) acquisition management information (such as lessons learned). This arrangement provides an informal setting, in which all "levels" of personnel can attend and ask questions - not just executives (59). The information is generally provided in a presentation - one scheduled topic was "Experiencing a Defense Acquisition Board, or DAB" - by an individual who is "well acquainted" with the subject (such as a PD) and can answer questions or clarify details. Announcements of such meetings are usually made in "periodicals" such as the base

newspaper, to encourage attendance by "interested" personnel (61);

(b) Becoming the ASD focal point for the new Acquisition Program Tracking System (APTS). The APTS contains a series of "metrics" - developed as part of AFSC's ongoing efforts to improve the acquisition process - that will be used by acquisition program management to measure their progress (in certain cases it may be used as a replacement for the Defense Acquisition Executive Summary, DAES, currently written by certain program offices) (59);

(c) Using the "Quick Mail" system + send memos, messages, or even conduct "conferences" - through use of the computer electronic "network" used at ASD (59);

(d) Developing new metrics - one possibility would be a measurement of "effective contract(or) selection process" by tracking the "meantime" intervals between contract awards and "yellow/red flag" progress reports - such a metric could be used to help analyze the "up front" contributions of various advisory groups such as the RFPSO (59);

(e) Investigating the various "reviews and audits" performed by ASD or other agencies on SPOs, to identify areas where "up front" help/advice/support could (perhaps) reduce the number of "inspections" needed - an example of a desirable result would be "eliminating (Independent Cost Assessments) ICAs by validating cost estimating models used by SPOs" (62).

Evaluator Agencies: The agencies sampled in this subdivision include the General Accounting Office (GAO), Cincinnati Regional Office, Dayton site; and the Air Force Inspection and Safety Center, Systems Acquisition Management Inspection Division (AFISC/IGY).

GAO (Dayton site): The purpose of the GAO is, simply put, to investigate and evaluate various programs, projects, agencies, and issues, as directed (or desired) by committees and (sometimes) individuals in the U.S. Congress. The cadre of GAO personnel at the Dayton, Ohio (Wright-Patterson AFB) suboffice tend to concentrate on Congressional concerns that relate to the development, acquisition and deployment of major USAF aircraft and related systems (63).

Given this area of responsibility, the GAO "cadre" is able to (and usually does) work with any agencies connected with whatever programs are being investigated. This includes "user" commands, defense contractors, subcontractors, and subtier contractors, test & evaluation centers, and various DOD and Service headquarters agencies, major commands, Program Executive Offices, laboratories, and SPOs (64).

The GAO possesses the authority to task all these agencies for cooperation with their investigations. This authority is described in GAO Order 0110.1, "Legislation Relating to the Functions and Jurisdiction of the General Accounting Office," which outlines the various pieces of Congressional legislation dealing with this subject, even

"all the way back" to the Budget and Accounting Act of 1921 which originally established the GAO (64).

The basic types of information normally sought by the GAO are those that deal with the financial and management performance aspects of programs or agencies - essentially "exactly what was your money spent for, and how well did/is the program succeed(ing) in providing the authorized product(s) and/or service(s)?" In recent years, however, Congress' increasing use of the GAO as its "question answering" and "legislation verification" tool has altered the scope of the agency's interests. Now, those areas of information that are expected to answer the Congressional questions are included in GAO interests - even if the areas are not particularly associated with financial or management issues (63).

The GAO does not possess a formal "lessons learned" or similar program; their reports to their Congressional "sponsors" do discuss key points and factors relating to the issues in question and the actions they recommend to address "sponsor" concerns. Most of these reports are unclassified and therefore usually become "public documents" no later than 30 days after delivery to the sponsor (64).

When given an investigation "tasking," the cognizant GAO office (usually a field office such as the Cincinnati Regional office, or its Dayton subunit) puts together an "investigation planning team." This team develops a detailed plan of operations for the investigation (63).

This plan addresses the scope of the investigation, the types of information needed, the number of investigations required, the time length of the investigation, judgement criteria, and similar factors. The plan is studied and modified (if needed) by a review group and the planning team (63).

Once the plan is approved, the cognizant GAO office notifies the primary "affected" organization of its intended "audit" schedule and the information/agency access required. Such notifications are usually in a written "letter" form, and are regarded as official correspondence (63).

The investigation team often "sits" within the primary "investigated" agency (at least part of the time), and travels to other sites/organizations as needed. The team usually reviews that agency's management and financial plans, status reports, and similar documents, as well as whatever agency materials relate to the "topics of interest" (63). Depending upon the those specific topics, the investigators will interview various personnel within the affected agencies, ranging from the program director to specific submanagers, analysts, and functional specialists. A similar "range" of documents, presentation materials, and working papers may also be requested, if the investigators feel that degree of detail is needed to properly understand the "macro" implications of the program activities. This approach is quite feasible (from the investigators' viewpoint) since the GAO team may often spend several months

"interfacing" with the affected agencies at the agencies' locations - where such documents should be readily available (63).

When the investigators "write up" their findings, they are able to make the appropriate changes to the structure and content of the obtained information. These changes may be needed in order to explain and clarify the findings (and recommendations) for the sponsor. However, the investigators are expected to review their finished product "line by line" to insure that every statement can be "referenced" by actual documentation or interview records (64). Such reviews are supposed to be so complete as to allow a "new" GAO member to clearly understand and "follow" the rationales used in the report (64).

All writeups are supposed to address the subject categories found in the investigators' Findings Summary Sheet, which are shown as follow (65):

(a) Issues Statement (reasons for the investigation);

(b) Criteria (by which the findings are judged);

(c) Conditions (discovered during the investigation);

(d) Cause (of the conditions);

(e) Effect (on project, other programs);

(f) Conclusions (about the situation);

(g) Potential Recommendations (for actions to be taken by affected agencies and others involved);

(h) Potential Alternatives (to the recommended actions).

The final "report" for the sponsor is sometimes given in briefings or presentations, but is most often in an actual report (63). This researcher's review of several different GAO reports indicated that these reports contain an introduction section, and sections for discussion, findings, conclusions and recommendations. Such reports usually have some form of "executive summary" which "highlights" the audit purpose, background, results-in-brief, principal findings, any matters for congressional consideration, and (GAO) agency comments. Most reports also contain appendices, which often contain comments from the "affected" organizations, and any references obtained from other GAO documents. The principal investigating office and the major team members are identified at the end of each report (66, 67, 68, 69).

The reports are almost always provided in paper form, and are addressed to the chairmen of the relevant committees or the appropriate sponsor (63). The Publishing Office at GAO "Headquarters" maintains a list of special activities/subjects that various Congresspersons or committees desire to be kept informed about; if a report deals with any of those interests, copies will be provided accordingly (64). Copies of any reports that involve DOD-related issues are supposed to be provided to the cognizant DOD agencies, which are then expected to distribute the copies to the appropriate lower-level organizations. The "affected" organizations often receive "courtesy copies" of

the document from the investigating office, rather than the "normal" source, the Publishing Office (64). Most reports contain a section which describes procedures for ordering (extra) copies, and states whatever fees are required.

The "investigating" GAO agency maintains some copies of their reports, plus (for at least three years) the various working papers and other "reference" documents gathered by the team. These "paper" documents are generally filed by program category (B-1 program, for example) (64).

If the GAO personnel wish to research subjects not in their "on hand" documents (such as prior to or in support of an investigation), they can consult published paper copies of the GAO's Reports and Testimonies Indexes; these documents are published monthly or annually, and contain report titles (both) and synopses (monthly version only) (64). The personnel might also access a GAO electronic "report directory," which uses a "key word" search software to locate report listings by title subject(s) or report numbers (64). The reports can then be ordered from one of many National Repositories for public documents, such as the one located in Cincinnati OH (64).

GAO personnel also consult various members of their own office when seeking information; many investigators have been in the same office for several years and have thus accumulated a wealth of "corporate memory" about various programs/subject areas. This situation is particularly true at the Dayton GAO site; certain individuals, for example,

have monitored the B-1B program since its inception in 1981 (63).

The "metrics" used by the GAO to evaluate their efforts are not usually quantitative in nature. The central headquarters does track the number of investigations, for example, but this information is generally used only in the Annual Reports to Congress, which deal with agency budget considerations, not "information processing" (64).

The GAO's various qualitative measures generally address the procedures and content of the investigation. There are several documents, among them the GAO's "Government Auditing Standards," the "GAO General Policy Manual," and the "GAO Communications Manual," that contain extensive descriptions of the standards and guidelines required for GAO investigations. These requirements are intended to insure the investigations are conducted in a thorough, accurate, and impartial manner (70, 71, 72). These requirements also apply to the investigation reports; an extensive review process is used to insure the reports "meet standards" before the report is published or forwarded to the sponsor (64).

There is "feedback" from the GAO's "customers" - their sponsors - in many cases, but such feedback is usually informal, often general in nature, and may sometimes contain inappropriate comments. Such comments might come from "non-sponsors" such as opposing parties (or even the sponsors themselves), and may express dissatisfaction with the

content of the report (73). It is reasonable to assume that such dissatisfaction is (in most cases) based on political considerations rather than the accuracy and scope of the "information processing" efforts.

One change being implemented by the GAO (at least for the Advanced Tactical Fighter program) is the "placing" of investigating teams "periodically" into the program office, staring at earlier stages in the development life cycle; the GAO has been involved with the ATF since the beginning of concept exploration (73). It is reasonable to assume that any significant issues arising from continued development of the ATF will be brought to the attention of Congress and the public, probably earlier in the system life cycle than on previous similar programs.

AFISC/IGY: The purpose of AFISC/IGY is - basically - "to assess (USAF acquisition) process(es) and program effectiveness," to "identify successful and deficient acquisition management," and "to consult and advise" various USAF agencies; the "tool" IGY uses to accomplish these actions is the Systems Acquisition Management Inspection, or SAMI (74).

The intent of SAMIs is, in IGY's view, to insure that there is "value added" to the process or program under review, rather than to focus on the "compliance issues" that many agencies normally associate with visits from "inspection" agencies. Such added value is provided by: "focusing" the SAMI "on major issues;" proposing "realistic

solutions" to any identified problems; preventing "train wrecks" in the program; closing the "credibility gaps" found in various agencies (including the IG); and providing managers with an "unbiased, independent, expert source for second opinions" that is also "within the (USAF) family" (74).

SAMIs can be used to address issues in any part of the acquisition life cycle of a program, "from requirements to supportability." Thus, since IGY's "area of responsibility" is considered to be "Air Force-wide," that office would usually work with a spectrum of agencies - "users" such as Strategic Air Command (SAC), the Air Staff, PEOs, SPOs, Air Logistics Centers, and HQ AFSC, among others (74).

IGY's basic authority to conduct SAMIs stems from The Inspector General (TIG), Office of the Secretary of the Air Force (OSAF), who is "who AFISC works for." The TIG's authority stems from "Title 10 US Code, 8020", which tells the TIG to (75):

(a) "Inquire into and report on discipline, efficiency, and economy of the Air Force;"

(b) "Periodically propose programs of inspection and recommend additional inspections and investigations;"

(c) Perform "any other duties prescribed by the (Secretary of the Air Force) SECAF or (Chief of Staff of the Air Force) CSAF."

Approved topics for these investigations are provided to TIG/AFISC/IGY by the Air Staff, which "prioritizes" the

many proposed topics, so that AFISC can plan for and allocate the resources and personnel needed to conduct the "high priority" investigations (76). "Proposed topics" may come from many sources, such as SECAF or CSAF, HQ USAF, SAF (the SECAF's support agencies), as well as the Major Commands (SAC, AFSC, and others), the PEOs, Office of the Secretary of Defense (OSD), and also individual program offices or agencies (74, 77); IGY/AFISC can also provide "proposed topics," which must be approved by TIG before submittal to the Air Staff (78). In those cases where IGY proposes topics, they often conduct one or two "data-gathering" trips prior to the final Air Staff "selection," so that the proposal can be revised to reflect more current and "detailed" information (about tasks, resources, and other issues). Once the topics have been finalized, Air Staff appoints a focal point for each topic, to address any questions the investigating agencies might have about that topic (78).

The AFISC/IGY can provide information about many of its SAMIs to many USAF organizations outside the "TIG to SECAF" hierarchy. However, certain information is considered "sensitive" or "for official use only," so all results must be screened (and edited if needed) before any "public" release (78).

IGY does not have a formal "lessons learned" process or program. Periodically (approximately every two years), a "special book," with observations culled from many

investigations, may be created - however, this document is usually limited in its distribution, since it often contains "sensitive" or similar information (78).

Once IGY has received its "priority proposals" list, it plans the various SAMIs - schedules, agencies to be visited, team "specialty" composition and size, special "subjects of interest" and similar factors are considered. In addition, the planners often coordinate their actions with the Acquisition Oversight Control Working Group (AOCWG)- a collection of representatives from various "evaluator" agencies such as AFISC, the IGs from the Major Commands, and the Air Force Audit Agency - to insure the team would not be interfering with other agencies' investigations. Then formal notice is given to the "main" agencies of interest - usually in a formal paper letter - of the intended schedule, so that proper facilities can be made available for use by the team (76).

Upon arrival at the "primary" agency to be visited, the SAMI team conducts an "in-briefing" for agency management. This briefing explains the reasons, goals, and objectives of the SAMI, and provides a forum for the team to request assistance and the agency management to offer their views and comments concerning the "proper course" for the SAMI (79).

Depending upon the topic of interest, a SAMI team may obtain information from various "levels" in the investigated

agencies, from the program managers/directors to specific "specialists" in the functional areas or management offices. This information tends to be in a "level oriented" form - "summary" information from higher levels, "background" data at medium levels, or "detailed report" information at the "worker bee" levels. The information may be provided in paper documents, computer files, videotapes, telephone conversations, or personal interviews, or other mediums as "appropriate" - or as outlined in various IGY office procedures and instructions relating to the conducting of a SAMI (78).

The SAMI team may "rearrange" the information they receive into whatever form needed to address the "topic of interest;" however, they must reference the original sources of the information, and also explain the context in which that information was contained (78).

When the SAMI team finishes its work, they present the results of the investigation (and their conclusions and recommendations) to the agency management at an "out-briefing." This information is usually contained in paper copies of charts or the actual "vugraph" overhead projection transparencies. However, the official "writeup" of their work is almost always put in a paper "report" form (79). This report contains an "executive summary" section, which "highlights" the SAMI purpose, scope, background, findings and recommendations, observations, and post inspection update sections; the report also contains attachments to

explain acronyms, identify the visited organizations, identify the team members, and other needed information. At the end of this report is a section with "reply instructions" - for agencies that must take action(s) to correct findings (which are considered problems or deficiencies) and a "distribution table" that identifies: the agencies that will receive this report; the # of copies they will get; the paragraphs in the report that explain what kind of reply is needed; and the type of "OPR" that the reply must be sent to, plus the suspense time interval for the reply (79).

IGY maintains the information from SAMIs in several different mediums and formats. The paper reports (and other paper documents) are very common, as are (of course) the personal memories of the SAMI team members. Computer magnetic disks are sometimes used - for working papers, draft correspondence, and similar items (78). Specific findings and observations can also be maintained in the Inspection Reporting Information System (IRIS). IRIS is an electronic database controlled by the Systems Development and Followup Branch, IGPD (80). These "findings and observations" are "formatted" into IRIS (by IGPD personnel) using IGY (or other agencies) inputs "placed" on the AFISC Form 0-41, "Inspection Finding Worksheet" (80); filling out the worksheet requires the use of the accompanying IRIS Coding Instruction booklet, and the "code definition" lists, which identify the numerical codes associated with various

subject areas, organizations, functional areas, actions, problem causes, classes of loss, and significances (81, 82).

IGY personnel maintain unofficial, "working" files that are generally indexed by whatever those individuals' current SAMIs indicate are "subjects of interest;" official files - that contain official correspondence, replies to SAMI findings, "record copies" of reports, and similar items - are kept by the Plans, Policy and Systems Division (IGP) office. If IGY personnel need to find or retrieve information, they can request it from IGP (if they feel it is "official"), ask other IGY members, search through their own work files, or work with IGPD personnel to check the IRIS database (78).

If IRIS use is desired, the searcher may request retrieval using a large variety of information "keys," that are based on the data input onto the Form 0-41. Such "keys" include: subject areas, project number, type of inspection, the Division which performed the inspection, the OPR for the finding, date of finding, functional areas, management actions, problem causes, and report status. Care must be taken with such a search, to help the would-be information user "save time in 'sorting through' computer output data" (81).

IRIS outputs are on "computer paper," and are intended only for use by AFISC personnel. Paper reports are often sent to other Air Force agencies, since the restrictions generally apply only to non-USAF agencies (78). However,

there is one form of "paper" document that can include SAMI-related information and also be released outside the Air Force: the "TIG Brief," AFRP11-1. This periodical is used to "spread the word" about subjects and issues that the TIG office feels would benefit Air Force members "if they knew about them." IGY personnel can write articles and submit them for TIG review (and hopefully publication); article subjects may include SAMI topics, as long as the "sensitive" information has been removed or "genericized" to avoid "inappropriate" comments about specific Air Force programs or agencies (76). Some examples of IGY articles published in "TIG Brief" include: "Spares Acquisition Integrated with Production," in the November-December 1990 issue; "Design of Experiments in System Acquisition," in the July-August 1990 issue; and "Artificial Intelligence as a TQM Tool," in the May-June 1990 issue (83, 84, 85).

IGY does not appear to use many "quantitative" metrics to evaluate their "information transfer" efforts (although the number of SAMIs actually performed is probably tracked for budgetary planning); IGP tracks the number of replies to SAMIs (and the due dates), and the distribution of "mailed" report copies (78). Most "qualitative" metrics involve informal (and formal) feedback from inspected agencies, "interested bystanders" such as support agencies, and TIG Brief readers; if the comments refer to "content" of a SAMI,IGY is given the comments and tasked to respond - otherwise, IGP handles the response. The apparent "lack of

metrics" is causing concern in IGY, as other "evaluator" agencies such as the AFSC IG are apparently "moving" to adopt detailed metrics (78).

IGY has been considering many changes, and is working to adopt several of them. For example, surveys (for organizations such as investigated agencies) are being discussed, to measure agency satisfaction with such SAMI actions as "in-briefs" and "out-briefs" and possibly other procedures; coordination with other "evaluator" agencies is being encouraged, such as expanded work with the AOCWG and the proposed "linking" of the IRIS database to the AFAA electronic database, which (like IRIS) is also located at Norton AFB (where part of the AFAA "resides"), but is in another building (78). Another idea that "has been mentioned" is to publish certain IGY articles in "non IG-oriented" periodicals, to reach different "readerships" and to profile their acquisition/management orientation (76).

Oversight/Management Agencies: The agencies in this sample subdivision include the Air Force Program Executive Office for Tactical Strike (AFPEO/TS), and the Air Force Program Executive Office for Tactical/Airlift (AFPEO/TA).

AFPEO/TS: The Program Executive Officer (PEO) for Tactical Strike (TS) is responsible for a set of major/selected acquisition programs that are being done to meet USAF (and joint service) "operational user" requirements for tactical, "air-launched" weapons and "air-directed ground support" capabilities. He (like all Air

Force PEOs) is directly accountable to the Assistant Secretary of the Air Force for Acquisition (who is also referred to as the Air Force Acquisition Executive, AFAE, or the Air Force's Service Acquisition Executive, SAE) and is expected to ensure the successful operation - in matters such as "cost, schedule, and performance (within baseline)" of those programs (86). The TS PEO (as well as any of one of his fellow PEOs) is able to "exercise his authority" in several ways, such as "issuing program direction to the program directors, baselining each program according to the (Acquisition Program Baseline) APB process, and having the (program directors) PDs report directly to him" (86). The programs within the TS "portfolio" include: the Advanced Medium Range Air-to-Air Missile (AMRAAM); the Sensor Fuzed Weapon (SFW); the Joint Surveillance and Target Attack System (JSTARS); the Tacit Rainbow antiradiation cruise missile; the Direct Airfield Attack Combined Munition (DAACM); and just recently added, the AGM-130A "boosted glide" guided bomb (87, 88).

Given these responsibilities, the AFPEO/TS personnel are able to (and usually do) work with a wide range of Air Force, other service and industry organizations. The most frequent interfaces are with the various SPOs, and their Program Element Monitors, or PEMs (who are concerned with matters pertaining to the planning, programming and budgeting process), who sit in the AFAE's "staff" office,

SAF/AQ (89). TS personnel also have extensive contacts with (88):

(a) "User" agencies, such as Headquarters Tactical Air Command (HQ TAC);

(b) the Army and Navy focal points for joint developments (like AMRAAM and JSTARS);

(c) Resource-providing agencies such as HQ AFSC, and the Aeronautical Systems Division (ASD) and the Electronic Systems Division (ESD);

(d) Supporting agencies such as the Acquisition Logistics Division (which "oversees" the Air Logistics Centers);

(e) Independent testing agencies such as the Air Force Operational Test & Evaluation Center (AFOTEC);

(f) Contractor corporate and program management offices for all of the relevant programs.

The authority given to the PEO/TS, to perform his mission and interface with such disparate groups, stems from the AFAE's 12 November 1990 "Charter for Air Force Acquisition Program Executive Officers and Designated Acquisition Commanders" memorandum (90). That memorandum is one form of implementation of certain recommendations from the 1986 Packard Commission's report on the DOD's weapons acquisition system (11) (see Appendix B for a diagram).

In keeping with those recommendations, the PEO's support staff has been deliberately limited in size by the AFAE (8). However, the PEO can organize his staff into

whatever "division of responsibilities" structure he feels would be most effective. In the AFPEO/TS office, the structure is primarily "program-oriented"- there are "action officers" who are responsible for all matters pertaining to specific programs, and also one person responsible for financial management issues of all the programs (89). There is also an "OSD Liason" individual, and administrative support personnel (91).

The "program" structure has proven most effective for this TS office, particularly with regards to the "firefighting" and communications duties that constitute a major portion of the AFPEO workload. This type of workload results from the basic focus of AFPEO personnel: to concern themselves with the major problems and issues facing their portfolio programs at any given time - those concerns that the PEO has the authority and resources to address, wherein an individual SPO might not (89). An example of such a problem would be finding funds to address a contractor's unanticipated (but justified) request for equitable adjustment to the price of a contract - the PEO has the authority to shift a certain amount of resources within his portfolio from one program to another, and could (depending upon the amount of the request) possibly make available the funds needed for that action (88). Addressing the many types of similar issues that arise, most of them requiring "quick and correct" solutions, is commonly known as "firefighting".

In order to perform successful "firefights," the AFPEO/TS personnel concentrate on creating a communications "network" of contacts at the various portfolio-related agencies; this network is used by the TS staff to provide and receive the extensive knowledge and cooperation these organizations need to address "firefighting" issues (88).

However, the TS "network" tends to contain only those agencies and individuals that are "currently" involved (in some manner) with the TS portfolio programs. There is little communication with other PEO offices, except when there are significant "cross-portfolio" program-related issues - such as past problems concerning AMRAAM integration with the F-15 aircraft, where the TS office worked with the AFPEO for Tactical/Airlift (AFPEO/TA) to address the issues (89). Similarly, there is little "general concerns" contact with other non-PEO agencies; some AFPEO/TS action officers did attend the "short-lived" Project Officers Group meetings, which were sponsored by HQ AFSC/XRM to address such concerns/issues (88).

The AFPEO/TS office has no structured "lessons learned" program; most of its "lessons" are provided informally - "from memories" of TS personnel - to those who seek the information, such as "network" contacts or outside agencies such as the various IGs (88). However, the TS PEO, Major General Stephen McElroy, has tasked the Tacit Rainbow Joint Program Office (JPO) to develop various "Lessons Learned" reports, to insure the "wealth of knowledge" obtained during

that program's ten year life is not completely lost due to its cancellation by the Secretary of Defense (89). One such report, which was circulated throughout the Aeronautical Systems Division (as well as the TS office) concerned the "lessons learned" from the source selection for Tacit Rainbow's Mission Planning System (92, 93).

When the TS office uses its "network" to obtain information, they communicate with various levels of management within the "source" agencies. A PEO normally communicates with individuals "equivalent" to him, in terms of their positions within their agencies. For example, the PEO will deal with the Program Directors in his SPOs, and usually the Chief Executive Officers (CEOs) of the companies contracting with those SPOs. The AFPEO action officers will regularly seek information from individuals lower in the "hierarchy," such as SPO projects directorate chiefs, company vice presidents, and the managers of the programs being performed for the SPOs (88). When dealing with SAF/AQ, the PEO will normally work with the Mission Area Directors (the individuals in charge of planning, programming, and budgeting functions for USAF acquisition efforts - by mission areas), while the action officers will normally deal with the PEMs (who work for the MA Directors) (88).

The TS office primarily uses telephone calls to describe its information needs - verbally or through "telefaxed" written memos or letters. Personal contact is

also utilized extensively; AFPEO/TS and SAF/AQ are both located in the Pentagon, while the PEO and the action officers travel extensively, to visit with various government and contractor organizations within the portfolio (89).

The "extent" of the information obtained is dependent upon the particular "subjects of interest" at that time; the TS PEO often obtains "executive summary" level information (and the "background" information that supports the summary), while the TS action officers usually obtain "status" information or "worker-level" information, to track the program efforts at a "detailed," sometimes "day to day" operational level (88).

The AFPEO/TS office generally gets its information through telephoned conversations or "faxed" memos and reports, or is given it verbally or visually at various meetings and briefings. Videotaped presentations, computer disks, "hardcopies" of briefing charts, or actual written reports are either "handed over" to the PEO/action officers at the meetings, or mailed "to the office" for AFPEO/TS use (89).

The TS office can "modify" this information in many different ways, depending upon the "final use" to which the information shall be put. For example, if the information is used in an Acquisition Executive Monthly Report (AEMR) for the AFAE, the useful data is summarized into the relatively short, "executive summary" form desired for

AEMRs. These reports are also used by the PEO to provide his personal assessments of the progress of his portfolio, and outstanding or upcoming issues facing his programs (88). If a Defense Acquisition Executive Summary (DAES) report is needed for the Undersecretary of Defense for Acquisition (also called the Defense Acquisition Executive), additional detailed information can be provided (since the DAES is required quarterly rather than monthly). If the data in draft briefings is intended for the Air Force Systems Acquisition Review Council (AFSARC) or the Defense Acquisition Board (DAB), the TS PEO visits the SPO and works with the PDs to develop the briefings (88). The PEO and action officers will review and comment on SPO-drafted documents such as Test and Evaluation Master Plan (TEMP). Much "realtime" information is also placed in "personal memos" or "Things to Do" lists (88).

The TS office maintains much of this "modified" information in an official filing system. "Paper" copies are kept in folders in safes (or filing cabinets), according to specific file plans which take into account the different programs and subjects of interest (88). Videotapes are secured and arranged by program/subject, while information stored on magnetic disks is also arranged by program or subject. Current, signed correspondence is kept in "read" files (88).

Additional information is maintained by the action officers in personal "working folders" (which usually

contain working papers, draft documents, and whatever "current" information the action officer is using), and (of course) their personal memories (89).

The "modified" information is usually kept in the "format" for which it is used ("summary" for AEMR, "extensive background" for DAES, and so forth). If it needs to be retrieved, the file plan can be used to find paper and video copies, while disc directories are used for electronic media (88).

The "modified" information is usually disseminated through mediums similar to those used to obtain it: telephone conversations or "telefaxed" documents, mailed documents, or personally provided at meetings (89).

In deciding "who" should receive such "modified" information, the TS personnel use mission requirements, laws or regulations, and their own judgement. "On-file" distribution lists can be used for certain information (such as the Tacit Rainbow "lessons learned" reports). Written and verbal requests are also considered, depending upon the identity of the requester, the nature of the material, and the uses to which the requester intends (or could intend) to put such information. Such considerations are important, particularly in situations where competing agencies may have provided information "off the record" or "in confidence" or where legal or contractual ramifications occur (88).

Once such considerations have been done, information is "passed on," usually to the appropriate "network" member(s) or other agencies who "should" get it (88).

The AFPEO/TS office does not use formal types of "quantitative" or "qualitative" criteria to judge the effectiveness of their "information processing." Informally, the TS personnel know who "provides," receives, and requests the information; they evaluate any comments/feedback received and respond if appropriate (88). For example, if a PEM asks for additional or clearer cost estimates, TS personnel would usually attempt to provide that information. Any solicitation of feedback is usually informal, such as a "what do you think of this draft?" request to a SPO (88).

The AFPEO/TS office has made several recent changes to its "information processing." For example, several of the "network" contacts can exchange information using an "electronic" telephone "link" between computer terminals. This system has transmitted information normally stored on magnetic disks; it has been very useful for "real time" information such as briefing charts and status reports (89). One action officer has also placed himself on the "mailing list" for electronic mail that the ASD's Eglin AFB location and ESD normally send to his programs at those sites (88).

The TS office also has more improvements "in the works." One example is an "offsite" meeting between the PEO and all of his PDs, currently planned for Fall 1991. This "offsite" will offer an informal opportunity for the PDs to

give comments, feedback, and suggestions to the PEO (and "vice versa") about how to improve "what we're (the AFPEO/TS) doing" (88). In addition, in a bid to become an "information hub," the TS office is evaluating a proposal that would allow a contractor to develop (and perhaps operate part of) an information management system that would augment the TS communications "network." Such a system offers the opportunity for the action officers to "quit fixing the computers and phones" and concentrate on their primary duties (88).

AFPEO/TA: The Program Executive Officer (PEO) for Tactical and Airlift (TA) is responsible for a set of major selected programs that are being done to satisfy USAF (and joint service) "operational user" requirements for tactical "counter air" and "interdiction" aircraft, tactical "heavy airlift" aircraft, "tactical training" aircraft, and tactical "friend or foe identification" capabilities. He has the same basic responsibilities to the Air Force Acquisition Executive (AFAE) as those of the PEO for Tactical Strike (and the other PEOs); he is able to exercise his authority in the same manner as his counterparts. The programs within the TA "portfolio" are: the F-15 "Eagle" air superiority and ground interdiction fighter; the F-16 "Fighting Falcon" counterair and multirole fighter; the F-22 Advanced Tactical Fighter; the C-17 advanced airlifter; the T-1A Training System; and the Mark XV "Identification Friend or Foe" combat identification system (94).

Given these responsibilities, the AFPEO/TA personnel are (like their AFPEO/TS "cousins") able to work with a spectrum of USAF, "sister" service, and industry agencies. These personnel (also) interface most frequently with their different SPOs, the appropriate PEMs in SAF/AQ. AFPEO/TA personnel also have extensive contacts with (95):

(a) "user" agencies such as Headquarters Military Airlift Command (HQ MAC), for the C-17;

(b) The Army and Navy focal points for "joint interest" programs such as C-17 and Mark XV (Army) and ATF (Navy);

(c) resource providing agencies such as HQ AFSC and Aeronautical Systems Division (ASD);

(d) Supporting agencies such as the Air Logistics Centers (ALCs);

(e) Independent testing agencies such as AFOTEC;

(f) Contractor corporate and program management offices for all of the "portfolio" programs.

The authority given to the PEO/TA is (as with the PEO/TS) based upon the November 1990 "PEO charter" written by the AFAE (90). The AFPEO/TA office is, like its counterparts, deliberately limited in size; the TA PEO, just as other PEOs, has "autonomy" in the formation of his "staff structure" (95).

The AFPEO/TA office (in June 1991) had an "action officer" structure, where the "action officers" were oriented to "mission" functional areas. There were four action officers, one each for Fighter Programs, Airlift and

Training Programs, Tactical Systems, and Financial Management. There were also executive and administrative support personnel (95, 91).

The AFPEO/TA personnel were also heavily involved in "communications" duties, in order to "provide clear, unambiguous direction to the SPOs" regarding the execution of their programs, and to "provide the environment needed by the SPOs" in order to achieve that program execution (96).

The "firefighting" activities similar to those performed by AFPEO/TS, were called "part of the job" by TA personnel, although the difference in terminology does not reflect any difference in commitment (to resolving the issues in question) (96).

The TA office (also) did not have extensive dealings with other PEO offices (95). However, when "cross portfolio" issues arose, or coordination on "PEO" responses to draft policies (provided by SAF, for example) was required, TA personnel would contact their counterparts in other AFPEOs, as needed (96).

The AFPEO/TA office had no formal "lessons learned" program or process. Certain formal "lessons learned" were acquired, in cases where special teams - such as Program Management Assistance Teams (PMATs) - were formed to assist the TA PEO in resolving specific questions or issues. However, those PMAT reports were usually considered "sensitive" information - often because certain information was provided "in confidence" to team members investigating

the various agencies involved in the issues - and therefore the "lessons" contained in the reports could not be disseminated to "non-involved" agencies (95). Most "lessons" were provided informally, often as "past experiences" (95, 96). Some "lessons" that were learned by TA personnel were used as the basis for their inputs to the draft policies and regulations that the AFPPEO/TA office reviewed - a "formal yet indirect" method of "passing on" lessons learned (96).

AFPEO/TA personnel also communicated with their "contacts" in other agencies according to the position levels (PEO to PD or CEO, action officer to directorate chief or vice president) as did TS personnel (95, 97).

Telephone conversations, "telefaxed" written memos, and personal contacts at meetings were AFPEO/TA personnel's most preferred methods of requesting, receiving, and providing information, although formal written letters and reports sent "through the mail" were commonly used techniques (95).

TA personnel (like TS personnel) would obtain a range of "extent" of information, from "summaries" for PEOs to "technical reports" for action officers. They would also (like the TS personnel) "modify" received information as needed to provide correct, clear information; examples include "writeups" such as AFAE "summary" reports, and "briefings" describing the AFPEO(TA) roles and responsibilities (98, 86, 94).

The TA office maintained much of the "modified" information in their official filing system. As with the TS office, paper copies were kept in folders in cabinets or safes based on specific file plans that accounted for the different "portfolio" programs and subjects of interest. The action officers also maintained informal "work folders," which had magnetic disks, working papers, and other "current projects," and also made extensive use of their memories (95).

The "modified" information was usually kept in the "format" for which it was used ("summary" for program baseline status sheets, "background" for management point papers, "extensive background" for AFPEO/TA briefings, and so forth) (99, 100, 94). If it needed to be retrieved, the file plan could be used to find paper copies, while disc directories were used for magnetic media - or other TA personnel could be consulted, if the personal folders did not contain the information "either" (95).

The TA office's "modified" information was usually disseminated through mediums similar to those used to obtain it: telephone conversations or "telefaxed" documents, mailed documents, or personally provided at meetings (95).

In deciding "who" should have received such "modified" information, the AFPEO/TA personnel used mission requirements, laws or regulations, and their own judgement (like their TS counterparts). TA individuals would always consider written and verbal requests based upon the identity

of the requester, the nature of the material, and the uses to which the requester intended (or could intend) to put such information. Such considerations were important, particularly in situations where competing agencies may have provided information "off the record" or "in confidence" (such as in the "PMAT" investigations) or where legal or contractual ramifications could occur (95).

Once such considerations had been performed, information was "passed on," usually to the appropriate contacts or other agencies who the TA office felt needed it (95).

The AFPEO/TA office (like the AFPEO/TS office) did not use formal types of "quantitative" or "qualitative" criteria to judge the effectiveness of its "information processing;" informally, the TA personnel knew who "provided," received, and requested the information; they evaluated any comments or feedback received and responded if "appropriate." For example, if a PEM asked for additional or clearer cost estimates, TA personnel would usually attempt to provide that information. Any solicitation of feedback was usually informal, such as a "what do you think of this draft?" request to a SPO (95).

The AFPEO/TA office is currently in the midst of substantial changes, that may or may not significantly affect their "information processing" or "lessons learned" efforts. The former PEO, Major General Edward Barry, has been selected for promotion and has moved on to another

position. The AFPEO/TA organization has been moved from Wright-Patterson AFB in Ohio to the Pentagon in Washington D.C., to join the other AFPEO offices; only one of the action officers "accompanied" the organization. The new PEO will choose his own "effective" staff structure and personnel, and thus determine the AFPEO/TA office's "ways of doing business" (95, 96).

Analysis

Once all the primary sample agencies had been surveyed (and the lack of need to add new samples to the investigation was confirmed), the "survey" information was analyzed. The intent of the analysis was to identify "patterns" in the characteristics of the agencies' operations (that dealt with "information processing" or "lessons learned"). The research questions and the topic checklist were used as the bases for "pattern recognition" criteria. The information was nominally sorted based upon these criteria - an agency "possessed" the characteristics called for in the criteria, or it "did not possess" those characteristics.

The "pattern recognition" criteria covered six basic categories of interest:

(a) The agencies' abilities to obtain RD&A project management-specific information;

(b) The type of "lessons learned" processes possessed by the agencies;

(c) The "modifications to obtained RD&A information" created by the agencies;

(d) The "maintaining" of modified RD&A information;

(e) The agencies' distribution of modified RD&A information;

(f) The agencies' measurement of the effectiveness of their "information processing" or "lessons learned" efforts.

The specific criteria used were:

(a) Access to RD&A program management information - does the agency have it;

(b) Obtaining RD&A project management information - does the agency actually do it;

(c) "Structured Lessons Learned-Type Efforts" - does the agency, in some manner, obtain, maintain, and disperse various "lessons learned-types of information" (or arranges for other agencies to do it);

(d) Formal Lessons Learned Process - does the agency specifically describe and control "lessons learned" definitions, formats, and acquisition, storage, and dissemination procedures;

(e) Modification of information - does the agency alter obtained RD&A project management information (add comments, emphasize key points, improve data clarity, or perform similar actions);

(f) Maintaining of information - does the agency store RD&A project management information (in particular

"modified" information) such that it can be identified and retrieved (in a useful form) for later review;

(g) Distribution of information - does the agency routinely distribute (or make available) "modified" RD&A project management information to organizations not in its "hierarchy of command;"

(h) Availability of Information to "Decision Makers" - does the agency routinely distribute (or make available) "modified" RD&A project management information to "oversight," "provider" or "evaluator" agencies not in its "hierarchy of command;"

(i) Availability of Information to "Decision Implementers" - does the agency routinely provide modified RD&A project management information to "information gatherers," training agencies, or program "executers" (such as SPOs) that are not in its "hierarchy of command;"

(j) Availability of Information to "Staff" - does the agency make the modified RD&A project management information available to personnel at "executive" and "support" levels within the "receiving" organizations;

(k) Metrics for Information Processing - does the agency (attempt to) measure the effectiveness of its "information processing" (or "lessons learned") efforts?;

(l) Quantitative Metrics - does the agency use "recorded" quantitative measurements to evaluate the effectiveness of its "information processing" (or "lessons learned") efforts?;

(m) Qualitative Metrics - does the agency use "recorded" qualitative measurements to evaluate the effectiveness of its "information processing" (or "lessons learned") efforts?;

(n) Formal Feedback - does the agency obtain (or create) documented comments and feedback from information processing/IP (or "lessons learned/LL") "customer" organizations, concerning the agency's "IP" (or "LL") efforts?;

(o) Solicited Feedback - does the agency use formal techniques (such as questionnaires, comment forms, interviews, or other "structured" methods) to obtain comments/feedback from information processing (IP), or "lessons learned" (LL) "customer" organizations, concerning the agency's IP (or LL) efforts?

(p) Feedback from "Staff" Customers - does the agency solicit (or obtain) "IP" (or "LL") feedback or comments from customer agency "support" and "executive" personnel?

The numerical values used to show whether or not the agency "possessed" (or "performed") the characteristics (or actions) called for by the criteria were 1 - to indicate "Yes," and 0 - to indicate "No." The "numbers" for each agency (using the specific criteria as the "independent variable") are shown in Table 1. The agencies are shown in the order they were profiled in the Findings section; the criteria are shown in the order they were listed in the previous paragraph.

TABLE 1

RESULTS FROM NOMINAL SORTING

(FOR FIRST EIGHT CRITERIA)

AGENCY	ALD	TQ	GAO	IGY	XRM	CY	TS	TA
CRITERIA								
PM Access	1	1	1	1	1	1	1	1
Obtained	1	1	1	1	1	1	1	1
Struct LL	1	1	0	1[b]	1	1	0[d]	0
Formal LL	1	0	0	0	1	0	0	0[d]
Modified	1	1[a]	1	1	1	0[c]	1	1
Maintained	1	1[a]	1	1	1	0[c]	1	1
Distributed	1	1[a]	1	1	1	1	1	1
Decis Makers	1	1[a]	1	1	1	1[c]	0	0

a Applies specifically to TQ's current "Wins" efforts

b Applies specifically to IGY's TIG Brief articles

c Applies specifically to CY's PM Seminars

d does not include Tacit Rainbow lessons learned efforts

e applies because of GAO report distribution problems

TABLE 1 (CONTINUED)

RESULTS FROM NOMINAL SORTING
(FOR SECOND EIGHT CRITERIA)

AGENCY	ALD	TQ	GAO	IGY	XRM	CY	TS	TA
CRITERIA								
Decis Implem	1	1[a]	0[e]	1[b]	1	1[c]	0	0
Staff Gets	1	1[a]	0[e]	1[b]	0	0[c]	0	0
Metrics	1	0[a]	0	0	1	0[c]	0	0
Quantity	1	0[a]	0	0	1	0[c]	0	0
Quality	1	0[a]	0	0	1	0[c]	0	0
Form Feedbk	1	0[a]	0	0	0	0	0	0
Solic Fdbk	0	0[a]	0	0	0	0	0	0
Staff Fdbk	1	0[a]	0	0	0	0	0	0

a Applies specifically to TQ's current "Wins" efforts

b Applies specifically to IGY's TIG Brief articles

c Applies specifically to CY's PM Seminars

d does not include Tacit Rainbow lessons learned efforts

e applies because of GAO report distribution problems

The results shown in the table were then scored, based on a subjective percentage figure as applied to two sets of sums - the totals per agency, and the totals per criteria.

Assuming that the "best" possible score for an agency "total" would be 16 - the number of criteria - and that the "best possible score for a criteria "total" would be 8 - the number of agencies - then the researcher selected 80% (of the "best" possible scores) as being the minimum "acceptable" percentage needed for the total scores. The rationale for the "80%" figure is based partly upon well-understood military effectiveness and reliability planning procedures; many military weapons development specifications are known to apply percentages of 95% or higher as the "minimum required" effectiveness or reliability. However, this investigation is mainly considering processes, which are generally not as well understood in terms of extremely accurate "measuring" criteria. Therefore, this researcher added a "safety factor" of 15% below the popular 95% , to compensate for "process uncertainties."

The results for the agency scoring are shown in Table 2, while the results for the criteria scoring are shown in Table 3; "Min Accept" is the minimum acceptable score, 80% of 16 (rounded to the nearest whole number), while the letters A through P are the criteria (where A stands for PM Access, B stands for Obtained, and so forth).

TABLE 2

RESULTS OF AGENCY SCORING

AGENCY	ALD	TQ	GAO	IGY	XRM	CY	TS	TA
SCORES								
Min Accept	13	13	13	13	13	13	13	13
Actual	15	9	6	9	12	6	5	5

TABLE 3

RESULTS OF CRITERIA SCORING
(FIRST EIGHT CRITERIA)

CRITERIA	A	B	C	D	E	F	G	H
SCORES								
Min Accept	6	6	6	6	6	6	6	6
Actual	8	8	4	2	7	7	6	6

TABLE 3 (CONTINUED)

RESULTS OF CRITERIA SCORING
(SECOND EIGHT CRITERIA)

CRITERIA	I	J	K	L	M	N	O	P
SCORES								
Min Accept	6	6	6	6	6	6	6	6
Actual	5	3	2	2	2	1	0	1

The reader may now be asking what these scores explain. Basically, these scores are a "first level warning

indicator," that alert the researcher (and the reader) that many agencies do not appear to possess most of the characteristics that the criteria would indicate are needed for a "good" lessons learned process. At the same time, the lack of "use" of certain criteria could indicate problems with the "appropriateness" of that criteria in the "real world." Note that a "visual" inspection of Table 1 would also have "pointed out" the various "locations" where there were many "zeros" and few "zeros;" however, the computations used for Tables 2 and 3 are less subject to "visual acuity" problems, and can also be easily verified by other people. In both cases, the researcher "re-reviewed" the "qualitative" information obtained in the investigation, to develop his conclusions and recommendations for further actions. Those topics are discussed in the following chapter.

Summary

This chapter presented the detailed findings about the eight sample agencies, in particular their "information processing" and "lessons learned" operations. It explained the nominal sorting techniques used by the researcher to analyze the findings, and presented the results of the scoring process in Tables 1 through 3. Chapter V will provide conclusions derived from the analysis, recommendations to improve the various agencies' "lessons learned" processes, and suggestions for future research.

V. Conclusions and Recommendations

Introduction

This chapter shall discuss the overall conclusions reached about the sample agencies' "lessons learned" process. It shall explain and recommend changes (to the "lessons learned" processes) that have the potential to improve the processes. It shall also provide recommendations for future research on this topic.

Conclusions

There were several "overall" conclusions (about the sample agencies' "lessons learned" efforts) that were readily reached, once the detailed findings were reviewed and the analysis performed. Some of these conclusions are:

(a) All of the sampled agencies regularly obtain (or can obtain) the detailed programmatic information needed as "raw material" for RD&A project management "lessons learned;"

(b) All of the agencies sampled have (or have access to) acquisition personnel who have the knowledge and experience needed to identify and create "lessons learned" (from the obtained programmatic information and their own backgrounds);

(c) Most of the sampled agencies do not appear to regard providing "lessons learned" (or similar information) for agencies outside their immediate area of responsibility

as a high priority - since few of those agencies had any sort of "lessons learned" effort, formal or otherwise;

(d) Much of the "information" or "lessons learned" processing that many of the sampled agencies do perform is oriented for the "executive level" agencies and individuals; "middle" and "lower" levels of management (agencies and individuals) do not appear directly involved and therefore may not significantly/directly benefit from such processing;

(e) The measurement of "information transfer" and/or "lessons learned" process effectiveness seems to be a concern only for those sample organizations who have direct responsibility for such processes - only those agencies have developed (or are developing) such "metrics."

Recommended Changes

Any attempts to improve the USAF's "lessons learned" processes should be examined from the "product" and "process" viewpoints - except in this instance, the "lessons learned" processes are themselves the "product," and the Air Force "culture" is the "process." Essentially, this means that the "long-term" approach to "lessons learned" issues will require changes in the way people in the USAF (and all other organizations that work with them) view their roles and responsibilities (the "culture"). With that thought kept in mind, this researcher has recommended several actions that would change the USAF's "ways of doing business;" such changes would have the potential to improve

"lessons learned" processes as they relate to RD&A project managers. These actions are:

(a) Conduct (a) detailed survey(s) - using questionnaires or semi-structured interviews - of all RD&A project management personnel in certain randomly selected acquisition-related organizations (such as SPOs), to get feedback directly from the people who should be "customers" (and sources) for "lessons learned." The goal of such (a) survey(s) would be to discover the ways in which various levels of RD&A managers believe they gain their acquisition management knowledge, and what role the various "lessons learned" programs play in the "acquiring" of that knowledge. To achieve this goal the surveys would seek to determine: "what" those management personnel know about "lessons learned" efforts; to what degree they support these processes; what faults, problems, concerns (or uses and advantages) they see in the current "lessons learned" programs; and also whether other, "non-acquisition" agencies such as the IGs or GAO are considered to be sources of "useful" management information. The surveys would certainly ask the recipients to provide comments and suggestions to improve "the information transfer" and "lessons learned" processes.

(b) Make "lessons learned" (LL) an integral part of the "Total Quality" philosophy. Significant improvements have been made in various acquisition operations once the principles and support structures of TQ have been used to

address problems. "Learn from others and do it better" would be a potential slogan for a "combined" LL/TQ philosophy; a more tangible step would be to form a Critical Process Team that would be charged with developing "improvements to existing knowledge transfer processes." Such a CPT team could be started "locally" but would have to be augmented with support from command level and Systems Division level agencies.

(c) Expand the responsibilities and resources of the Program Management DCS offices (or their equivalent organizations) to encompass "creating and providing" program management lessons learned. These "functional" offices would be allowed to "look across" the various RD&A programs ongoing at their Systems Divisions, then use that "across" perspective to create program management "lessons learned." The "perspective" concept is analogous to the "overview" idea used by the AFPEOs - except that the PM DCSes would not be responsible for program execution, but for "learning from" and "providing advice to" the program offices. The knowledge and "lessons" resulting from such access could be provided to individual agencies through the existing "program consultant" role, as well as to individual project management personnel via "home office" meetings, messages, or training sessions.

(d) Institute "lessons learned" usage and creation requirements as part of the various Program Reviews and Milestone Decisions that most RD&A programs have to satisfy.

If most RD&A agencies had to use or create lessons learned on a regular basis, then support for "lessons learned" could become "part of the job," rather than an "additional duty."

(e) Bring "evaluator" agencies "into" the acquisition process, preferably as early as possible. Many of these agencies' "inspectors" have been trained as acquisition professionals - for example, IGY's SAMI team members are all chosen from the ranks of "veteran" acquisition community members (74) - and/or have vast professional experience in dealing with acquisition issues; using them as "graybeard" advisors (particularly early in the development cycle) would tap that expertise, and perhaps give their agencies a greater appreciation for the problems that often arise in development and acquisition programs. As a part of such "integration," arrange for GAO and AFISC "RD&A related" reports to contain "lessons learned" sections, and for those reports to be provided to "the lowest levels" of Air Force RD&A organizations (not just HQs), so that the "widest dissemination of this knowledge" can be achieved.

(f) Have acquisition agencies work with the various training agencies, such as DSMC and AFIT, to develop additional or alternate "mediums" for providing "lessons learned." For example, AFIT/LSY has "contracted out" for development of a "computer-interactive" training tool, to support its Systems 100-200 acquisition management courses.

(g) Expand use of the concept of "interactive seminars," to where various acquisition "scenarios" or

issues (that would "expose" participants to "lessons learned") are presented in a "simulated acquisition experience." This is basically the same principle used by aircrews when they train using their aircraft simulators (although admittedly seminars aren't quite so "hands-on" oriented) - mistakes can be made, "lessons" can be learned, without the impacts (financial and otherwise) that "real life" errors would cause.

Most of these changes/actions just described would require significant time (and in certain cases resources) to implement. In the "immediate" time frame, several actions could be taken to improve the versatility and potential effectiveness of existing (or developing) "lessons learned" programs. Some of the possible actions include:

(a) Expand the AFSC Program Managers Lessons Learned Process, to allow lessons that were created by people other than just program directors. The current arrangement does not consider the extremely time-consuming duties most program directors face - thus, many PDs may feel they should "fight the fires first" and provide "lessons" later. If so, then few lessons would get submitted (in point of fact, only "a few" lessons <u>have</u> been provided to date). However, it is often much more feasible for PDs to "revise and alter" draft documents, rather than creating the documents themselves. If this avenue were allowed for the PMLLP, more lessons might be submitted - particularly if PDs tasked their managers to provide draft LLs at regular intervals.

(b) Allow "background papers" and longer documents to be input into the Air Force Lessons Learned Program (AFLLP) database. The current format for AFLLP lessons is suitable, when viewed in the role of a "synopsis" or an abstract. However, many individuals (inside and outside the sampled agencies) have expressed concerns that the complexities and "nuances" of most RD&A efforts are extremely difficult to "condense" into the one or two pages that are currently the limit for a "lesson learned." Therefore, certain details may be "left out" or "overlooked" that could impact the usefulness of the "lesson." An example might be the lesson: "contractor-government working groups should be used to coordinate development on full-scale development programs." If the lesson was written based upon a "cost-plus" type of development, the lesson might not explain the type of contract used and the contractual ramifications a person on a "fixed-price" contract might encounter if they attempted to use this lesson after contract award. A "background paper" or longer input, concerning such a lesson, would be able to include much of the "context" information that would explain the contract background, and the impacts of such an action on the contract. In addition, allowing longer documents (such as the Tacit Rainbow Mission Planning System "lessons learned" document) would provide a larger, more "contextual" oriented information source. In those cases where the document is too long, establish a physical location (such as a technical library or possibly a history

office) to hold the "paper" copies. "Off-site" information could be referenced in the "normal" lessons learned format.

(c) Restart the Project Officer's Group (POG) meetings. These POG sessions, attended by AFPEO and AFSC "action officers," would be an excellent forum for discussing common issues and concerns, and could be used by the PEOs to provide "lessons learned" through their action officers; the AFSC "recipients" of those lessons could in turn (as appropriate) provide the "lessons learned" through the PMLLP to other acquisition organizations. In addition, such meetings would maintain/enhance the AFPEO/HQ AFSC communications that are currently "decreasing," because of the HQ AFSC "move" to Wright-Patterson AFB.

The previously described changes are but a few of many possible changes. This researcher feels these changes are "doable" and should improve the USAF's "lessons learned" concepts and processes.

Recommended Future Research

This investigation has essentially been the first phase of a multi-phase effort to examine existing and potential "lessons learned" processes and support improvements to those processes. Time and resource constraints prevented a full investigation of "all" possible "lessons learned" processes and also the initiation of the second phase of the effort - "customer" surveys. In this second "part," a survey such as the one described in the Recommended Changes

subsection would be designed, developed, and conducted, using a representative sample of RD&A agencies as "recipients." The results would be analyzed, to form the basis for additional recommended changes. Such a survey could then be modified and redone to gather information about the results of any changes implemented after the initial survey (such as changes recommended in this study, or changes started as "resulting by-products" of this investigation).

APPENDIX A

TOPIC CHECKLIST

TOPIC #1: Possibility For RD&A "Lessons Learned"

Purpose of Interview Questions: To identify the purpose and general features of the specific agency being investigated; the answers should indicate whether or not the agency is (or could be) a "processor" of RD&A program information that is (or should be) used for project management "lessons learned." Such data would also indicate if that agency had been "placed" in the appropriate sampling subdivision.

Objective A: Identify the purpose/mission of the sample agency being investigated.

--- Oversight/Management?

--- Provider of Resources/Support?

--- Evaluator/Advisor?

--- Gathering of Information?

--- Other?

Objective B: Determine the focus of sample agency's interfaces with USAF organizations (who they work with to accomplish their mission).

--- RD&A organizations?

--- Major Commands (MAJCOMMs)?

--- Weapon systems "User" or "Maintainer" organizations?

--- Others?

Objective C: Identify the justifications used by the sample agency to obtain program information from RD&A agencies.

--- Common goals/purposes?

--- "Corporate" Structure?

--- Laws or regulations?

--- Policies or agreements?

--- Personal relationships or "expected" behavior?

--- Others?

Objective D: Find out the relevant "subject areas" the sample agency is interested in when it interfaces with USAF RD&A organizations.

--- Financial operations?

--- Project management?

--- Technology development?

--- Logistics?

--- Others?

Objective E: Identify whether or not sample agency can (or does) provide RD&A information it obtains to agencies outside its "hierarchy of command" (which is those agencies directly "above" and "below" the subject agency in its own organizational structure)

--- Agencies with similar or complementary missions?

--- Organizations with missions similar to those of "interfaced" USAF RD&A agencies?

--- Others?

Objective F: Determine whether or not the sample agency has a specifically identified "lessons learned" (or equivalent term) process.

--- Formal "Lessons Learned" (or equivalent term) Program?

    --- Official, documented policies, procedures, and techniques for acquiring, maintaining, and disseminating "lessons learned" (or equivalent term) information?

--- Informal "lessons learned" (or equivalent term) efforts?

    --- Unofficial (or undocumented) policies, agreements, practices, and methods for obtaining, formatting, and "passing on" information such as "things to avoid," "lessons learned," "best ways of accomplishing (Task X)," and similar knowledge?

TOPIC #2: Information Processing

Purpose of Interview Questions: To determine: the specific types of organizations (and individuals) from which the sample agency obtains RD&A program information; the methods that agency uses to "modify" and "comment on" the information it obtains; the ways in which the agency "passes on" the "altered" information to other organizations. The answers should describe the agency's methods of processing (acquiring, maintaining, and disseminating) actual (or potential) "lessons learned" information.

Objective A: Identify the sample agency's sources of RD&A program information.

--- Program Directors/Managers?

--- Program Personnel?

--- On-Site Representatives?

--- Different Non-Program Agencies?

--- Different Program Offices/Organizations?

--- Others?

Objective B: Describe the methods used by the sample agency to identify and communicate its information "needs" to the information sources.

--- Written requests?

--- Telephone?

--- Videoteleconference?

--- Personal contact?

--- Other?

Objective C: Determine the categories of the "subjects of interest" information requests made by the sample agency (to the RD&A organization).

--- Program/project/subproject?

--- Command/Systems Division/SPO (or equivalent hierarchy)?

--- Functional specialty (engineering, management, others)?

--- Special Interest (development testing and evaluation, information management, maintenance, others)?

--- Others?

Objective D: Describe the "extent format" the RD&A information (that the sample agency obtains) is in.

--- "Executive Summary" (primarily main points/issues)?

--- "Background/Status Report" (main points plus some "details" and general background)?

--- "Worker-Level Review" (main points plus extensive "details" and background)?

--- Other?

Objective E: Identify the medium(s) in which RD&A program information is furnished to the sample agency.

--- Written documents?

--- Verbal (telephone)?

--- Personal contact (meetings, briefings, others)?

--- Audiovisual media?

--- Electronic transmission?

--- Magnetic media?

--- Other?

Objective F: Determine the types of changes that the sample agency makes (or has the furnishing agency make) to the "regular" content/structure of furnished RD&A information.

--- Reorder/reformat?

--- Rephrase/rewrite?

--- Edit (remove information)?

--- Add additional comments/data?

--- Emphasize important ideas/features?

---- Key Points (or "lessons learned")?

--- No changes?

--- Other?

Objective G: Describe the medium(s) in which the sample agency maintains the (changed) information.

--- "Paper" copies?

--- Electronic database/files/software?

--- Magnetic or optical discs?

--- Audiovisual media?

--- Personal memories?

--- Other?

Objective H: Identify the "materials" (or document types) that the sample agency keeps this information in.

--- Reports, briefings, background papers, others?

--- Logs, working notes, drawings, diagrams, others?

--- Official Forms, files, notebooks, books, others?

--- Other?

Objective I: Determine the subject "indexes" used by the sample agency to store/maintain the (changed) information.

--- Program/project/subproject?

--- Service/Command/Systems Division/SPO (or equivalent organizational hierarchy)?

--- Functional category (financial, management, others)?

--- Special Interest (specific technology, support equipment, others)?

--- Alphabetical order/program element/other codes?

--- Other?

Objective J: Determine the "extent format" used by the sample agency to store/maintain this information.

--- "Executive Summary" (primarily main points/issues)?

--- "Background/Status Report" (main points plus some "details" and general background)?

--- "Worker-Level Review" (main points plus extensive "details" and background)?

--- Other?

Objective K: Describe the methods used by the sample agency to find and retrieve stored RD&A (changed) information when it is needed.

--- Electronic "key word" search software?

--- Personal research in files?

--- Card catalog/file plan?

--- Other?

Objective L: Determine the categories in which the (changed) RD&A information is disseminated by the sample agency (to other organizations).

--- Program/project/subproject?

--- Command/Systems Division/SPO (or equivalent hierarchy)?

--- Functional specialty (engineering, management, others)?

--- Special Interest (development testing and evaluation, information management, maintenance, others)?

--- Others?

Objective M: Describe the medium(s) in which the sample agency "sends out" the (changed) information.

--- "Paper" copies?

--- Electronic database/files/software?

--- Magnetic or optical discs?

--- Audiovisual media?

--- Telephone (verbal)?

--- Personal contact?

--- Other?

Objective N: Identify the "materials" (or document types) that the sample agency provides this information in.

--- Reports, briefings, background papers, others?

--- Pamphlets, brochures, periodicals, "news updates", presentations, others?

--- Official Forms, files, notebooks, books, others?

--- Other?

Objective O: Identify the methods used by the sample agency to decide what organizations/individuals should receive (or have access to) the (changed) information.

--- Distribution List?

--- Written requests/direction?

--- Verbal requests/direction?

--- Access codes?

--- Mission requirements?

--- Other?

Objective P: Determine what types of agencies/individuals receive the (changed) RD&A information that this sample agency disseminates.

--- all U. S. Government personnel?

--- all Government contractors?

--- Congress/the President/Secretary of Defense/others?

--- Program Directors/Managers/Executive Officers/others?

--- Other "information processing" agencies?

--- Most MajComms/SPOs/Labs/other RD&A personnel?

--- Anyone who asks (or Other)?

TOPIC # 3: Process Evaluation Criteria

Purpose of Interview Questions: To describe the various criteria the sample agency uses to judge the effectiveness of its "information processing" efforts. The answers should provide an indication of whether or not the sample agency should adopt additional criteria/metrics (and if a draft set of such metrics - such as a customer survey? - should be considered/drafted/developed as part of this study).

Objective A: Identify the various types of "quantitative measurement" criteria used to evaluate the sample agency's "information processing" efforts.

--- During a Given Time Period,

    --- For "All" (an aggregate total) Types of (Changed) RD&A Information:

        --- # of agencies that provide?

        --- # of organizations that receive?

        --- # of agencies that request?

        --- # of individual submissions?

        --- # of individual "receptions"?

        --- # of individual requests (for)?

        --- # of comments/feedback from agencies and organizations?

            --- # from providers?

            --- # from receivers?

            --- # from requesters?

        --- # of comments/feedback from individuals?

            --- # from providers?

--- # from receivers?

--- # from requesters?

--- For a Certain Category (management, logistics, financial, others) of (Changed) RD&A Information:

--- # of agencies that provide?

--- # of organizations that receive ?

--- # of agencies that request?

--- # of individual submissions?

--- # of individual "receptions"?

--- # of individual requests (for)?

--- # of comments/feedback from agencies and organizations?

--- # from providers?

--- # from receivers?

--- # from requesters?

--- # of comments/feedback from individuals?

--- # from providers?

--- # from receivers?

--- # from requesters?

--- Other?

Objective B: Determine the various types of "qualitative measurement" criteria used to evaluate the sample agency's "information processing" efforts.

--- Identity of agencies/individuals that provide the (changed) RD&A information?

--- Identity of organizations/individuals that receive (changed) RD&A information?

--- Identity of agencies/individuals that request (changed) RD&A information?

--- Are these agencies/individual "inside" or "outside" the sample agency's "hierarchy?"

--- Content of comments/feedback from "customers" (the "changed" information providers, receivers, requesters, and others)?

--- "Procedural" (process earlier/later, more copies for one agency, others)?

--- "Substance" (add more customers, improve clarity, get information from more or different sources, focus on different subjects, and so forth)?

--- Fiscal Constraints (is there money for new software, hardware, travel, and such)?

--- Identity of agencies that give comments/feedback?

--- Provider?

--- Receiver?

--- Requester?

--- Others?

--- Inside or Outside Hierarchy?

Objective C: Describe the techniques used by the sample agency to obtain comments/feedback about their "information process" from their "customers."

--- Unsolicited Comments/Feedback

--- Questions, concerns, inquiries, suggestions, direction, other?

--- Solicited Comments/Feedback

--- Informal ("what are you doing with the information, is information useful, do you have any thoughts or comments on our methods")?

--- Verbal, personal contact, request memo, other?

--- Formal (for the record)

--- Customer comment forms?

--- Questionnaires?

--- Customer-generated "usefulness" reports?

--- Structured interviews?

--- Meetings with customers (with meeting minutes, memos for record, other)?

--- Customer-generated "progress" briefings?

--- No formal methods?

--- Other?

--- Other?

TOPIC # 4: Changes/Improvements to Information Processing

Purpose of Interview Questions: To profile current and proposed changes/improvements to the sample agency's information processing practices. This information will be used as part of the basis for the researcher's recommendations regarding for changes/improvements to the sample agency's information processing and "lessons learned" practices.

Objective A: Identify recent (within the previous 6-9 months) changes and improvements that have been suggested by agencies/individuals that are not part of the sample agency.

--- Who made suggestions?

--- Providers, receivers, requesters, others?

--- What types of Suggestions?

--- "Procedural" (process earlier/later, more copies for one agency, others)?

--- "Substance" (add more customers, improve clarity, get information from more or different sources, focus on different subjects, and so forth)?

Objective B: Describe the changes and improvements that the sample agency is implementing/considering.

--- What types of Suggestions?

--- "Procedural" (process earlier/later, more copies for one agency, others)?

--- "Substance" (add more customers, improve clarity, get information from more or different sources, focus on different subjects, and so forth)?

--- Who suggested these changes/improvements?

--- Internal (offices or individuals within the sample agency?

--- External (Customer agencies/individuals)?

--- Other?

Objective C: Determine the justifications cited by the sample agency for implementing/considering the changes and improvements.

--- Deficiencies in current methods?

--- New capabilities not previously available?

--- Hardware?

--- Software?

--- Organizational structure?

--- Different relationships between agencies or individuals?

--- Other?

--- Direction from higher levels in hierarchy?

--- More efficient methods?

--- Customer "preference"?

--- Other?

Appendix B

Excerpts From Selected Sources

1. Air Force Form 1251, Potential Lessons Learned Submittal Record, Jan 90 (page 128)

2. AFSCR 550-19, Commander's Policies - Program Management Lessons Learned Process, 28 June 1991 (pages 129-130)

3. Air Force Acquisition System (Diagram) (page 131)

POTENTIAL LESSONS LEARNED SUBMITTAL RECORD		
TO: ALD/LSE WPAFB,OH 45433-5000		FROM:
NAME:	DATE:	PHONE (AUTOVON OR COMM)
TOPIC:		
LESSON LEARNED:		
PROBLEM:		
DISCUSSION:		
RECOMMENDED ACTION:		

AF FORM 1251 JAN 90 PREVIOUS EDITIONS ARE OBSOLETE
(MAY BE LOCALLY REPRODUCED)

DEPARTMENT OF THE AIR FORCE
Headquarters Air Force Systems Command
Andrews Air Force Base DC 20334-5000

Commander's Policies

PROGRAM MANAGEMENT LESSONS LEARNED PROCESS

1. Meeting the challenges of today's acquisition environment requires us to avoid past mistakes—our Lessons Learned. To facilitate this effort, we've pulled together many ideas into an integrated, comprehensive Program Management Lessons Learned Process (Atch 1).

2. Access to the Air Force Lessons Learned database has been simplified, and a Program Director's (PD) area has been added. The Program Director's area consists of unedited Lessons Learned disseminated from an "as it happens/as required" electronic information network (INFONET). The HQ AFSC/XR Lessons Learned INFONET contains executive level, fast-breaking insights/experiences provided by the Service Acquisition Executives, Program Executive Officers, and the Program Directors. Program Directors should also capture and share with their peers the Lessons Learned from key program events. The media used could be videotapes, inputs to HQ AFSC/XR's Lessons Learned INFONET, or letters to me. We will arrange to share them throughout the command.

3. The product divisions will establish face-to-face meetings between program offices for disseminating Lessons Learned information. One form of these meetings is PD Circles, a forum for discussing cross-program impacts of your ongoing activities with a common contractor or subcontractor. Discussions between the product divisions or within a product division result in a more uniform corporate strategy for dealing with a common contractor.

4. I expect Program Directors to encourage their subordinates to support the Air Force Lessons Learned Program. In doing so, I urge you to use appropriate caution when dealing with sensitive or proprietary data.

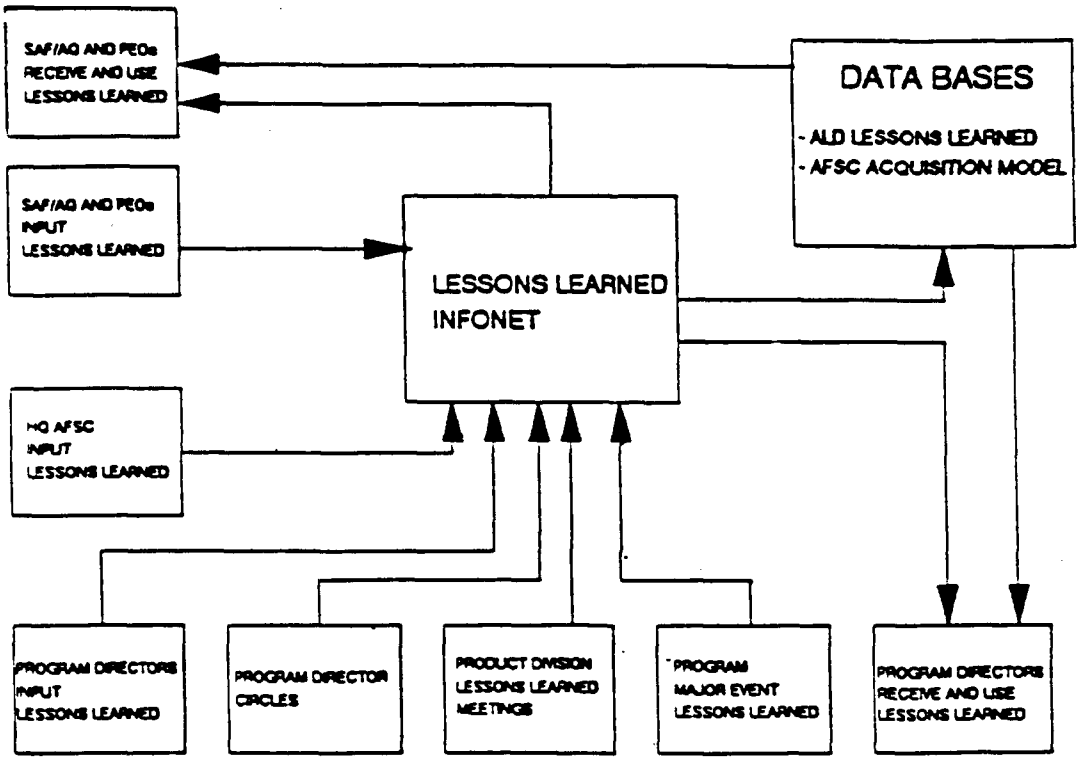
5. No process is complete without metrics. HQ AFSC will report progress on the segments we are responsible for, and I expect each product division to develop metrics and to report their progress. HQ AFSC/XR will work with you to establish standard metrics and will revitalize this critical Lessons Learned process.

RONALD W. YATES, General, USAF
Commander

1 Atch
AFSC Program Management
Lessons Learned Process

AFSCR 550-19
28 June 1991

AFSC PROGRAM MANAGEMENT LESSONS LEARNED PROCESS



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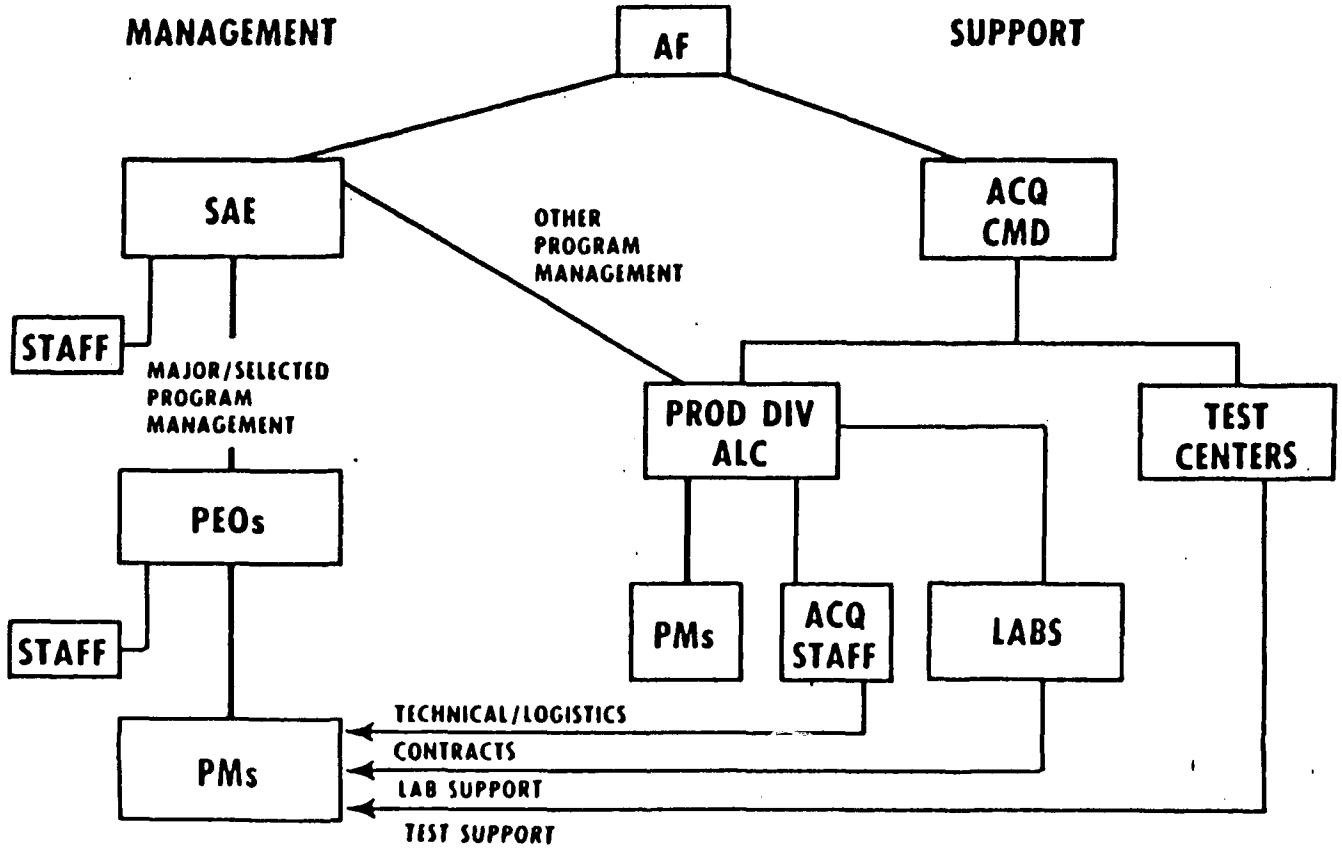
ASD/CS, Wright-Patterson AFB OH 45433-6503 10
ESD/CS, Hanscom AFB MA 01731-5000 10
FTD/CS, Wright-Patterson AFB OH 45433-6508 10
HSD/CS, Brooks AFB TX 78235-5000 10
SSD/CS, Los Angeles AFB CA 90009-2960 10
HQ AFISC/IMP, Norton AFB CA 92409-7001 1
AUL/LSE, Maxwell AFB AL 36112-5564 1

AFSC—Andrews AFB DC 1991

AIR FORCE ACQUISITION SYSTEM



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Vita

Captain Mark W. McNabb was born on 7 September 1958 in Gainesville, Florida. He graduated from Gainesville High School in 1976 and attended the University of Florida, graduating with a Bachelor of Science in Mechanical Engineering in August 1981. In February 1982 he joined the Air Force. Upon graduation from Officer Training School in May 1982, he was assigned to the Air Force Armament Laboratory, Eglin AFB, Florida. He initially worked as a dispenser weapons design engineer, supporting low altitude dispenser and bunkered target munition development programs. In January 1984 he became a small arms development engineer, and later acted as program manager for all Air Force development efforts in the Joint Service Small Arms Program. In August 1986, he was re-assigned to Aeronautical Systems Division, Wright-Patterson AFB, Ohio. He initially served in the Strategic Systems Program Office, as a munitions subsystems development manager. In 1988 he became a member of the Special Projects Office. There he managed subsystems development, and later contracts changes, for various highly advanced, classified aeronautical systems technologies, until he entered the School of Systems and Logistics, Air Force Institute of Technology, in May 1990.

Permanent address: 525 NW 32nd Avenue
Gainesville, FL 32609

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13. ABSTRACT (Maximum 200 words)
This study investigated the types of processes used by certain U.S. government agencies to provide "lessons learned" that could be used by USAF research, development and acquisition project managers. Areas of interest include the types of agencies that could provide "lessons learned"; the sources, methods, and techniques these agencies use to process (acquire, maintain and disseminate) management information such as lessons learned; and the measurement criteria the agencies use to evaluate the effectiveness of these processes. A general literature search helped to identify eleven candidate agencies; eight were chosen for full investigation. A survey of each "sample" agency was conducted. The survey obtained "agency description" information/materials for review, then used follow-up interviews to clarify/update that information. Final information was analyzed using nominal sorting and scoring techniques. Results indicated "information gatherer" and "resource provider" agencies tended to have "lessons learned" programs, while "evaluator" and "oversight/management" agencies did not. A similar pattern was seen regarding the use of "information/lessons learned" process "metrics". Several changes to improve "lessons learned" processes were suggested.

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