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ANALYSIS OF THE EXPENDITURE FORECASTING PROCESS WITHIN AIR FORCE SYSTEMS COMMAND WITH EMPHASIS ON THE REALIZATION OF EXPENDITURES

THESIS

Timothy R. Thomas, Captain, USAF

AFIT/GCA/LSY/91S-13

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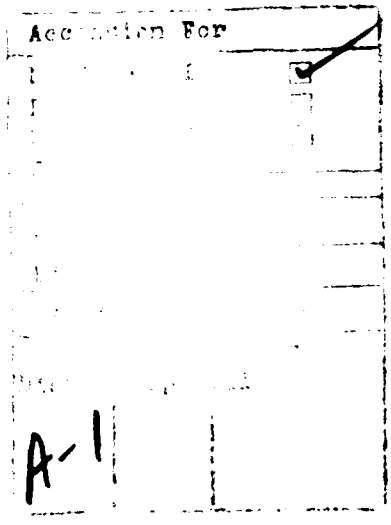

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THESIS

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Timothy R. Thomas

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Abstract

This study investigated and documented the expenditure process within Air Force Systems Command. Specifically, this study examined the process between the time of obligation and the time of expenditure realization. Data gathered demonstrated no significance for predicting expenditure realizations.

The primary focus was a graphic analysis for tendencies in the data. RDT&E appropriation tendencies proved to be similar to those for aircraft procurement appropriations. Obligation size by itself proved to be an unimportant factor in predicting expenditure realizations. The data demonstrated that approximately 85% of obligations will experience an expenditure within three years after the effective date of the obligation. This three year window is too large an area of uncertainty for predicting expenditure realizations. It was also found within this three year window an expenditure was just as likely to occur in the first, second, or third year. The results do further amplify the difficulties of producing an expenditure forecast.

ANALYSIS OF THE EXPENDITURE FORECASTING PROCESS WITHIN AIR FORCE SYSTEMS COMMAND WITH EMPHASIS ON THE REALIZATION OF EXPENDITURES

I. Introduction

Chapter Overview

This chapter first identifies the existing problem of expenditure forecasting within the acquisition environment of Air Force Systems Command's (AFSC) financial management community. Secondly, the specific problem is explained, and the need for the research in this important area is underscored. The chapter then presents an outline of the specific research objectives, and closes with a discussion of the scope of the research.

General Issue

Each Program Control (PC) office in each System Program Office (SPO) within AFSC is responsible for submitting updated expenditure forecasts annually, at the very least. These updated forecasts are developed in detail for every contract for which the SPO is responsible. Then the contract forecast updates are compiled to produce the total SPO program forecast.

Currently, there is no prescribed methodology for use by the PC analysts in preparing the expenditure forecasts.

The analyst may use any number of procedures to produce the expenditure forecast. This freedom is based on the fact each analyst has the responsibility of knowing he will eventually have to defend this forecast. A popular method of forecasting expenditures on a contract basis is through the use of the contractor produced Contract Funds Status Report (CFSR). The CFSR is used to assist in predicting amounts and dates of occurrence for expenditures belonging to the contract. Another method of forecasting expenditures could be as simple as using a percentage of expected obligations. These two methods along with other methods currently used by the PC analysts are inconsistent when predicting expenditure occurrences. The problem is no method consistently predicts the dates of occurrence for expenditures.

This problem of forecasting expenditures has many facets. There are numerous directions for which a study of expenditure forecasting could pursue. The time period from the point of obligation to the point of expenditure realization is one of the facets which requires documentation.

The point of obligation is considered to be the effective date of obligation which is stamped on the obligation document. An obligation is a documented transaction which constitutes a legal requirement for the contractor to furnish supplies or services and for the government to incur an expenditure at some future date

(1:1145). The point of expenditure realization occurs when the expenditure is officially recognized as an expenditure. An expenditure occurs when the government makes a payment on an invoice or similar document presented by the contractor (1:1145). This will be further discussed in Chapter II.

An analysis of the aforementioned time period is required if establishing a consistent method for forecasting the dates of occurrence for expenditures is to be achieved. It is believed this analysis will provide the PC analyst with needed information which will assist in predicting the dates of occurrence for expenditures. If the final analysis of the time period displays a distinct trend, then the PC analyst will be able to use this research to better forecast the dates of occurrence for expenditures.

Specific Problem

The specific problem is no forecasting methodology has been developed which consistently predicts the dates of occurrence for expenditures. Accordingly, an analysis and detailed documentation of the process from the time of obligation to the time of expenditure realization should be performed.

The forecast created by the PC analyst is one way to measure the SPO's fund control performance, so it is important to create a forecast the SPO can imitate. It is, also, significant to realize "all stages of the Department of Defense's (DoD) budget formulation and execution process

are supported by the use of this forecast" (1:505). Also, "Congress and The Office of the Secretary of Defense (OSD) are concerned with Defense-related Treasury expenditures at the total Federal budget level" which this forecast supports (1:1145). The Air Force's financial credibility is truly at stake because of the accuracy of the expenditure forecasts (1:273).

Research Objectives

The following research objectives were developed to further identify the expenditure forecasting process and all the organizations which have a role in its outcome:

I. Identify the route of the expenditure forecast from the task conception to the final report destination.

A. Identify the responsible organizations which are involved in the task distribution process of expenditure forecast.

B. Identify the responsible organizations for the expenditure forecast, once it has been developed, until it reaches its final destination.

II. Identify the objectives of the expenditure forecast by describing how the information in the expenditure forecast is used by the organizations for which the forecast has been developed.

III. Describe in detail the process from the time of obligation to the time of expenditure realization.

A. Identify when an expenditure is realized.

B. Identify the organizational route the process follows once an obligation has occurred.

The last research objective was developed in an effort to clarify the uncertainties which exist when attempting to forecast the occurrence of expenditure realizations. To accomplish the following research objective, data analysis was performed:

IV. Identify the length of time from the point of obligation to the point of expenditure realization.

Scope of the Research

An extensive study of the process from the time of obligation to the time of expenditure realization would be an enormous undertaking. The scope of this analysis had to be scaled down accordingly.

The process within the contractor environment would be a study by itself. Every contractor has a different accounting system of his own. It was determined the most important aspect to the PC analyst was the concern over time measurement within the contracting environment and not the contractor's billing process. Therefore, each funding action will be assessed for time from the point the obligation document transfers from the SPO to the contractor to the point in which an expenditure is realized. Thus, the contractor's accounting system is bypassed without losing the impact created by its operations.

Another scope limitation is that of selecting the funding documents to be examined. In the attempt to make sure this study would not be influenced by any single acquisition program bias, it was decided to select funding documents on a contract basis.

There are numerous acquisition contracts within AFSC. Due to this large database of acquisition contracts, it was decided to concentrate on one product division within AFSC. Since the major aircraft contracts within Aeronautical Systems Division (ASD) control a large percentage of the Air Force funds, and have a significant influence on expenditures, ASD was the likely choice.

In attempt to make the database of contracts more manageable, it was decided to limit the analysis to the two most frequently used appropriations within AFSC. These two appropriations are Research, Development, Test, and Evaluation (3600) and aircraft procurement (3010).

The last scope adjustment was to eliminate any complex categories of the system which would tend to confuse the study. Progress Payments are an example of items which were not included because of the increased confusion identified with tracking these funding actions through the system.

Chapter Summary

This chapter first identified a problem with expenditure forecasting which exists within the acquisition environment of AFSC. The specific problem was then

explained, and the need for research was emphasized. An outline of specific research objectives was presented, and, lastly, the scope of the research was discussed. The next chapter will discuss all background information which is vital to understanding and resolving this problem. The next chapter will also completely satisfy the requirements of the first three research objectives.

II. Background of the Problem

Chapter Overview

This chapter presents an overview of the AFSC expenditure forecasting arena. The chapter first reviews the different classification of funds. Secondly, this chapter discusses forecasting and its role in the AFSC financial community. This portion of the chapter also identifies the hierarchy and conception of the forecast requirement. The last section of the chapter introduces two information sources which need to be reviewed when creating an expenditure forecast. The two information sources discussed are the OSD goals and CFSRs.

Classification of Funds

The funding process within the acquisition environment of AFSC initiates three types of funding actions. These funding actions are classified and accounted for as commitments, obligations, and expenditures. Figure 1 is an illustration of the funding process within AFSC.

Commitments occur when funds are reserved administratively showing an intent to incur an obligation. An obligation is a documented transaction which constitutes a legal requirement by the contractor to furnish supplies or services, and a legal requirement for the government to pay for any items at completion or delivery. There are, of course, legal exceptions to this definition, but these

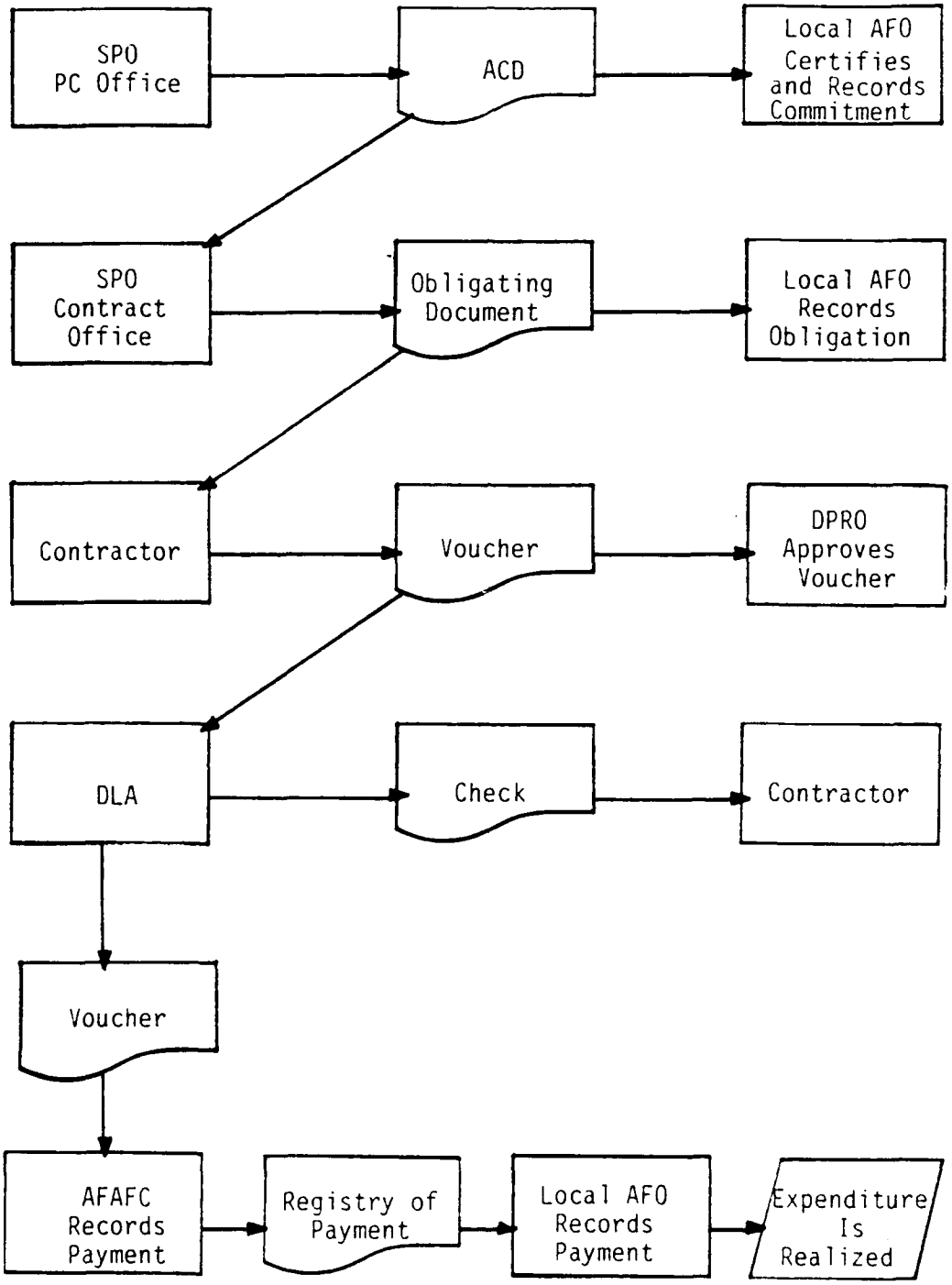

Figure 1. Funding Process

exceptions are not within the scope of this study. An expenditure occurs when the government makes a payment on an invoice or similar document presented by the contractor (1:1145).

Funds must first be committed by the SPO PC office. This is done by submitting an Administrative Commitment Document (ACD) to the local accounting and finance office (AFO). An example of an ACD is shown in Appendix A. Information included within the ACD are the contract to be funded, the item to be purchased, the appropriation to be used, and the amount of funds to be committed. This shows the AFO that the SPO intends to obligate funds up to the amount shown on the ACD for the item identified at some future date. The AFO certifies the commitments and records them as they are generated (1:523).

A contracting officer is usually the one responsible (in AFSC) for generating obligations by producing a contract or other obligating document. These documents are sent to the local AFO and the contractor involved. When sent out an effective date of obligation is stamped on the document. This stamped date is the official obligation date. Once the obligations have been generated, and the AFO has received a copy of the contract or other obligating document, the AFO will record the obligations. A binding agreement is indicated when the AFO shows an obligation has been made. This agreement signifies work, goods, or services will be delivered to the government by the contractor, and the

government will pay for the work, goods, or services (1:509, 523).

There are three classifications for Air Force payments. The first is the "for-self" expenditure. This type of expenditure occurs when an obligation is recorded at the local AFO, and the local AFO is also the paying station. A paying station is the organization which writes the checks for the government to pay the contractor. These payments are generated when paying local contractors or suppliers. They are, also, recorded immediately in the local AFO's records (1:513).

The second type of payment is the "by-others" expenditure. With this payment the local AFO is only the accountable station. The local AFO is not the paying station. An example of this would be the ASD AFO. The ASD AFO would record the obligations made for the F-16, but it would be the Defense Logistics Agency (DLA) that makes all of the payments to the contractor for the F-16. "These payments are recorded as undelivered orders outstanding (UOO) or as accrued expenditures unpaid (AEU) in the local station until notification of the payment is received from the paying office" (1:515). Invoices flow constantly from the contractor to the paying station. The paying station processes these vouchers and then distributes checks to the contractors. A record is kept of all of the check disbursements and sent to the Air Force Accounting and Finance Center (AFAFC). AFAFC processes the record of

disbursements and then sends it on to each accountable station on what is called a "by-others" register. When the local AFO receives the "by-others" register and records the appropriate data, an expenditure officially occurs (1:515).

The last type of payment is the "for-others" expenditure. All DLA expenditures are "for-others" expenditures because none of its payments are generated from within (DLA pays the contractor "for" ASD) (1:515).

Within the AFSC acquisition environment, the payments to the contractor from the government will usually follow the same process. First, the contractor will submit a voucher to the Defense Plant Representative Office (DPRO) for the work accomplished against the obligation. When a voucher is approved by the Administrative Contracting Officer (ACO) at the DPRO, it is returned to the contractor. The contractor then forwards the voucher to the DLA office which services the contract. DLA will then issue a check to the contractor. DLA will also forward the voucher to AFAFC. When AFAFC receives the voucher, the payment is recorded on a registry of payment. The registry is then sent to the local AFO. The AFO then records the payment, and the expenditure is realized (4:42).

Because the PC analyst has no control over the organizations actually paying the contractor, he has very little control over expenditures. This explains why expenditures are so tough to forecast. But, because the SPO's fund control performance is measured against the

forecast, it is very important to build the best forecast possible (1:515).

This section and the accompanying flow chart (Figure 1) fulfill the requirements of the Third Research Objective.

Forecasting

The term forecast has numerous meanings and definitions. The objective of the forecast discussed in this report is to calculate contract financial activity throughout future periods. Forecasts are created to anticipate contract changes and future contract events which will affect the SPO's future financial responsibilities. The forecast is an estimate of when the obligations and expenditures will be reflected in the AFO records (1:263, 509).

The overall purposes of the financial forecast are to produce a planned budget execution, to provide data for analyzing budget execution, and to detect potential problems. All levels of the Air Force, including OSD and The Office of Management and Budget (OMB), use the forecast to measure budget execution (1:507).

All military services are required every year to develop monthly obligation and expenditure forecasts for the upcoming fiscal year (FY). This annual forecasting cycle all begins with a memorandum issued by The Office of the Assistant Secretary of Defense Comptroller (OASD(C)) to the

Services (1:1145). Figure 2 is an illustration of the forecasting cycle.

The Assistant Secretary of the Air Force Financial Management and Comptroller (SAF/FM) is where the direction comes from which requires that all major commands (MAJCOMs) must submit forecasts for the upcoming FY. Each MAJCOM then sends instructions for forecast preparation to each of its field activities (1:507).

During the October/November time frame, all appropriations are forecasted by the PC analysts. This is based on the DoD Appropriations Act for the FY. If for some reason the Act has not been passed, then the most recent Congressional position is used for the forecast's financial baseline (1:509).

Once the forecasts have been developed by the AFSC PC analyst, using the instructions provided in AFSCR 172-370, they are then sent to the local comptroller's office. The comptroller's office consolidates all of the forecasts received and submits them to HQ AFSC/Directorate of Programs and Budget (ACB). When all of the AFSC inputs have been thoroughly reviewed, they are then processed, and transmitted to AFAFC on magnetic tape. AFAFC collects, consolidates, edits, and processes all the MAJCOM's forecasts. Once this has been accomplished, they submit the completed plan to the Air Force/Deputy Assistant Secretary (Budget) (SAF/FMB). After SAF/FMB has reviewed the

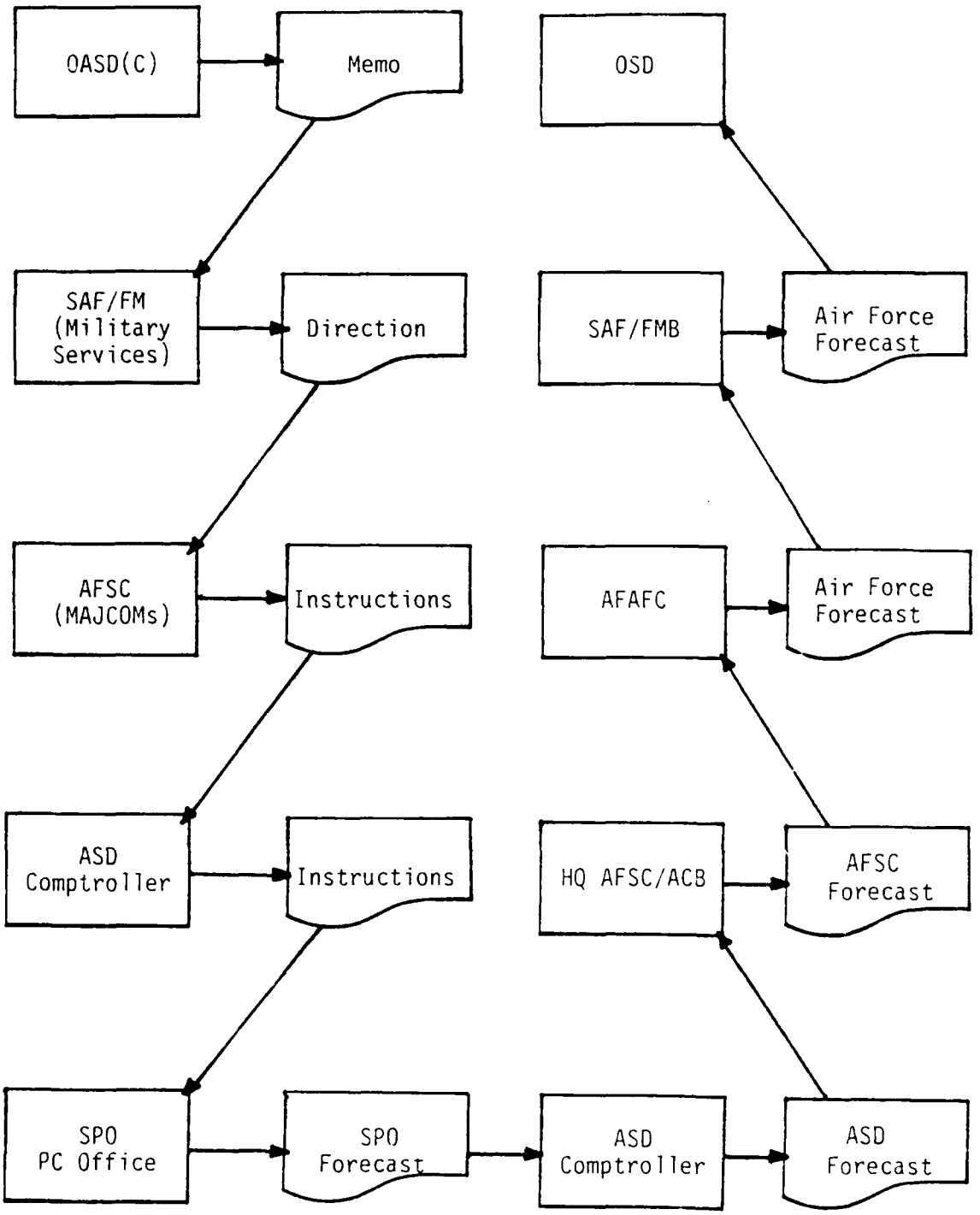

Figure 2. Forecast Cycle

submission completely, it is then passed on to OSD as the official Air Force Obligation/Outlay Plan (1:505).

This section and the accompanying flow chart (Figure 2) fulfill the requirements of the First and Second Research Objectives.

The OSD Goals

One source of information for the analyst to use in preparing a financial forecast is the OSD goals. An example of the OSD goals is shown in Appendix B. All appropriations have goals established by the OSD comptroller for obligations and expenditures. "The goals represent a ten-year historical trend supplemented with negotiations among OSD, OMB, the Treasury Department, and the Service comptrollers" (1:517). The goals are represented by percentages of total funding for each specific FY.

> For example, the FY 1987 OSD goals for RDT&E appropriation (3600) were to have 90 percent of the funds obligated in year one and 100 percent in year two. If the financial manager used only these goals to build a forecast for $10 million in funding, the first year obligation amount would equal $9 million. In the second year, the remaining $1 million would be obligated, bringing the total to $10 million. (1:517)

The OSD goals are updated annually, but they can be updated more frequently if economic conditions cause this requirement. If any copies are needed of the OSD goals, they can be obtained from the local Directorate of Programs and Budget (ACB), who receives the goals from HQ AFSC/ACB (1:517).

These goals can be very helpful, but they should only be used as a guide, and only if the goals are achievable. Never develop a financial plan using only the OSD goals.

The CFSR

The two primary sources of information for accomplishing an expenditure forecast are the CFSR and historical data (4:9). An example of a CFSR is shown in Appendix C. The CFSR is submitted to the government by the contractor on DD Form 1586 when required. It is applicable for use on contracts over $500,000 and at least six months long (2). Also, it may be used on contracts between $100,000 and $500,000 with MAJCOM approval. CFSRs are submitted on a quarterly basis. These reports are used by the SPO for analysis of the contract and for contract funding status (1:894-895).

One aspect of the CFSR is a forecast of billings provided by the contractor for total authorized work. The forecast of billings is updated throughout contract performance and whenever authorized work is changed. The CFSR could possibly provide the best picture of future expenditures because it includes actual costs, fee, and/or profit associated with the contract. Its usefulness, however, is only possible if the contractor's reporting is accurate and reliable (1:510-512).

Because CFSRs are a primary source of information for use in preparing an expenditure forecast, it would be wise

to become accustomed to this report before developing the forecast. So, if a SPO receives CFSRs, they should at least be used as a backup source in preparing the expenditure forecast.

Chapter Summary

This chapter presented an overview of the AFSC expenditure forecasting environment and satisfied the requirements of the first three objectives. The chapter began with a review of the different classifications of funds. Next, forecasting and its role in the AFSC financial community were discussed. The closing section of the chapter introduced and discussed the OSD goals and CFSRs which are information sources the PC analyst should be familiar with when creating an expenditure forecast. The next chapter will present and discuss the methodology employed to resolve the fourth research objective.

III. Methodology

Chapter Overview

This chapter first explains, in detail, the intent of the Fourth Research Objective introduced in Chapter 1. The chapter then describes the procedures used to answer this research objective.

Fourth Research Objective

Identify the length of time from the point of obligation to the point of expenditure realization.

The intent of this objective was to identify the time duration for which this process requires. The interval of time is a crucial element when producing an expenditure forecast. There are many uncertainties which exist when attempting to forecast the occurrences of expenditure realizations.

In order to examine the time period in question, a method of collecting data had to be developed. Once this method had been formulated, the collection of data could be accomplished. The data collection was accomplished in conjunction with the Procedures/Quality Assurance Division of the Directorate of Accounting and Finance for Financial Management & Comptroller within ASD (ASD/ACFCM).

The method used for sampling was nonprobabilistic. Because a random sampling could not be accomplished, judgement sampling was used. Judgement sampling is a form

of purposive sampling. Purposive sampling occurs when a nonprobabilistic sample is drawn to conform to certain criteria. "Judgement sampling occurs when one handpicks sample members to conform to some criterion" (3:280).

The criteria for the judgement sampling were the following:

1. Obligations were to be taken from contracts that had total obligations over $1 billion.
2. Only RDT&E (3600) and aircraft procurement (3010) obligations were to be used.
3. Progress Payments were not to be included.
4. Only the first expenditure, whether full or partial, which corresponded to each obligation selected was considered.

The first criterion was included because it would isolate the major contracts which control a large percentage of the AFSC funds, and thus, have a significant influence on expenditures. The second criterion was included to limit the analysis to the two most frequently used appropriations within AFSC. The third criterion was included because Progress Payments would only confuse the analysis. Tracking funding actions is complicated enough without including a further confusing element such as Progress Payments. The fourth criterion was included to limit the scope of this analysis to a researchable project. Tracking obligations until they were fully expended would be a confusing and painstaking process, not unlike tracking Progress Payments.

The sample selection was done manually by a representative from ASD/ACFCM. Figure 3 is an illustration of the methodology for sample collection. First, the contracts with over $1 billion in total obligations had to be identified. This was done by using the Acquisition Management Information System (AMIS). AMIS is a report produced within the contracting community which shows the most current financial status of a contract (4:22). Thirty-two contracts were identified as having over $1 billion in total obligations. When the thirty-two contracts had been identified, then one obligation for each appropriation (3600 and 3010) was selected judgementally from each contract. These obligations were selected by using the Manual Audit Sheets within each contract file. Once an obligation was selected, then the Contract Modification document had to be retrieved from the contract file. When the Contract Modification document was located, the effective date of obligation was identified.

Once an obligation and its effective date were identified, then the next step was to search for the corresponding expenditure. The expenditure search was accomplished using the "by-others" register sent from AFAFC. Each register, after the date of the obligation, had to be reviewed until a corresponding expenditure was found. Once the expenditure had been tracked, the date the ASD AFO received and recorded the expenditure was identified.

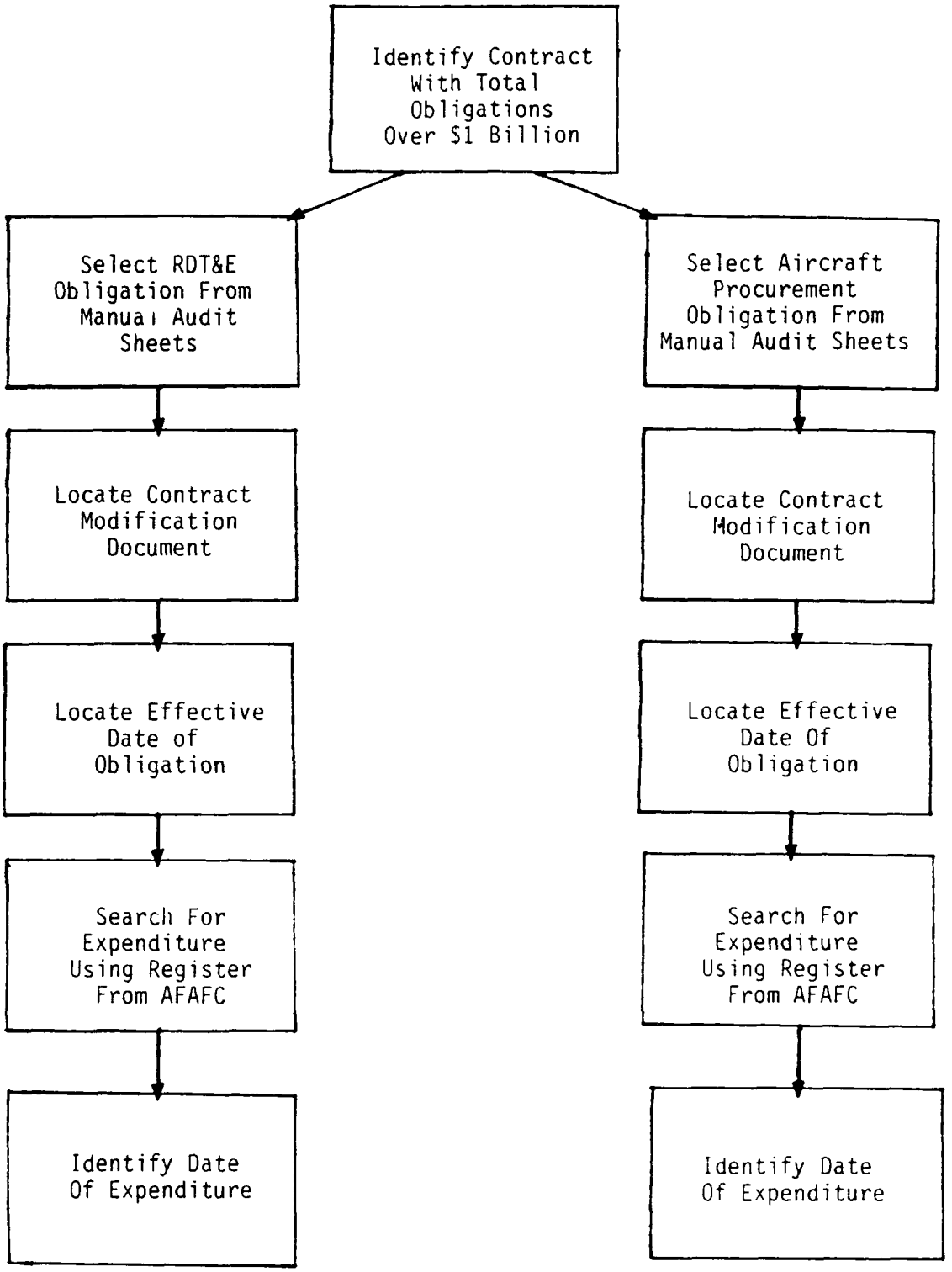

Figure 3. Methodology for Sample Collection

After both the obligation date and the expenditure date had been recorded, the number of days between the two dates could be calculated. The span of time was calculated using the Julian calendar system.

Chapter Summary

This chapter first explained the intent of the Fourth Research Objective. The chapter then described the procedures used to answer the research objective. The next chapter will present the results obtained to resolve the Fourth Research Objective.

IV. Presentation of Results

Chapter Overview

This chapter presents the results obtained for the Fourth Research Objective outlined in Chapter I. This research objective will be restated, and followed by a detailed presentation of the data collected.

Fourth Research Objective

Identify the length of time from the point of obligation to the point of expenditure realization.

The intent of this objective was to identify the time duration for which this process requires. The data that were analyzed in response to this objective were collected by ASD/ACFCM, as explained in the previous chapter. A complete listing of the data can be found in Tables 1 and 2.

Table 1 includes data collected for RDT&E (3600) appropriations. The second column shows the obligation amount of each data sample. The next column displays the effective date of each obligation using a Julian calendar system. The fourth column shows the AFO recording date of the first expenditure corresponding to each obligation. The next column displays the amount of days that had elapsed between the effective date of obligation and the expenditure recording date. The last column transfers the statistic of days into a statistic of years. Table 2 displays the aircraft procurement (3010) data in the same manner.

TABLE 1

RDT&E FUNDS

DATA	Obl. Amount	Julian Effective Date of Obl.	Julian Recording Date for Exp.	Number of Days Between Obl. & Exp.	Number of Years Between Obl. & Exp.
1	$1,252,000	88244	90074	561	1.5
2	$1,411,000	89258	91081	553	1.5
3	$302,887	85358	88159	896	2.5
4	$120	80088	84185	1558	4.3
5	$814	81036	83005	699	1.9
6	$470,000	84159	87258	1195	3.3
7	$15,758	83108	85164	787	2.2
8	$435,199	79304	80127	188	.5
9	$66,444	78206	78263	57	.2
10	$33,300	82333	83211	243	.7
11	$1,629,344	79033	79082	49	.1
12	$203,059	78334	80023	419	1.1
13	$4,100,000	90054	90309	255	.7
14	$2,122,449	89090	90296	571	1.6
15	$41,661,000	86330	88295	695	1.9
16	$4,042,000	84202	87163	1057	2.9
17	$103,400	90345	91030	50	.1
18	$294	84174	89104	1757	4.8
19	$646,000	87079	89219	871	2.4
20	$1,411,000	89258	91081	553	1.5
21	$444,110	88028	88179	151	.4

TABLE 2

AIRCRAFT PROCUREMENT FUNDS

DATA	Obl. Amount	Julian Effective Date of Obl.	Julian Recording Date for Exp.	Number of Days Between Obl. & Exp.	Number of Years Between Obl. & Exp.
1	$397,013	89269	90156	252	.7
2	$942,300	88115	90107	723	2.0
3	$624,386	88221	91030	905	2.5
4	$1,200,000	87150	87328	178	.5
5	$11,980	89074	90174	465	1.3
6	$23,247,752	86073	89333	1356	3.7
7	$363,000	87040	89145	836	2.3
8	$3,056,284	89089	91016	657	1.8
9	$7,800,000	88054	89219	531	1.5
10	$4,286,875	87254	89145	622	1.7
11	$222,215,000	83333	87224	1352	3.7
12	$1,224,000	84059	86327	999	2.7
13	$431,000	88068	89252	550	1.5
14	$12,700	89118	89333	215	.6
15	$777,122	87352	89037	416	1.1
16	$1,423,584	87167	88175	373	1.0
17	$18,786	88103	89087	350	1.0
18	$7,367,250	88005	89005	366	1.0
19	$431,000	88069	89251	548	1.5
20	$510,000	87218	88025	172	.5
21	$39,018	89349	90093	109	.3
22	$1,067	83088	86105	1113	3.0
23	$179,429	80365	82363	729	2.0
24	$1,769,043	85119	87349	960	2.6
25	$52,500	83034	86009	1071	2.9
26	$1,460,620	85206	86014	173	.5
27	$178,833	83060	83111	51	.1
28	$55,000	77021	77069	48	.1
29	$50,750	77304	83033	1920	5.3
30	$263,231	86317	89125	904	2.5
31	$31,729	80046	82294	979	2.7
32	$765,356	83035	83072	37	.1

The next section of graphs display the above data using three different methods. The first set of graphs (Figures 4 and 5) display each of the appropriation's data by showing a bar for each data point. Each bar is representative of the obligation amount, from smallest to greatest in millions of dollars, of each data point, and how many years it took for that obligation to produce its first expenditure. For example, in Figure 4, the first bar represents the smallest obligation amount taken from Table 1 which was $120. The obligation of $120 took approximately 4.3 years before it produced its first expenditure.

Figures 4 and 5 demonstrate that the obligation amount did not seem to be a factor in determining the length of time before an expenditure was realized. There was no trend exhibited by the sample data of either appropriation.

The next set of graphs (Figures 6 and 7) also display each appropriation separately. Each bar in the two figures is representative of the number of years it took before the first expenditure was produced and the percentage of sample data which fell into that category. For example, in Figure 6, the first bar represents the percentage of the sample data which produced its first expenditure within a year after the effective date of obligation. This first bar shows a third of the sample data produced its first expenditure within a year.

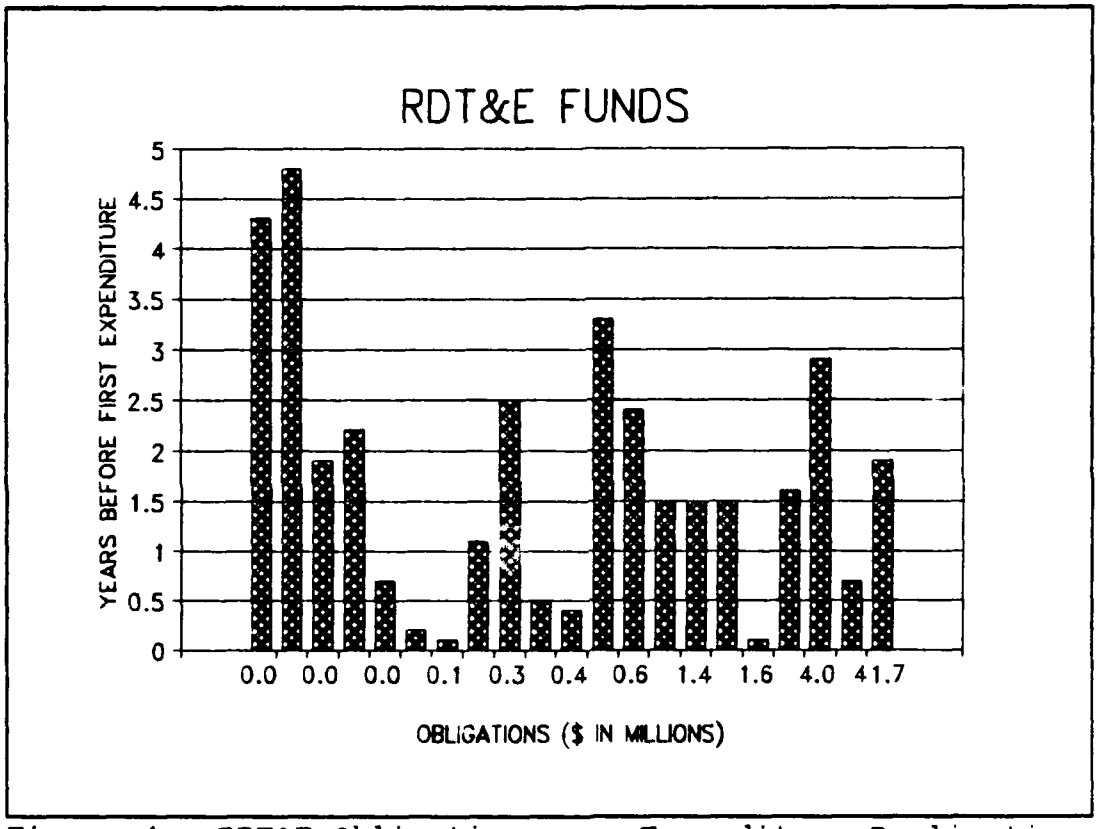

Figure 4. RDT&E Obligations vs. Expenditure Realization

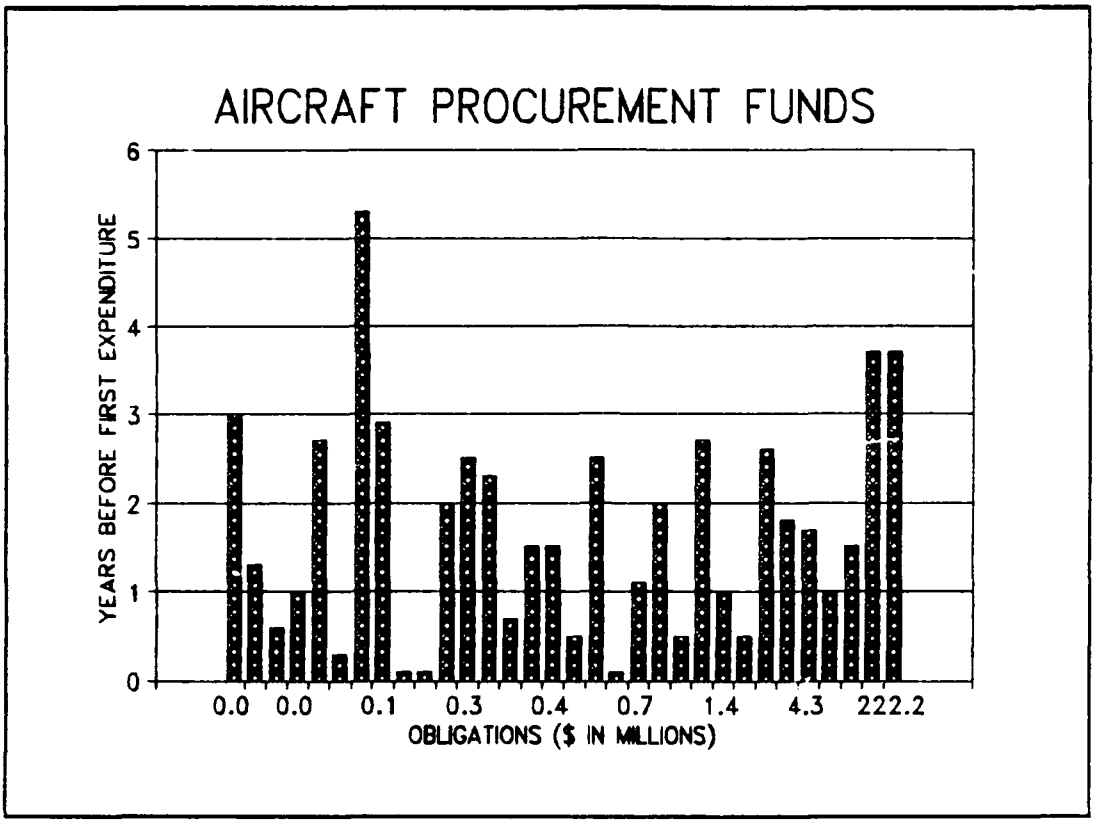

Figure 5. Aircraft Procurement Obligations vs. Expenditure Realization

Figures 6 and 7 demonstrate most of the sample data were proportionately distributed within the first three years. This means that an obligation was just as likely to realize its first expenditure within one year as it was to realize an expenditure within two or three years.

The last set of graphs (Figures 8 and 9) are cumulative in nature. Each bar in the two figures is representative of the number of years it took before the first expenditure was realized and the cumulative percentage of sample data which fell within the category. For example, in Figure 8, the

third bar represents the cumulative percentage of the sample data which realized its first expenditure within three years after the effective date of the obligation. This third bar shows it took three years for approximately 86 percent of the sample data to realize its first expenditure.

Figures 8 and 9 demonstrate most of the sample data realized its first expenditure within three years. This gives the forecaster a three year window to work within.

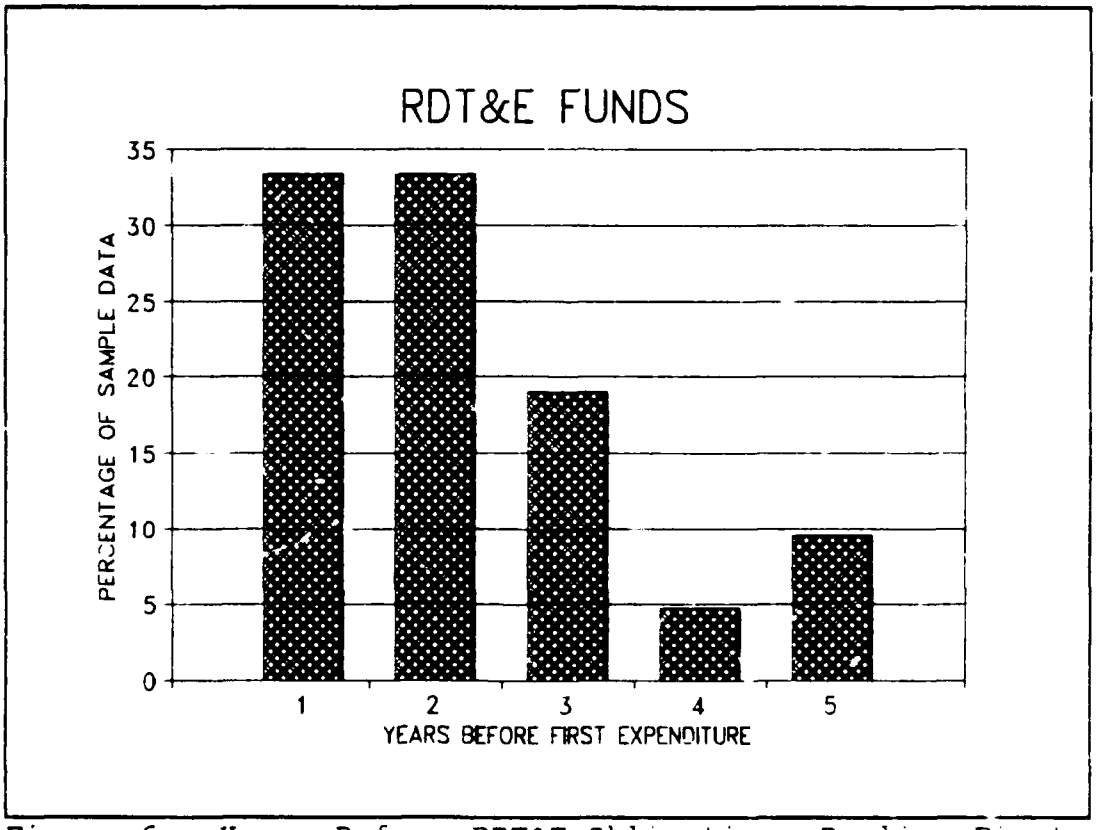

Figure 6. Years Before RDT&E Obligations Realize First Expenditure

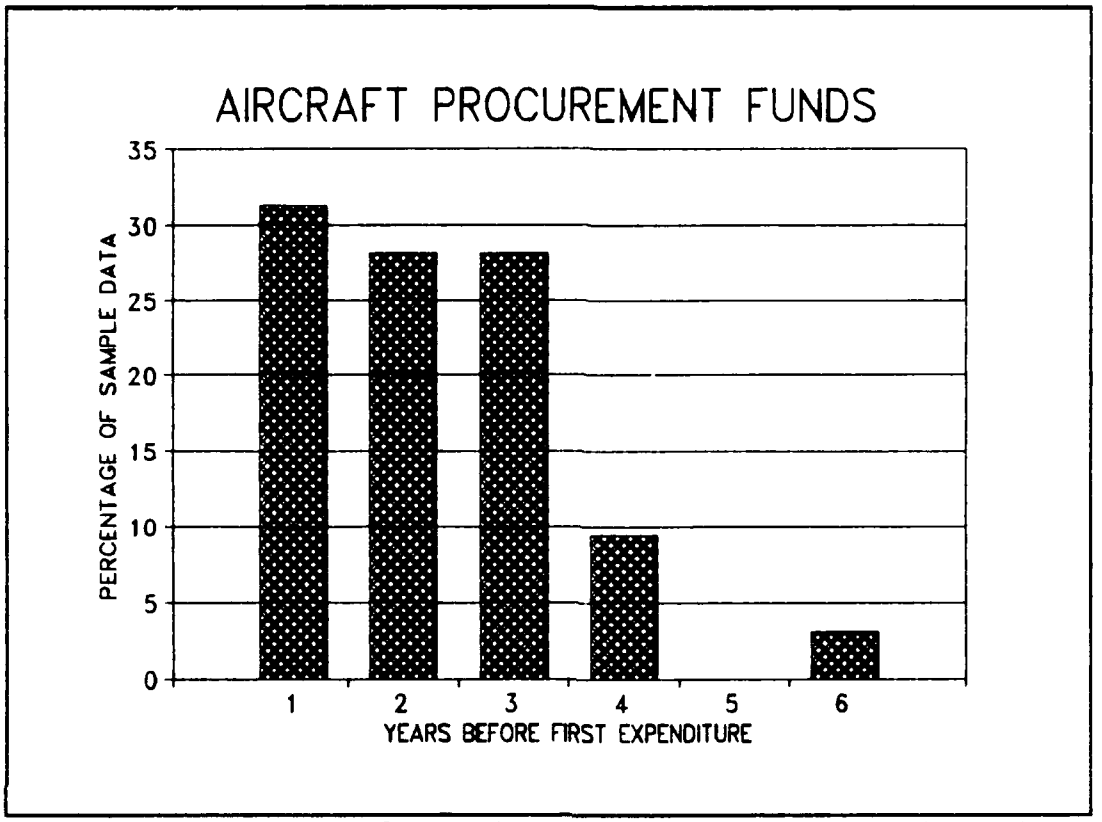

Figure 7. Years Before Aircraft Procurement Obligations Realize First Expenditure

Chapter Summary

This chapter first restated the Fourth Research Objective. This was then followed by a detailed presentation of the data collected. The next chapter will discuss the final recommendations and conclusions concerning this research.

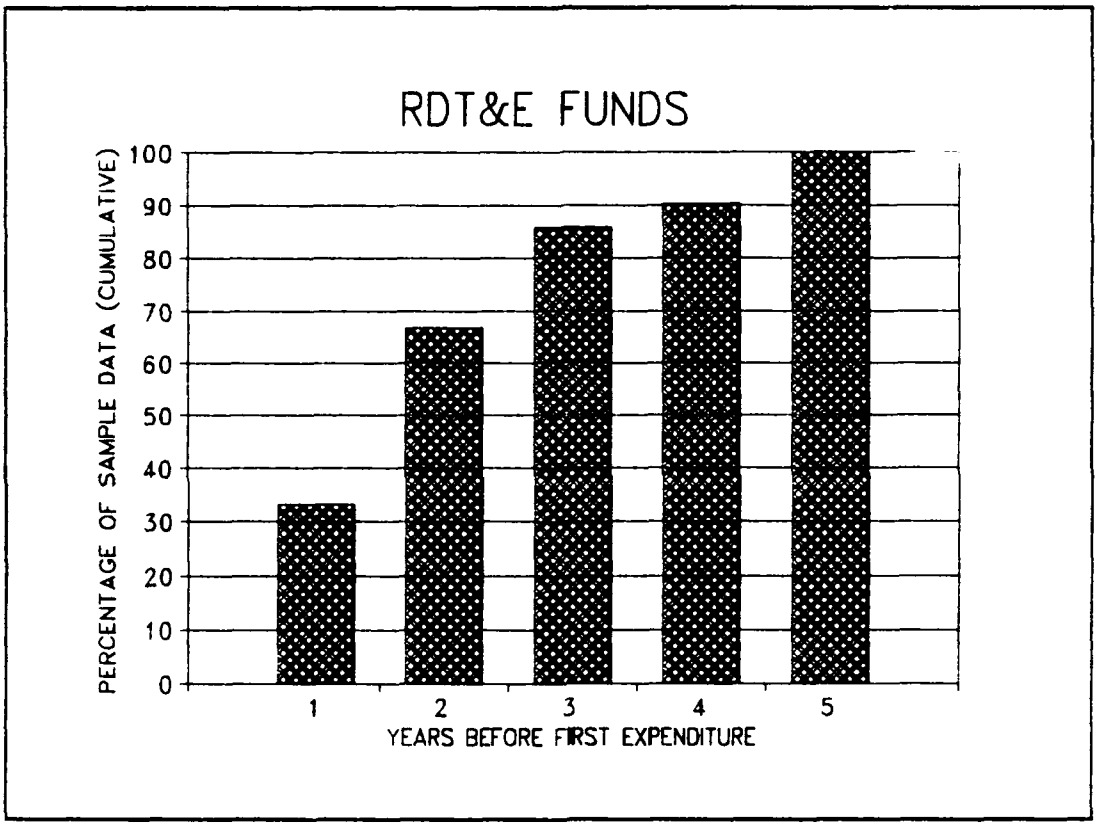

Figure 8. Years Before RDT&E Obligations Realize First Expenditure (Cumulative Format)

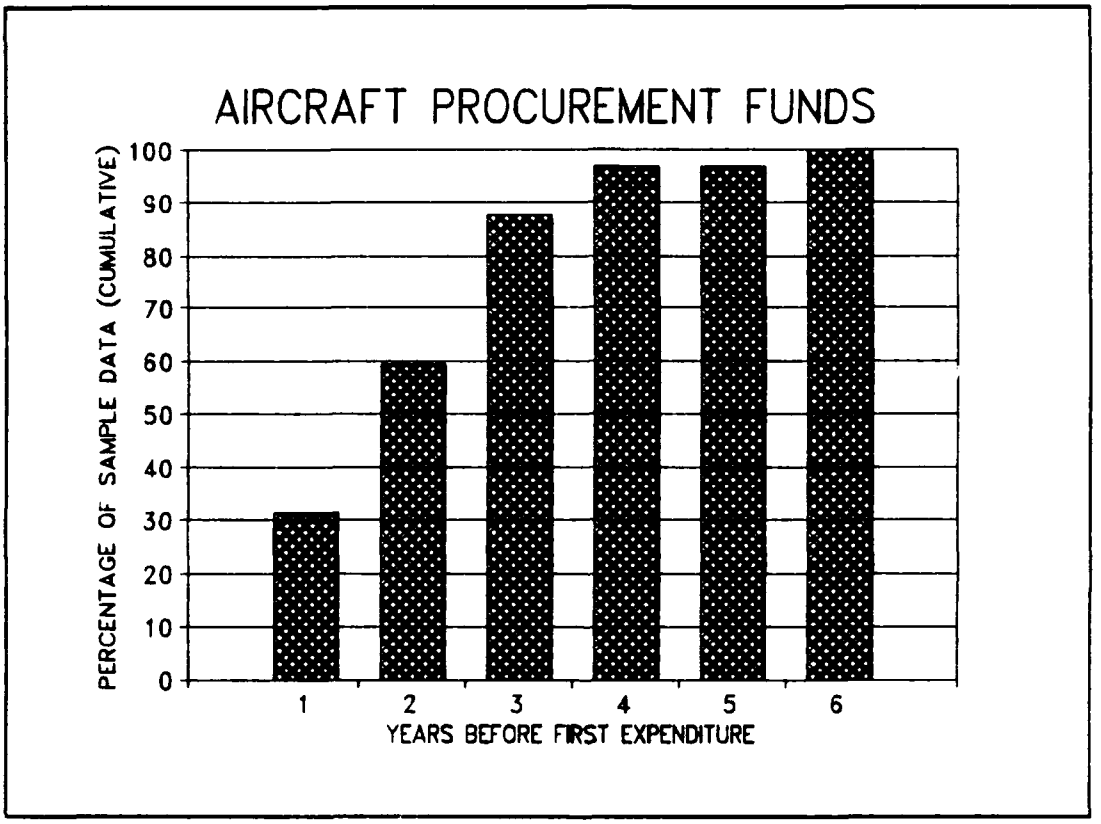

Figure 9. Years Before Aircraft Procurement Obligations Realize First Expenditure (Cumulative Format)

V. Conclusions and Recommendations

Chapter Overview

This research analyzed and documented the expenditure forecasting process within AFSC. The research also included an analysis of the funding process from the time of obligation to the time of expenditure realization. To accomplish this investigation, research objectives were developed, stated in Chapter I. The backgrounds of the funding process and expenditure forecasting were reviewed in Chapter II. Chapter II also fulfilled the requirements of the first three objectives. The methodology used to answer the fourth Research Objective was explained in Chapter III. Chapter IV presented the results obtained to resolve the fourth Research Objective. This final chapter will discuss the conclusions drawn from the results.

Discussion of Results

The mission of this research was to examine and document a known problem affecting the financial community within AFSC. As stated earlier, the specific problem guiding this study was the fact there has been no forecasting methodology developed which consistently predicts the dates of occurrence for expenditures. In recognizing this problem, it was determined the area of primary focus would be the time period from the point of obligation to the point of expenditure realization. An

analysis of this time period was deemed necessary if establishing a consistent method for forecasting expenditures was ever to be achieved.

The fourth Research Objective could not be as cleanly resolved as the previous objectives, but this is the nature of data analysis. The primary focus of the analysis was the search for trends in the data. The data were arranged graphically in various patterns to uncover any possible trends.

As seen in the previous chapter, differences pertaining to expenditure realization are minimal between RDT&E (3600) and aircraft procurement (3010) appropriations. The RDT&E graphs were almost identical to the aircraft procurement graphs. The first two graphs (Figures 4 and 5) displayed a complete lack of any visual trend which signified the obligation size does not seem to be a factor when forecasting the occurrence of expenditure realizations. In other words, no date for expenditure realization can be forecasted relying only on the amount of the obligation.

It is evident by reviewing figures 6 and 7, an expenditure is just as likely to be realized within one year after the effective date of an obligation as it is to be realized within the second or third year. This was demonstrated by the fact most of the sample data was proportionately distributed within the first three years.

Figures 8 and 9 demonstrated the fact approximately 85% of obligations will experience an expenditure within three

years after the effective date of obligation. This gives the PC analyst a three year window to work within. This is a very large area of uncertainty.

The intent of the fourth Research Objective was to identify the length of time from the point of obligation to the point of expenditure realization. There were no definitive answers for this objective. As stated earlier, the length of time identified by the analysis could be within one year, two years, or three years. The results of the data analysis presented do not assist the PC analyst in preparing an expenditure forecast. However, the results do further amplify the difficulties of producing an expenditure forecast.

Conclusion

As mentioned earlier, there are numerous directions a study of expenditure forecasting could pursue. This research was an effort to resolve one of those avenues. Another possible direction for future studies is the analysis of contractor reports, such as the Contract Performance Report (CPR). These reports could be analyzed for possible relationships between cost data and the realization of expenditures.

Forecasting is not a perfect science, but that does not take away from the dependency upon the forecast by organizations who need the information provided by the forecast. It should be recognized, organizations such as

Congress, OSD, OMB, and the Treasury Department rely upon the forecast for budget execution (1).

ADMINISTRATIVE COMMITMENT DOCUMENT

TO	DATE	CONTRACTUAL INSTRUMENT NO
		CONTRACTOR

PR ITEM NO	CONTR ITEM NO	CONTRACT QUANTITY	PR OR MIPR NUMBER AND ACCOUNTING CLASSIFICATION	UNIT PRICE	TOTAL COST
			I certify that the commitment of these funds for this B-1B Production procurement document is in compliance with the full funding policy set forth in DODD 7200.4 (AFR 172-14). I also certify to the propriety of the funds cited on this contractual/administrative commitment document (AFM 177-101). The supplies and services to be obtained by this instrument are (In Scope) (Out of Scope) of the original contract.		

PREPARED BY (Type Name & Symbol, Telephone No. and Signature)

The supplies and services to be obtained by this instrument are authorized by law for the purpose set forth and are chargeable to allotments enumerated above, the available balance of which is sufficient to cover the cost in an amount not to exceed $ _____

_____ DATE

_____ SIGNATURE (Accounting Officer)

AFLC FORM APR 80 49

PREVIOUS EDITION WILL BE USED

Appendix B: OSD Goals

FY 91 OSD OBLIGATION/EXPENDITURE RATES
(CULMULATIVE FROM INCEPTION)

	FY 91 1ST YEAR		FY90 2ND YEAR		FY 89 3RD YEAR		FY 88 4TH YEAR		FY 87 5TH YEAR	
AIRCRAFT										
OBS	61.0	(66.5)	82.1	(89.2)	100.0	(100.0)				
EXP	4.5	(5.9)	28.9	(32.0)	66.0	(67.0)	83.0	(86.0)	94.1	(95.0)
MISSILE										
OBS	77.0	(69.5)	87.0	(84.5)	100.0	(100.0)				
EXP	6.0	(5.0)	30.1	(28.0)	58.7	(65.0)	99.2	(90.3)	109.0	(97.5)
OTHER										
OBS	70.0	(64.2)	93.0	(86.6)	100.0	(100.0)				
EXP	17.0	(14.5)	42.0	(42.0)	65.5	(67.0)	84.0	(84.5)	94.0	(92.5)
RDT&E										
OBS	94.0	(89.1)	100.0	(100.0)						
EXP	58.0	(51.2)	87.5	(86.8)	94.4	(95.0)	98.0	(97.2)		
O&M										
OBS	100.0	(100.0)								
EXP	76.7	(76.7)	94.5	(95.0)	97.4	(98.0)				

( ) FY 90 RATES
RATES REPRESENT EOY POSITION

FY 91 EXPENDITURE RATES ARE ACTUALLY
YOUR OUTLAY RATES FOR THE YEAR

UNCLASSIFIED
CLASSIFICATION

NA-90-1070-3

CONTRACT FUNDS STATUS REPORT (DOLLARS IN THOUSANDS)

FORM APPROVED
OMB NUMBER 22 R0180

1. CONTRACT NUMBER	3. CONTRACT FUNDING FOR FY INC. FY89-FY93	5. PREVIOUS REPORT DATE 29 JUNE 1990	7.	9. INITIAL CONTRACT PRICE TARGET __ 146,879 CEILING_____
2. CONTRACT TYPE FFP	4. APPROPRIATION 3010	6. CURRENT REPORT DATE 28 SEPTEMBER 1990	8. PROGRAM	10. ADJUSTED CONTRACT PRICE TARGET __ 280,357 CEILING_____

11. FUNDING INFORMATION

LINE ITEM/WBS ELEMENT a.	APPROPRIATION IDENTIFICATION b.	FUNDING AUTHORIZED TO DATE c.	ACCRUED EXPENDITURES PLUS OPEN COMMITMENTS TOTAL d.	CONTRACT WORK AUTHORIZED			FORECAST			TOTAL REQUIREMENTS k.	FUNDS CARRY OVER l.	NET FUNDS REQUIRED m.
				DEFINITIZED e.	NOT DEFINITIZED f.	SUBTOTAL g.	NOT YET AUTHORIZED h.	ALL OTHER WORK i.	SUBTOTAL j.			
TOTAL		241,890		279,493	(38,488)	241,005	759		759	241,764		

12. CONTRACT WORK AUTHORIZED (WITH FEE/PROFIT) ACTUAL OR PROJECTED

	SEP '90 ACTUAL TO DATE	OCT '90	NOV '90	DEC '90	QTR 2 '91	QTR 3 '91	QTR 4 '91	FY 1992	FY 1993			AT COMPLETION
a. OPEN COMMITMENTS	15,088	4,000	4,000	4,000	15,000	20,000	30,000	5,000	-			-
b. ACCRUED EXPENDITURES	31,306	38,321	48,402	54,053	78,507	103,098	132,684	257,369	307,700			307,700
c. TOTAL (12a + 12b)	46,394	42,321	52,402	58,053	93,507	123,098	162,684	262,369	307,700			307,700
13. FORECAST OF BILLINGS TO THE GOVERNMENT	17,744	3,819	4,456	6,403	13,945	15,591	17,735	72,600	88,712			241,005
14. ESTIMATED TERMINATION COSTS												

REMARKS

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REPORT DOCUMENTATION PAGE

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	September 1991	Master's Thesis

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5. FUNDING NUMBERS

6. AUTHOR(S)

Timothy R. Thomas, Captain, USAF

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Approved for public release; distribution unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

This study investigated and documented the expenditure process within Air Force Systems Command. Specifically, this study examined the process between the time of obligation and the time of expenditure realization. Data gathered demonstrated no significance for predicting expenditure realizations.

The primary focus was a graphic analysis for tendencies in the data. RDT&E appropriation tendencies proved to be similar to those for aircraft procurement appropriations. Obligation size by itself proved to be an unimportant factor in predicting expenditure realizations. The data demonstrated that approximately 85 percent of obligations will experience an expenditure within three years after the effective date of the obligation. This three year window is too large an area of uncertainty for predicting expenditure realizations. It was also found within this three year window an expenditure was just as likely to occur in the first, second, or third year. The results do further amplify the difficulties of producing an expenditure forecast.

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   a. Yes b. No

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   a. Yes b. No

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   Man Years _____ $_____

4. Often it is not possible to attach equivalent dollar values to research, although the results of the research may, in fact, be important. Whether or not you were able to establish an equivalent value for this research (3 above), what is your estimate of its significance?

   a. Highly Significant b. Significant c. Slightly Significant d. Of No Significance

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