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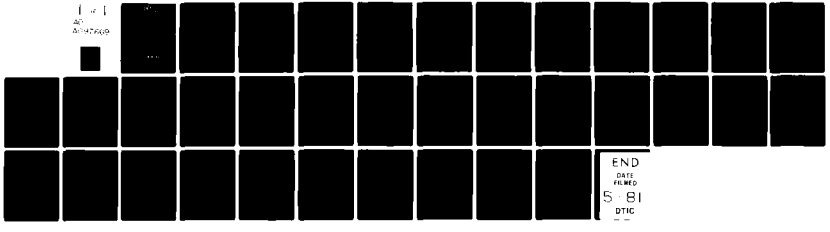

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INTERIM REPORT

THE AIR FORCE NONDESTRUCTIVE INSPECTION MANAGEMENT INFORMATION SYSTEM DEVELOPMENT PROGRAM.

PHASE II — PRELIMINARY DESIGN AND APPROVAL.

TASK 1 — NDI MAINTENANCE DATA ANALYSIS.

March 1981

36

David E. Franck

Prepared for
DEPARTMENT OF THE AIR FORCE
AIR FORCE NONDESTRUCTIVE INSPECTION PROGRAM OFFICE
SAN ANTONIO AIR LOGISTICS CENTER
KELLY AIR FORCE BASE, TEXAS
under Contract F41608-79-D-A014-0004

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This report summarizes the Task 1 activities of ARINC Research Corporation in support of Phase II of the Air Force Non-destructive Inspection (NDI) Program Office (MMEI) at the San Antonio Air Logistics Center (SAALC), Kelly Air Force Base, Texas. These activities, performed as part of Contract F41608-79-D-A014-0004, included an assessment of NDI maintenance

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data available via the AFM 66-1 Maintenance Data Collection System (MDCS). The objective of these efforts was to determine the magnitude of NDI maintenance in terms of man-hours expended, the manner in which NDI maintenance is documented, and the number of bases reporting NDI to the MDCS.

INTERIM REPORT

THE AIR FORCE NONDESTRUCTIVE INSPECTION MANAGEMENT INFORMATION SYSTEM *DEVELOPMENT PROGRAM*

PHASE II - PRELIMINARY DESIGN AND APPROVAL

TASK 1 - NDI MAINTENANCE DATA ANALYSIS

March 1981

AIR FORCE NONDESTRUCTIVE INSPECTION
PROGRAM OFFICE (MMEI)
SAN ANTONIO AIR LOGISTICS CENTER
KELLY AIR FORCE BASE, TEXAS

under Contract F41608-79-D-A014-0004

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FOREWORD

This report summarizes the Task 1 activities of ARINC Research Corporation in support of Phase II of the Air Force Nondestructive Inspection (NDI) Program Office (MMEI) at the San Antonio Air Logistics Center (SAALC), Kelly Air Force Base, Texas. These activities, performed as part of Contract F41608-79-D-A014-0004, included an assessment of NDI maintenance data available via the AFM 66-1 Maintenance Data Collection System (MDCS). The objective of these efforts was to determine the magnitude of NDI maintenance in terms of man-hours expended, the manner in which NDI maintenance is documented, and the number of bases reporting NDI to the MDCS.

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CHAPTER ONE

INTRODUCTION

This interim report briefly documents the efforts, findings, and conclusions of Task 1 - Nondestructive Inspection (NDI) Maintenance Data Analysis - of a multitask program. ARINC Research Corporation is performing preliminary engineering design and analysis efforts under Contract F41608-79-D-A014-0004, "Air Force NDI Management Information System (MIS) Development Program - Phase II, Preliminary Design and Approval", for the Air Force NDI Program Office at the San Antonio Air Logistics Center (SAALC/MMEI).

1.1 PROGRAM OFFICE BACKGROUND

NDI techniques are used to identify material defects without damaging the article under test. The purpose of NDI is to identify an impending failure in a structural material before the material fails catastrophically. NDI techniques permit making maximum use of a material before it has to be removed as a safety hazard. NDI methods used in the Air Force include fluorescent penetrant, magnetic particle, eddy current, ultrasonic, and radiographic testing. Air Force personnel use these methods to assure equipment integrity through a comprehensive NDI program for all major weapon systems and support equipment.

The Air Force NDI Program Office is responsible for managing and supporting all NDI activities throughout the Air Force. The Program Office is assisted by a monitor at each major command (MAJCOM), an NDI manager at each Air Logistics Center (ALC), and NDI monitors within system manager (SM) and item manager (IM) functions throughout the ALCs.

1.2 PROJECT BACKGROUND

Task 1, the subject of this interim report, is the first of six tasks of the current contract. Together, these tasks make up Phase II of a three-phase program to develop and implement a MIS to improve the management effectiveness of Air Force NDI Program personnel.

A feasibility study performed in Phase I evaluated and documented the technical and economic feasibility of developing and implementing the proposed MIS as well as substantiating the need. Phase II includes developing a preliminary design for the MIS, documenting the need for the MIS, and preparing a Data Automation Requirement (DAR). Phase III will consist of the detailed design, programming, and implementation of the MIS, as well as the associated training and documentation.

The MIS development program was pursued to fill the void caused by the lack of feedback to Air Force NDI managers on the type, extent, and findings of NDI activities throughout the Air Force. Currently, NDI maintenance is documented with nonspecific support general codes (SGCs) or other available codes in accordance with the Air Force Manual (AFM) 66-1 Maintenance Data Collection System (MDCS). Although some NDI - related maintenance

data are received and processed at HQ-AFLC, there are no known specific NDI-related data products produced by HQ-AFLC, other ALCs, or other Air Force organizations. As a result, NDI managers in the Air Force receive no information as to the status, progress, cost, effectiveness, or other characteristics of NDI efforts throughout the Air Force. Thus, the Air Force NDI program is being managed without the feedback necessary for effective management decisions.

The finding of the feasibility study, completed in November 1979 under Contract F09603-78-G-4125-SA01, was that it would be technically and economically feasible to develop an NDI MIS within the structure of Air Force data processing (DP) resources. On the basis of the study results, the Program Office, with the assistance of ARINC Research, prepared and submitted to AFLC a Required System Capability (RSC) document. The RSC was approved by HQ-AFLC/LOE on 27 March 1980, providing the go-ahead for the current Phase II efforts.

1.3 TASK OBJECTIVES

The objectives of Task 1 were to determine the magnitude of NDI maintenance (i.e., manhours expended), the number of bases reporting NDI work, and the composition of NDI maintenance documentation codes in current use. The scope of this task was limited to using currently available AFM 66-1 MDCS data.

CHAPTER TWO

TASK FINDINGS

The efforts of Task 1 were divided into two areas of investigation: assessment of depot-level (ALC) NDI manpower requirements and review of D056 Product Performance System data. These areas are discussed in the following sections.

2.1 ALC NDI MANPOWER REQUIREMENTS

The ALCs are not participants in the base-level AFM 66-1 MDCS. It is known that the ALCs expend considerable resources on NDI although there is virtually no documentation for this outside the ALCs. ARINC Research experience has shown that little, if any, information on ALC NDI maintenance is available except at each ALC. Therefore, ARINC Research project personnel visited each ALC and interviewed NDI management personnel to determine the levels of NDI activities. Lengthy interviews were conducted with the ALC NDI Managers, cognizant shop foremen, and ALC NDI Section Chiefs in the following offices:

- OCALC: MAQS, MABEF, MMEAP, MMETT
- SMALC: MMET, MANCD, MANPJ
- OOALC: MABE, MANE, MANP, MAKE, MMETP
- WRALC: MMET, MABP, MANC
- SAALC: MMETT, MASR, MASPE

Where available, information was collected to substantiate production NDI manpower requirements. However, almost no firm data are available in this context to validate NDI manpower requirements; therefore, most of the available information upon which the manpower estimates are based are on-site management assessments of the number of people active in NDI production work, the percentage of work time spent in NDI work versus non-NDI work (e.g., training, administration), current shortages or surpluses of personnel, and workloads. As a result, the figures derived in this survey represent the best approximation and judgment of cognizant area managers. They are not and should not be represented as actual requirements, but should be used as "ballpark" figures providing an order-of-magnitude estimate.

On the basis of interviews with cognizant NDI management personnel at each ALC, the following man-year estimates were developed for current annual production NDI workloads exclusive of R&D, management, training, or non-NDI activities.

Organization	Estimated Annual Requirements (Man-Years)
OCALC	202
SMALC	55
OOALC	55
WRALC	50
SAALC	126
TOTAL	488 man-years (862,784 man-hours)

These figures are evidence of a substantial manpower commitment to NDI at the ALCs.

2.2 AFM 66-1 DATA REVIEW

As required, ARINC Research identified and reviewed available AFM 66-1 MDCS NDI data. The source used for this data review was the D056, the Product Performance System. This computer system, a central Air Force collection point and repository for AFM 66-1 maintenance data, is maintained at HQ-AFLC. The D056 provides various data products to several hundred users monthly and also provides raw data input to many other Air Force/ AFLC data systems. For this data review, two D056 sources were used : currently available data in the D056B.5006 data product, and filtered AFM 66-1 data from the D056E. The results of these reviews are discussed in the following paragraphs.

2.2.1 AFM 66-1 NDI Documentation Procedures

It is appropriate here to provide a brief overview of the documentation procedures for NDI maintenance in the AFM 66-1 MDCS. It should be noted that in our review we found that NDI maintenance is generally being documented in accordance with the existing rules of the AFM 66-1 MDCS. These rules allow NDI maintenance actions to be documented using one of two procedures: a simplified procedure using support general codes (SGCs) designed to document general-level base support work and often used to justify support requirements; and the procedure used by most other Air Force maintenance activities which includes when discovered code (WDC)-U*, various applicable how malfunction codes, action taken codes, type maintenance codes, and work unit codes.

There are only three SGCs available to specifically document NDI: 0411B, NDI, unscheduled; 04610, NDI, all types; and 04630, R&D NDI. Other SGCs are also "legally" used to document NDI e.g., during phase inspections. The use of SGCs precludes the use of all other maintenance codes except the type maintenance code.

The second procedure is common to most Air Force maintenance and is widely known and used throughout the Air Force. However, a multitude of different codes is available for the technician to choose from, often with little guidance. As a result, many code combinations are used inconsistently to document NDI. The only code consistently used is WDC-U, which is shared with SOAP maintenance.

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* WDC-U is defined in AFM 66-1 as: NDI, all types (including SOAP)

This duality of documentation procedures can be seen in the data bases reviewed as part of this Task and are "legal" under the current rules of the AFM 66-1 MDCS. An alternative documentation procedure to eliminate this duality is addressed in a separate report on Task 2 of the Phase II program.

2.2.2 D056 Data Product Review

The D056B.5006 data product is a summary listing of maintenance performed on Air Force weapon systems by work unit code (WUC) at the end-article designator (EAD) level. This particular data product was chosen because it treats support general codes (SGCs) as WUCs and summarizes them for each weapon system.

One shortcoming of this data review was that information was not available for maintenance documented by use of when discovered code (WDC)-U which is used for NDI or oil analysis (SOAP) maintenance when SGCs are not used. This part of the NDI maintenance documentation is discussed in section 2.2.3. In addition, any NDI documented by using SGCs other than the three NDI-specific SGCs was not available.

D056B.5006 data products for the period 1 June 1979 through 31 May 1980 were reviewed. The level of data available was limited to Air Force-wide man-hours for each NDI SGC by weapon system. Data were available for 61 different weapon systems at the EAD level. Several weapon system variants can constitute one weapon system EAD as defined by the system manager. For example, several KC-135 variants e.g., KC-135A, KC-135D, KC-135Q, are included in the KC-135A EAD. Therefore, several mission, design, series (MDSs) often constitute a single EAD as designated by the system manager.

NDI maintenance data were not available for Aerospace Ground Equipment (AGE); Communications, Electronic, and Meterorological (CEM) equipment; missiles; or other special equipment. HQ-AFLC personnel indicated that data collection for many of these equipments ceased within the last two years.

Table 1 presents the NDI man-hour data, for the period 1 June 1979 through 31 May 1980 taken from the D056B.5006 data products. Because of the design of the D056 computer program, these data do not include engine NDI or off-equipment maintenance documented by use of SGCs. Therefore, the data in Table 1, while complete to the extent that the D056 processes the data, represent only on-equipment NDI documented from SGCs.

The D056 receives AFM 66-1 MDCS maintenance data from 451 bases world-wide. The amount of NDI reported by each base varies according to available facilities and type and number of aircraft supported. There are 196 official NDI laboratories in the Air Force, but it is impossible to determine from this data source the number of bases reporting NDI maintenance.

2.2.3 D056E Data Review

To augment the NDI information provided by the D056B.5006 data products and thus obtain better insight into the magnitude of NDI maintenance, ARINC Research reviewed unprocessed AFM 66-1 NDI maintenance data provided by the D056E portion of the D056. These NDI data represent the data base from which other D056 reports are created. In addition to the NDI SGC data, this data base contains records with when discovered code (WDC)-U which is used to document NDI and engine oil analysis (SOAP).

Table 1

D056 ON-EQUIPMENT NONDESTRUCTIVE INSPECTION MAN-HOUR SUMMARY

REPORTED AGAINST SUPPORT GENERAL CODES

1 June 1979 - 31 May 1980

WEAPON SYSTEM	0411B UNSCHEDULED	04610 SCHEDULED	04630 R&D	TOTAL
A-7D	594	2,335	269	3,198
A-10A	811	1,421	16	2,248
A-37	1,064	1,276	12	2,352
B-52D	2,361	814		3,175
B-52G	660	2,958		3,618
B-52H	67	1,846		1,913
B-57	6			6
C-5A	734	18,558	50	19,342
C-7A	7	111		118
C-9A	37	658	2	697
C-9C	3			3
C-123	70	781		851
C-130	1,572	5,258	128	6,958
C-130B	1,240	5,640	61	6,941
C-130E	5,016	18,516	35	23,567
HC-130H	700	1,114		1,814
C-131	52	379	8	439
C-137B	60			60
C-140	156	320		476
C-141A	1,429	5,059	59	6,547
E-3A	90			90
F-4C		5,275	18	5,293
F-4D		5,967	6	5,973
F-4E	1,907	11,180	24	13,111
F-4G	24	1,019		1,043
RF-4C	3,838	8,050		11,888
F-5		75		75
F-5E	427	1,387		1,814

Table 1 (Cont.)

D056 ON-EQUIPMENT NONDESTRUCTIVE INSPECTION MAN-HOUR SUMMARY

REPORTED AGAINST SUPPORT GENERAL CODES

1 June 1979 - 31 May 1980

WEAPON SYSTEM	0411B UNSCHEDULED	04610 SCHEDULED	04630 R&D	TOTAL
F-15		5,685		5,685
F-15C		108		108
F-16A	159			159
F-16B	26			26
F-100		54		54
F-101B		41		41
RF-101A		1		1
F-104	1	679		680
F-105	488	4,411	226	5,125
F-106A	40	2,092	34	2,166
F-111A	36	3,713	22	3,771
F-111D	139	2,112		2,251
F-111E	46	1,823		1,869
F-111F	10	1,219	4	1,233
FB-111A	269	1,981		2,250
UH-1F	51	224	11	286
HH-1H	13	37		50
HH-1N	553	201		754
CH-3C	2,339	4,682	23	7,044
HH-53	841	678		1,519
KC-135A	3,375	7,518	33	10,926
RC-135A	297	132	8	437
RC-135C	31	234		265
WC-135B	125			125
T-33A		1,585		1,585
T-37	1,263	959	32	2,254

Table 1 (Cont.)

D056 ON-EQUIPMENT NONDESTRUCTIVE INSPECTION MAN-HOUR SUMMARY

REPORTED AGAINST SUPPORT GENERAL CODES

1 June 1979 - 31 May 1980

WEAPON SYSTEM	0411B UNSCHEDULED	04610 SCHEDULED	04630 R&D	TOTAL
T-38	6,196	30,622	90	36,908
T-38B	1,589	14,651		16,240
T-39	1,380	3,879	4	5,263
T-43A	133	30		163
QF-102		187		187
O-2	415	592		1,007
OV-10	512	863		1,375
TOTAL	43,252 (18.4%)	190,990 (81.1%)	1,175 (0.5%)	235,417

To assure a data base with only NDI data, the data were separated into three categories: known SOAP data, known NDI data, and undefined data (SOAP or NDI). Figure 1 illustrates the data filter used to differentiate between SOAP, NDI, and undefined. The data provided and used in the detailed analysis represented the period of 10 April 1979 through 30 June 1980, or 1.225 years. This data base contained a total of 175,760 records, or maintenance actions, of which 3,330 (1.9%) were SOAP, 2,016 (1.2%) were undefined, and 170,414 (96.9%) were NDI.

The remainder of this section addresses only the NDI data. The NDI data were reported by use of both available documentation procedures of the AFM 66-1: support general codes (SGCs) 0411B, 04610, and 04630; and WDC-U, in conjunction with other associated maintenance codes (i.e., how malfunction code, action taken code, type maintenance code, and work unit code). These data are summarized in Table 2. As can be seen in Table 2 over 550,000 inspections were reported or an annual average of nearly 450,000 inspections.

As reflected in Table 2, the dual documentation procedures available to and used by the NDI technicians result in a lack of cohesiveness in reporting, thus preventing specific conclusions. It was partly because of this lack of cohesiveness that ARINC Research developed and proposed, during the feasibility study in Phase I, a single, simplified documentation procedure.

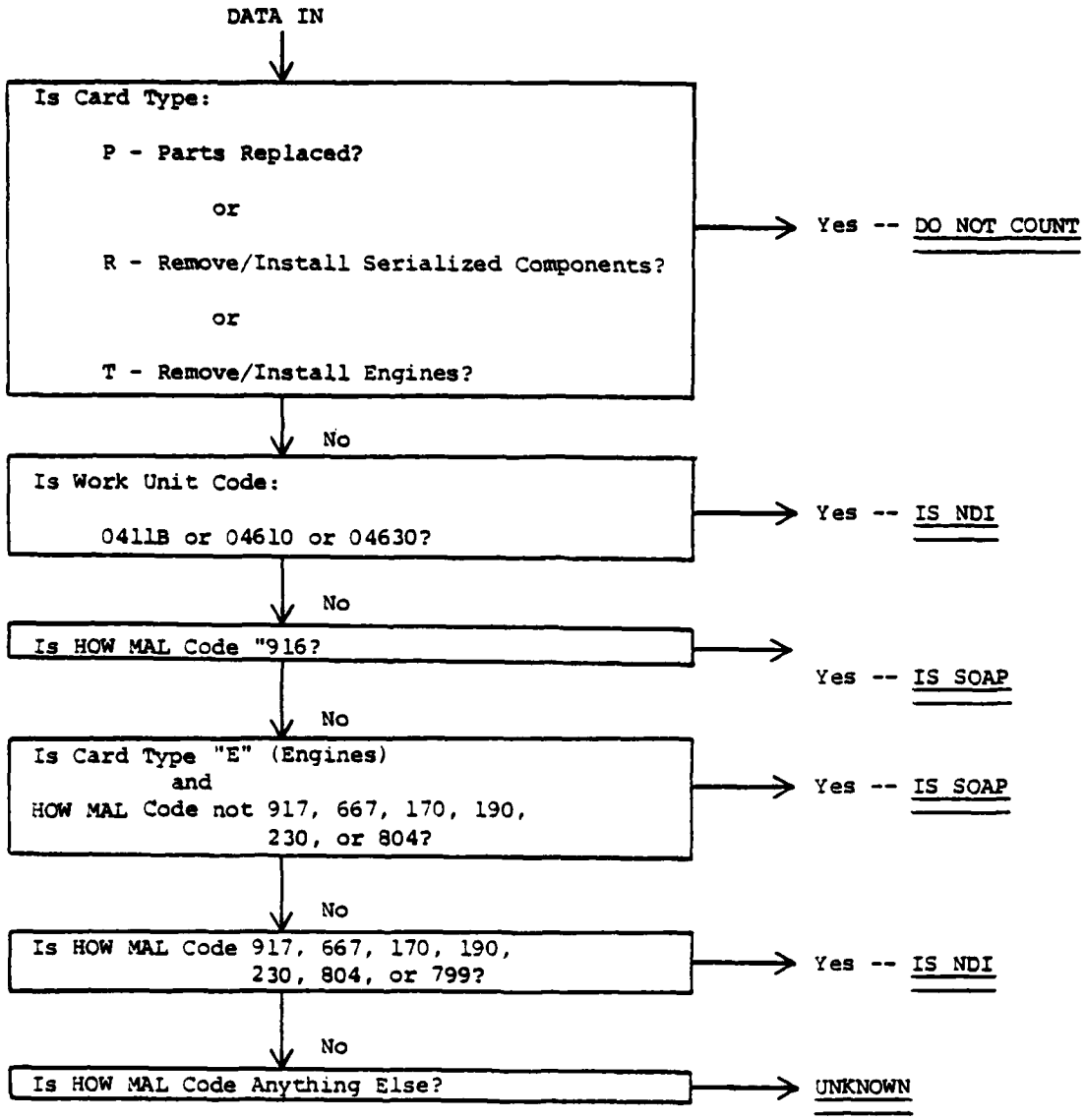

Figure 1. ARINC NDI FILTER FOR D056 DATA

Table 2. NDI DATA SUMMARY

10 April 1979 - 30 June 1980

Documentation Procedure	Records	Man-Hours	Inspections
Support General Code			
0411B - Unscheduled NDI	29,478	81,744	64,128
04610 - Scheduled NDI	103,342	327,386	330,816
04630 - R&D NDI	593	5,541	419
SubTotal	133,413	414,671	395,363
When Discovered Code-U How MAL Code			
917 - NDI Defect	69	504	46
190 - Cracked	5,640	14,286	10,043
170/667 - Corrosion	213	1,088	392
230 - Contaminated	454	1,699	525
804 - No Defect	4,123	7,868	1,598
799 - No Defect	26,502	62,550	142,187
Sub-Total	37,001	87,995	154,791
TOTAL	170,414	502,666	550,154
Annual Average	139,152	410,454	449,231

The data review disclosed a discrepancy between the information provided in the D056B.5006 and the totals of the unprocessed NDI data. In Table 1, the total man-hours contained in the D056B.5006 data products for 1 June 1979 through 31 May 1980 totaled 235,417. From Table 2, the same data category (SGCs 0411B, 04610, 04630) showed 414,671 man-hours or an annual rate of 338,507 man-hours, an increase of nearly 44% over that reported in the D056B.5006 reports. Further investigation revealed that some NDI SGC data are screened out by the D056 system during processing. These data fall into two categories:

1 - Engine work documented with SGCs

2 - Off-equipment work documented with SGCs

As the D056 system is currently designed, these data are not included in the processing of weapon system totals. This will have no impact on the NDI MIS, because the proposed NDI coding procedures will not utilize data codes now being excluded and the current processing algorithms will not be used.

For some equipment, e.g. missiles, special equipment, and engines, no NDI summaries are currently available in the D056. To obtain a better idea of which aircraft actually have NDI maintenance reported against them, the data base was again analyzed, this time to provide the NDI information by weapon system (MDS level). Because of the method by which data records are created and maintained, only on-equipment records could be used to identify the aircraft. Appendix A lists the weapon systems for which NDI maintenance was reported; in addition to aircraft, data were reported for missiles, electronic warfare systems, and non-Air Force systems.

Table 3 provides further detailed information by showing the on-equipment NDI man-hours reported against weapon systems and how they were reported. The diversity of how malfunction codes used in the WDC documentation procedure is evident in Table 3. This inconsistency in reporting provides only general information on the man-hours spent and the system inspected. These data do not permit comparisons among weapon systems and bases or specific conclusions about NDI for a particular weapon system such as the effectiveness of NDI, the method of inspection, or the results of inspections.

The off-equipment NDI data were summarized by base; they are presented in Table 4. It was not possible to summarize these data by weapon system with the data available. However, the D056 uses and the NDI MIS will also use a cross-reference table to permit summarizing the data by EAD. The duality of reporting procedures is also evident in Table 4.

Appendix B lists the bases reporting NDI maintenance data and the weapon systems that can be identified to a particular base.

2.3 Data Summary

From the data collected, it is evident that substantial manpower resources, more than 1.27 million man-hours (720 man-years) per year, are expended to perform NDI: approximately 862,784 man-hours (488 man-years) per year at the ALCs; and 410,454 man-hours (232 man-years) per year at the base level. Most of the work, approximately two-thirds, is undocumented and unavailable to Air Force NDI management through the AFM 66-1/D056 data

Table 3

ON-EQUIPMENT NDI MAN-HOURS BY MDS
10 APRIL 1979 - 30 JUNE 1980

MDS	NO. BASES REPORTING	SUPPORT GENERAL CODE			WHEN DISCOVERED CODE U: HOW MAL CODE						TOTAL
		0411B UNSCHEDULED	0461C SCHEDULED	0463C R&D	917 NDI DEFECT	190 CRACKED	170/667 CORROSION	230 CONTAMINATED	804 NO DEFECT	799 NO DEFECT	
A-7D	21	473	2370	259		30				277	3409
YA-7D	1	20									20
A-10A	12	1098	1254	36	24					10	2422
A-37B	10	1021	1206	20		6	10			57	2320
B-52D	4	2394	734	1		31	1			35	3196
B-52G	9	681	2476			126	3			425	3711
B-52H	5	81	1883			681		6		488	3139
B-57C	1	1									1
EB-57B	1	12								2	14
C-5A	6	807	20478	49	10	1368	4	8		4106	26830
C-7A	4	7	108								115
C-9A	4	34	678	3				2		4	721
C-9C	1	4									4
C-123K	3	16	557		12					150	735
UC-123K	3	50	163							69	282
C-130A	18	1590	4911	114	1		38			17	6671
C-130B	12	1286	5669	22		34	315			119	7445
C-130D	1		238			30				78	346
C-130E	21	3385	17045	21		18	40	121		58	20688
C-130H	8	22	1451					15	2	43	1533
AC-130A	1	129	247	24		48		4		7	459
AC-130H	1	691								20	711
DC-130E	2	117	128								245
EC-130E	2	164	545							2	711
HC-130H	12	258	388		13	1		4		3	667
HC-130N	9	45	305				256			44	650
HC-130P	8	460	437					16		72	985
MC-130E	3	784	249	16						5	1054
WC-130E	2	6	81			2				35	124
WC-130H	2	42	148			4	2				196
C-131B	4		78								78
C-131D	12	17	239							13	269
C-131E	3	28	70	13							111
C-135A	2	46	4			2				32	84
C-135B	4	54	6							8	68
C-135C	2	76									76
C-135N	1	4	4								8
EC-135J	2		63								63
EC-135K	1	22									22
EC-135C	2		38			3		4		148	193
EC-135G	2		53								53
EC-135H	2		269							2	271
EC-135J	1	30									30
EC-135L	1		77							3	80
EC-135N	1	108	40						56		204
EC-135P	1		113							10	123
KC-135A	49	2956	6689	34	2	738	3	50	54	1855	12381
KC-135D	1	128	9								137
KC-135Q	7	641	221			56				119	1037
NC-135A	1	14									14
RC-135A	2		8								8
RC-135M	3	10	10			2				20	42
RC-135S	1		74								74
RC-135T	1		27								27
RC-135U	3		36							5	41
RC-135V	4	10	67							101	178
WC-135B	2		2							2	4
NKC-135A	3	137	40	8						4	189
C-137B	1	39	4								43
C-137C	1	32									32
C-140A	1		251								251
C-140B	2	120	108								228
C-141A	17	902	4393	36	4	658	13	58		497	6561
C-141B	3		34	16			6			4	60
NC-141A	1	117	4	8							129
YC-141B	2	8	4								12
E-3A	2	94				12				5	111
E-4A	1					3				21	24
E-4B	1									9	8
F-4C	19	668	5363	18	72	10		9	14	78	6231
F-4D	19	2520	5862	6	3	34		53		334	8812
F-4E	17	1835	10648	11	70	8		114	2	221	12909
F-4F	1	1	2								3
F-4G	6	24	1086			4		3		88	1205
RF-4C	19	3847	7693		4	14		93	34	113	11798
YF-4E	1	29									29
F-5B	1		79								79
F-5E	4	347	1589			17				422	2375
F-5F	1	5	20								25

Table 3 (Continued)

ON-EQUIPMENT NDI MAN-HOURS BY MDS
10 APRIL 1979 - 30 JUNE 1980

MDS	NO. BASES REPORTING	SUPPORT GENERAL CODE			WHEN DISCOVERED CODE U: HOW MAL CODE						TOTAL
		0411B UNSCHEDULED	04610 SCHEDULED	04630 R&D	917 NDI DEFECT	190 CRACKED	170/667 CORROSION	230 CONTAMINATED	804 NO DEFECT	799 NO DEFECT	
F-15A	9	2364	4902		14	276	1	66		1083	8706
F-15B	8	846	652	9		96		4		101	1708
F-15C	3	122	116		12	8		14		85	357
F-15D	1	15	22							37	74
F-16A	4	74	67							48	189
F-16B	2	28	59						20		107
F-100D	2	65									65
F-100F	2	16	20								36
F-101B	4		26							30	56
RF-101C	1		2								2
F-102A	1		4								4
QF-102A	1		26								26
TF-102A	1		27								27
PQM-102A	1		22								22
PQM-102B	2		177								177
F-104G	1	1	409							2	412
TF-104G	1		365					4			369
F-105B	3	61	1699	16			36			1	1813
F-105D	8	119	2062	228	32	15				64	2520
F-105F	8	50	230	82							362
F-105G	2	173	301	7			24	4		64	573
F-106A	16	18	1417	16	90	54		46		252	1893
F-106B	13	23	595	12	4			15		82	731
F-111A	3	37	4039	22					4	121	4223
F-111D	3	142	4137		25			3		29	4336
F-111E	4	80	1691		33	44	8	19		2960	4835
F-111F	2	8	1177	34	18	1		4		68	1310
EF-111A	1		12								12
FB-111A	3	313	2112							32	2457
O-2A	19	434	563			38				17	1052
O-2B	1		2								2
OV-10A	5	567	1139			34		24	3	43	1810
T-33A	28	200	1653			17		6		174	2050
T-37B	10	1425	1060	32		2		65	4	210	2798
T-38A	16	6492	26956	94		531	18	35	15	198	34339
T-38B	1	2067	14056								16123
T-39A	7	77	51	6						8	142
T-39B	1	199	36								235
CT-39A	18	1471	4187			26		24	3	101	5812
T-43A	2	128	34								162
SR-71A	1	2									2
WS-213B	1		110								110
HH-1H	7	13	45					2		12	72
TH-1F	6	49	57							4	110
UH-1F	5	9	58							4	71
UH-1N	18	580	232					7		25	844
UH-1P	4	6	96								102
HH-3E	13	1047	3088	24			3				4162
CH-3E	14	1524	1603			2		64		64	3257
CH-53C	6	75	458							16	549
HH-53B	3	247	59							49	355
HH-53C	10	364	231				8	12		136	751
HH-53H	2	278	6					2			286
AGM-65A	3		25								25
AGM-65B	1		4								4
AGM-65T	1		1								1
AGM-69A	1	10								6	16
AIM-4F	1			8							8
AIM-4G	1		4								4
AIM-7E	11	46	398								444
AIM-7F	2		6	2							8
AIM-9B	1		28								28
AIM-9E	6	34	224								258
AIM-9J	6	8	82								90
AIM-9P	2	4	6								10
AIM-9T	1		20								20
ALE-2	3	4	44								48
ALE-38	1	4									4
ALQ-71	1		1								1
ALQ-72	2		11								11
ALQ-87	1		13								13
ALQ-119	3	4	2							2	8
LGM-25C	3		83							155	238
LGM-30F	1									4	4
MCN-A.F.	18	41	472	4							517
TOTAL		52511	192698	1311	443	5084	789	980	211	16526	270553

Table 4

OFF-EQUIPMENT/ENGINE NDI MAN-HOURS BY BASE
10 APRIL 1979 - 30 JUNE 1980

BASE CODE	BASE	SUPPORT GENERAL CODE			WHEN DISCOVERED CODE D: HOW MAL CODE						TOTAL
		0411B UNSCHED	04610 SCHED	04630 R&D	917 NDI DEFECT	190 CRACKED	170/667 CORROSION	230 CONTAMINATED	804 NO DEFECT	799 NO DEFECT	
AEDY	ALCONBRY RAF, UK	3173	120							12	3305
AGGN	ALTUS AFB, OK		1		12	96					109
AJJT	ANDERSEN AB, 8AF GU		4			116	2	3		582	707
AJXP	ANDREWS AFB, MD	35	2064								2099
AJXR	ANDREWS NG, MD		150				7				157
AQRC	ATLANTIC CITY NG, NJ		733							4	737
ASHE	AVIANO AB, ITALY	150	14								164
ATQZ	BAER FIELD NG, IN		408			8		361			777
AWUB	BARKSDALE 8AF, LA	24	240			6	32				302
AXQD	BARNES NG, MA	122	14								136
BAEY	BEALE 15AF, CA	3167	6								3173
BHVW	BENTWATERS RAF, UK	6	276			132				2275	2689
BJHZ	BERGSTROM AFB, TX		1941					4			1945
BKTZ	BERRY FIELD, TN	2	157								159
BNKR	BIRMINGHAM NG, AL		203		32	8				3	246
BSGX	BITBURG AFB, GER		775			20		2		584	1381
BWKR	BLYTHEVILLE 8AF, AR	40	496								536
BXRH	BOISE NG, ID		204								204
CRWU	BUCKLEY ANG, CO		133		2	20				282	437
CTGC	GRISSOM 8AF, IN		59			78	2			1381	1520
CURZ	BURLINGTON NG, VT					79	12				91
CVVM	BYRD FIELD NG, VA		649		1						650
CZQZ	CANNON AFB, NM		2094								2094
DCFT	CAPITAL NG, IL		1							5	6
DDPF	CARSWELL 8AF, TX	1014	227							14	1255
DESR	CASTLE 15AF, CA		1			41				1199	1241
DKPX	CHARLESTON AFB, SC		6	1880		1029				1098	4013
DPEZ	CHEYENNE NG, WY	4	603	26		4					637
DPLH	CHICAGO NG, IL		4								4
DPNB	O'HARE IAP, IL		68								68
DVLK	CLARK AB, PHILI		2605								2605
EEPZ	COLUMBUS AFB, MS	9	6218			4					6231
ETTB	N. AMSTRADAM, NETH	9	702							2	713
EZTH	DALLAS NAS, TX		487			4	4				495
FAKZ	DANNELY FIELD, AK		107								107
FBNV	DAVIS-MONTHAN 15AF, AZ		2286					10		10	2306
FFAN	DES MOINES NG, IA		1								1
FGWB	DOBBINS AFB, GA		10								10
FGWD	DOBBINS NG, GA	185									185
FJRP	DOUGLAS NG, NC	16	8								24
FJXT	DOVER AFB, DE		14			10		4		144	172
FKNN	BANGOR ANG, ME	16	23		2		3				44
FMKM	DULUTH NG, MN		1674	24						2	1700
FNWZ	DYESS 15AF, CA		3724								3724
FSPM	EDWARDS AFB, CA	62	182			65				2116	2425
FTEP	EGLIN 03, FL	26	867	36							929
FTEV	EGLIN AAF09, FL	590									590
FTFA	EGLIN AFB, FL	18	1502	994		91	4	4		2721	5334
FTQW	EIELSON 15AF, AK		579	10							589
FXBM	ELLSWORTH 15AF, SD	61	82			61	4				208
FXSB	ELMENDORF, AK		2072								2072
GAMH	ENGLAND AFB, LA		90			184				1548	1822
GHLN	FRANCIS WARREN 15AF, WY									21	21
GJKZ	FAIRCHILD 15AF, WA		9			33	7			244	293
GJQG	FORBES ANG, KS		643								643
HAYW	FRESNO NG, CA		160	8							168
HKR2	FT. SMITH NG, AR	6	551								557
HTUV	G. B. MITCHELL, WI	13								6	19
HTUX	MITCHELL FIELD, WI	508									508
HUUA	GEORGE AFB, CA.	6	2229			334			8	720	3297
JFSD	GRAND FORKS 15AF, ND	31	16			86	4			858	995
JKSE	GREAT FALLS NG, MT		23			44				359	426
JLQN	PEORIA NG, IL		2								2
JLSQ	GREATER PITTSBURG NG, PA	51				2					53
JLSS	GREATER PITTSBURG AP, PA		318								318
JLWS	WILMINGTON NG, DE		597								597
JREZ	GRIFFISS 8AF, NY		606			360				1970	2936
JWEC	HAHN AB, GER	151	187			209				3032	3579
KBHT	HANCOCK FIELD, NY					2				12	14
KBJA	HANCOCK NG, NY		433								433
KJGW	HAYWARD NG, CA		46								46
KKGA	HECTOR NG, ND		52		2	36				28	118
KNMD	HICKAM AB, HI	31				516	113	26		772	1456
KNMG	HICKAM NG, HI		248			11					259
KRSM	HILL AFB, UT	2003	670					12			2685
KWRC	HOLLOMAN AFB, NM	80	5010	12			2				5104
KYJL	HOMESTEAD 8AF, FL		336			117				27	480
LDXF	HULMAN NG, IN	2	223							5	230
LGPU	ALBROOK AFB, PN	8	170			24				65	267
LJYC	INCIRLIK AB, TURKEY		105							10	115
LRKQ	JACKSON NG, MS		216								216
LSGA	JACKSONVILLE NG, FL		16								16

Table 4 (Continued)

OFF-EQUIPMENT/ENGINE NDI MAN-HOURS BY BASE
10 APRIL 1979 - 30 JUNE 1980

BASE CODE	BASE	SUPPORT GENERAL CODE			WHEN DISCOVERED CODE U: HOW MAL CODE						TOTAL
		04113 UNSCHED	04610 SCHED	04630 R&D	917 NDI DEFECT	190 CRACKED	170/667 CORROSION	230 CONTAMINATED	804 NO DEFECT	799 NO DEFECT	
LUXC	JOE FOSS NG, DS		1011								1011
LWRC	SAWYER 8AF, MI		644	13		104					761
LXEZ	KADENA 8AF, OKINAWA	312	140			286	6	4		3322	4070
LYBH	KANAWHA NG, WV		149								149
MAHG	KEESLER AB, MS		13								13
MBCV	KEFLAVIK AP, ICELAND	100	15								115
MBMV	KELLOG NG, MI	77	4								81
MBPB	KELLY AFB, TX	39									39
MBPF	KELLY NG, TX		978			55					1033
MDVL	KEY FIELD NG, MS		519								519
MHMV	KIRTLAND AFB, NM	41	1300								1341
MHMZ	KIRTLAND ANG, NM									10	10
MLRV	KULIS NG, AK		68								68
MLWR	KUNSAN AB, KOREA		1446							2	1448
MMFZ	KWANGJU AB, KOREA		22								22
MSET	LAKENHEATH, UK		1363			2				19	1384
MSQB	LAMBERT NG, MO		184							8	192
MUHJ	LANGLEY AFB, VA	6	2179	2		74				1893	4154
MXDP	LAUGHLIN AB, TX	4842	2226					20		32	7120
NGCJ	LINCOLN NG, NB	50	628								678
NKAK	LITTLE ROCK 8AF, AR		1215								1215
NLZG	RICKENBACKER AFB, OH		44		3	2	8			42	99
NLZL	RICKENBACKER ANG, OH	72	96								168
NRCH	LORING 8AF, ME		1266							159	1425
NUEX	LUKE AFB, AZ	1014	2522								3536
NVZR	MACDILL AFB, FL	36	3182							2	3220
PCZP	MARCH 15AF, CA	702	1126			35				277	2140
PJMS	MARTIN NG, MD		1139								1139
PJVY	MARTINSBURG NG, WV		174					6		2	182
PLXL	MATHER AFB, CA	13	6786	6							6805
PQWY	MCCHORD AFB, WA		3300								3300
PRQE	MCCONNELL AFB, KS	278	27	4		203				2128	2640
PRQG	MCCONNELL NG, KS	24	5							8	37
PSTE	MCENTIRE NG, SC		96	770		12					878
PSXE	MCGHEE NG, TN	8	202			6					216
PTFL	MCGUIRE AFB, NJ		884								884
PTFN	MCGUIRE NG, NJ	13	396				49			92	550
PYJX	MEMPHIS NG, TN		40								40
QJKC	MINN-ST. PAUL NG, MN		117								117
QJKL	ST. PAUL AP, MN	2	28								30
QJVF	MINOT 15AF, ND	1	2363								2364
QSEU	MOODY AFB, GA	38	2409			4					2451
QYZH	MOUNTAIN HOME 15 AF, ID		1963			3				24	1990
RDRD	MYRTLE BEACH AB, SC	21	318							53	392
RKMF	NELLIS AFB, NV	20	338			283				2749	3390
RQLH	NEW ORLEANS NG, LA		190								190
RQNA	NEW ORLEANS NAS, LA		406								406
RVJV	NIAGARA FALLS NG, NY		196				2				198
RVKQ	NIAGARA FALLS AP, NY		849								849
SCEY	NORTON AFB, CA	3461	6264					2			9727
SGBP	OFFUTT 15AF, NB		4			14				2867	2885
SHYQ	OLMSTEAD NG, PA		224								224
SKKA	ONTARIO NG, CA	32									32
SMYU	OSAN AB, KOREA	2976	722							74	3772
SPBQ	OTIS ANG, MA		161								161
SXHT	PATRICK AFB, FL		256								256
SZDT	PEASE AB 8AF, NH		131			58	4			1121	1314
SZDW	PEASE NG, NH					7			174	105	286
TDKA	PETERSON, CO	4	6			447	10			1091	1558
TEWC	LOCKHEED, AZ		9								9
THWA	PLATTSBURG 8AF, NY	2	690			31				752	1475
TMKH	POPE AFB, NC		982							9	991
TQJF	PORTLAND NG, OR		4			4				5	13
TUMR	PUERTO RICO NG, PR					9				453	462
TYFR	RAMSTEIN AB, GER	16	3219			4				17	3256
TYMX	RANDOLPH AB, TX	6	151					118	5546		5821
UBNY	REESE AFB, TX	86	3076			76	2	14		255	3509
UCTL	RENO NG, NV	5	26		1						32
UDHY	RHEIN MAIN AB, GER	3	51	126		32				1008	1220
UEBL	RICHARDS-GEBAUR AB, MO		605					5			610
ULYB	ROSECRANE NG, MO		11								11
UPWV	SMALC MRS, CA							21			21
USEB	SALT LAKE CITY NG, UT		849								849
VBDZ	SCHNECTEDY NG, NY		669	16		4					689
VDYD	SCOTT AFB, IL		1953							94	4047
VGLZ	SELFRIDGE AB, MI	2	3								5
VGWU	SEMBACH ABS, GEP		14								14
VKAG	SEYMOUR-JOHNSON AFB, NC		29	14							43
VLSB	SHAW AFB, SC	195				75					270
VNVP	SHEPARD AFB, TX	1865	1			8		3		4	1881
VSRE	SIOUX CITY NG, IA		33								33
VTNB	SKY HARBOR NG, AZ		775								775

Table 4 (Continued)

OFF-EQUIPMENT/ENGINE NDI MAN-HOURS BY BASE
10 APRIL 1979 - 30 JUNE 1980

BASE CODE	BASE	SUPPORT GENERAL CODE			WHEN DISCOVERED CODE U: HOW MAL CODE						TOTAL
		0411B UNSCHED	04610 SCHED	04630 R&D	917 NDI DEFECT	190 CRACKED	170/667 CORROSION	230 CONTAMINATED	804 NO DEFECT	799 NO DEFECT	
VYHK	SPANGDAHLEM, GER	41	196			6				196	439
WAAR	SPRINGFIELD NG, OH		3								3
WEAS	STANDFORD NG, KY									21	21
WKVB	SUFFOLK APT, NY		25			5		8		26	64
WPZQ	TAEGU, KOREA	15									15
WVAD	TF GREEN NG, RI		542								542
WWYK	TINKER AFB, OK		1645								1645
WYTD	TOLEDO NG, OH	52	17								69
XBGX	TORREJON AB, SPAIN	84	107			135		4		2058	2388
XDAT	TRAVIS AFB, CA	2		184	6	2698	15	28			2933
XDQU	TRAVIS AP NG, CA	266									266
XHEA	TUCSON NG, AZ	50	37	17							104
XHZG	TULSA NG, OK		360								360
XLMU	TYNDALL AFB, FL		6395	20							6415
XQDT	UPPER HEYFORD, UK		1021			97				544	1662
XTBT	VAN NUYS NG, CA	7	88								95
XTLF	VANCE AFB, CA					8		34			42
XUMU	VANDENBURG AFB, CA									1616	1616
YRJS	WELFORD RAF, UK		2								2
YSSF	WESTCHESTER NG, NY		76								76
YTPM	WESTOVER AFB, MA		2543								2543
YVEW	WHEELER AB, HI					<.5					<.5
YZEU	W. ROGERS NG, OK	8	30	68							106
YZJU	WILLIAMS AFB, AZ	2	239			361	7	8	920	244	1781
ZHTP	WRIGHT-PATTERSON, OH	50	2750					18			2818
ZJXD	WORTSMITH BAF, MI		1154								1154
ZNRE	YOKOTA AB, JAPAN		1242								1242
ZQEL	YOUNGSTOWN, OH	437	732								1169
ZRZP	ZARAGOZA, SPAIN	238	125								363
ZSYQ	ZWEIBRUEKEN, GER		125			224			1009	531	1889
	TOTAL	29233	134688	4230	61	9202	299	719	7657	46024	232113

collection process. The balance of the data is reported by approximately 200 bases and against 154 weapon systems and covering nearly 450,000 inspections per year.

The duality of NDI reporting was clearly shown in the data review, further demonstrating the confusion arising from the current documentation rules of the AFM 66-1. The confusion and the duality should be eliminated to achieve a cohesive data base, thus simplifying the job of the NDI technician in data documentation and yielding more consistent use of data codes. Improved accuracy of NDI documentation can also be anticipated. These problems should be minimized, and possibly eliminated, with the implementation of NDI maintenance codes proposed by ARINC Research in Phase I.

It was also noted that essentially no ALC data were available. SMALC was the only ALC that reported NDI data in the 1.225-year period represented by the D056 data. A total of 21 man-hours was reported, as compared with the 97,240 man-hours (55 man-years) per year estimated by SMALC NDI personnel to be required for production NDI.

CHAPTER THREE

CONCLUSIONS

3.1 CONCLUSIONS

The following conclusions are presented on the basis of the results of the Task 1 contract activities:

- NDI maintenance activities require large expenditure of manpower resources -- more than 1.27 million man-hours per year.
- Only 200 of the 451 bases reporting to the D056 reported NDI maintenance.
- Dual NDI reporting procedures are available and used throughout the Air Force.
- NDI maintenance documentation is not available as a single, cohesive data structure using existing AFM 66-1 documentation procedures.
- Specific conclusions regarding NDI activities or effectiveness are not possible with the existing data base.
- Improvements to the existing NDI documentation procedures are necessary to provide the information needed for specific engineering and management decisions.
- A large quantity of NDI maintenance data is excluded from D056 data products because of processing procedures.

APPENDIX A

WEAPON SYSTEMS WITH NDI REPORTED

D056E (10 April 1979 - 30 June 1980)

Appendix A

WEAPON SYSTEMS WITH NDI REPORTED
D056E (10 April 1979 - 30 June 1980)

A-7D
YA-7D
A-10A
A-37B
B-52D
B-52G
B-52H
B-57C
EB-57B
C-5A
C-7A
C-9A
C-9C
C-123K
UC-123K
C-130A
C-130B
C-130D
C-130E
C-130H
AC-130A
AC-130H
DC-130E
EC-130E
HC-130H
HC-130N
HC-130P
MC-130E
WC-130E
WC-130H
C-131B
C-131D
C-131E
C-135A
C-135B
C-135C
C-135N
EC-135A
EC-135B
EC-135C
EC-135G
EC-135H
EC-135J
EC-135L
EC-135N
EC-135P
KC-135A
KC-135D
KC-135Q
NC-135A
RC-135A
RC-135M
RC-135S
RC-135T
RC-135U
RC-135V
WC-135B
NKC-135A
C-137B
C-137C
C-140A
C-140B
C-141A
C-141B
NC-141A
YC-141B
E-3A
E-4A
E-4B
F-4C
F-4D
F-4E
F-4F
F-4G
RF-4C
YF-4E
F-5B
F-5E
F-5F
F-15A
F-15B
F-15C
F-15D
F-16A
F-16B
F-100D
F-100F
F-101B
RF-101C
F-102A
QF-102A
TF-102A
PQM-102A
PQM-102B
F-104G
TF-104G
F-105B
F-105D
F-105F
F-105G
F-106A
F-106B
F-111A
F-111D
F-111E
F-111F
EF-111A
FB-111A
O-2A
O-2B
OV-10A
T-33A
T-37B
T-38A
T-38B
T-39A
T-39B
CT-39A
T-43A
SR-71A
WS-213B
HH-1H
TH-1F
UH-1F
UH-1N
UH-1P
HH-3E
CH-3E
CH-53C
HH-53B
HH-53C
HH-53H
AGM-65A
AGM-65B
AGM-65T
AGM-69A
AIM-4F
AIM-4G
AIM-7E
AIM-7F
AIM-9B
AIM-9E
AIM-9J
AIM-9P
AIM-9T
ALE-2
ALE-38
ALQ-71
ALQ-72
ALQ-87
ALQ-119
LGM-25C
LGM-30F
NON-A.F.

APPENDIX B

WEAPON SYSTEM BY BASE REPORTING NDI

D056E (10 April 1979 - 30 June 1980)

WEAPON SYSTEM BY BASE REPORTING NDI
D056E (10 April 1979 - 30 June 1980)

BASE	EQUIPMENT SERVICED
ALCONBRY RAF, UK	F-5E/RF-4C/AIM-9E/AIM-9J
BENTWATERS, UK	A-10A
ALTUS AFB, OK	C-5A/C-141A/KC-135A
ANDERSON AB GAF, GU	B-52D/KC-135A/WC-130E/WC-130H
ANDREWS AFB, MD	C-9C/C-130E/C-135B/C-135C/C-137C/C-140B/T-39A/CH-3E/CT-39A/UH-1N
ANDREWS NG, MD	F-105D/F-105F/T-33A/T-43A
ATLANTIC CITY NG, NJ	F-106A/F-106B/T-33A
AVIANO AB, ITALY	C-141A/F-4C/F-4D/F-4E/RF-4C
BAER FIELD NG, IN	C-131D/F-4C/F-100F/KC-135A
BARKSDALE BAF, LA	A-37B/B-52G/CT-39A/KC-135A/RC-135A
BARNES NG, MA	A-10A/F-100D
BEALE 15AF, CA	T-38A/KC-135A/KC-135Q/SR-71A
BEAUVECHAIN BLG	F-16A
BENTWATERS RAF, UK	A-10A/HC-130H/HC-130N/HC-130P/HH-53C/AGM-65A/AGM-65T/AIM-7E
BERGSTROM AFB, TX	C-130B/O-2A/CH-53C/CT-39A/OV-10A/RF-4C
BERRY FIELD, TN	C-130A
BIRMINGTON NG, AL	C-131D/RF-4C/NONAF
BITBURG AFB, GER	F-15A/F-15B
BLYTHEVILLE BAF, AR	B-52G/KC-135A
BOISE NG, ID	C-131D/RC-4C
BRADLEY NG, CT	A-10A/C-131E/F-100D/F-100F
BUCKLEY ANG, CO	A-7D/C-131D
GRISSOM BAF, IN	A-37B/EC-135G/EC-135L/KC-135A/KC-135D/RC-135T
BURLINGTON NG, VT	B-57C/EB-57B
BYRD FIELD NG, VA	F-105D/F-105F
CANNON AFB, NM	F-111D
CAPITAL NG, IL	F-4C/O-2A/AIM-9B
CARSWELL BAF, TX	B-52D/F-105D/F-105F/KC-135A/ALQ-87
CASTLE 15AF, CA	B-52G/B-52H/F-106A/F-106B/T-33A/KC-135A
CHARLESTON AFB, SC	C-141A/C-141B
CHEYENNE NG, WY	C-130B/TH-1F/UH-1F/NONAF
CHICAGO NG, IL	C-130A/KC-135A
O'HARE IAP, IL	C-130A/C-130H/KC-135A
CLARK AB, PHILI	C-9A/C-130E/C-141A/F-4D/F-4E/F-4G/F-5E/T-33A/T-38A/CH-3E/CT-39A/HH-3E/RC-135M/ AGM-65A
COLUMBUS AFB, MS	T-37B/T-38A
EL AMSTRADAM, NETH	F-15A/F-15B
DALLAS NAS, TX	C-130B
DANNELY FIELD, AK	RF-4C
DAVIS-MONTHAM 15AF, AZ	A-7D/A-10A/O-2A/HH-1H/LGM-25C
DES MOINES NG, IA	A-7D/C-131B
DOBBINS AFB, GA	C-7A
DOBBINS NG, GA	F-105D/F-105F/F-105G
DOUGLAS NG, NC	C-130B
DOVER AFB, DE	C-5A/C-141A
DANGOR ANG, ME	KC-135A
DULUTH NG, MN	T-33A/RF-4C
DYESS 15AF, CA	B-52D/C-130H/T-37B/KC-135A
EDWARDS AFB, CA	A-7D/A-10A/B-37B/B-52G/F-4C/F-4D/F-4E/F-4F/F-15A/F-15B/F-15C/F-16A/F-111D/ O-2A/T-38A/FB-111A/HH-1H/RF-4C/UH-1N/YC-141B/YF-4E/AGM-65A/NKC-135A
EGLIN 03, FL	C-130A/AC-130A
EGLIN AAF09, FL	AC-130H/CH-3E/HH-53B/HH-53C/HH-53H/MC-130E/UH-1N
EGLIN AFB, FL	A-7D/A-10A/A-37B/C-9A/F-4C/F-4D/F-4E/F-4G/F-15A/F-15B/F-15C/F-15D/F-16B/ F-111A/F-111E/F-111F/O-2A/T-38A/CH-53C/CT-39A/HC-130H/HC-130N/HC-130P/ HH-53B/HH-53C/KC-135A/RF-4C/UH-1N/AIM-7E/AIM-7F
EIELSON 15AF, AK	F-4E/O-2A/T-33A/HH-3E/KC-135A/KC-135Q/RC-135S/RC-135U/RC-135V
ELLINGTON NG, TX	F-102A/NONAF
ELLSWORTH 15AF, SD	B-52H/EC-135A/EC-135C/EC-135G/KC-135A/LGM-30F
ELMENDORF, AK	C-130E/C-141A/F-4E/T-33A/HC-130N/HH-3E/AIM-7E/AIM-9E
ENGLAND AFB, LA	A-7D
FRANCIS WARREN 15AF, WY	C-130B/TH-1F
FAIRCHILD 15AF, WA	B-52G/C-130A/C-131D/KC-135A/KC-135Q/UH-1N
FAIRCHILD NG, WA	C-131D
FORBES ANG, KS	C-131B/KC-135A
FRESNO NG, CA	F-106A/F-106B/T-33A
FT. SMITH NG, AR	F-4C
GR. MITCHELL, WI	KC-135A
MITCHELL FIELD, WI	C-130A
GEORGE AFB, CA	F-4E/F-4G/F-105F/F-105G/UH-1P
GRAND FORKS 15AF, ND	B-52H/HH-1H/KC-135A/TH-1F/UH-1F/AGM-69A
GREAT FALLS NG, MT	C-131D/F-106A/F-106B/AIM-4F
GRIFFIS NG, IL	A-37B/C-131E/O-2A
GREATER PITTSBURGH NG, PA	A-7D/KC-135A
GREATER PITTSBURGH AP, PA	A-7D/C-123K/KC-135A/UC-123K
WILMINGTON NG, DE	C-130A
GRIFFISS BAF, NY	B-52G/F-106A/F-106B/T-33A/KC-135A
HAHN AB, GER	F-4E/AIM-7E/AIM-9J/AIM-9T/ALQ-119
HANCOCK FIELD, NY	F-106A
HANCOCK NG, NY	A-10A/A-37B
HAYWARD NG, CA	HC-130H/HC-130P/HH-3E
HILL AF, UT	C-131D/F-4D/T-33A/AIM-7E/AIM-9E

WEAPON SYSTEM BY BASE REPORTING NDI
(As of 10 April 1979 - 30 June 1980)

BASE	EQUIPMENT SERVICED
HICKAM AB, HI	C-5A/C-130B/C-130E/C-135C/C-141A/O-2A/T-33A/EC-135J/HC-130H/HC-130P/HH-53C/KC-135A/KC-135Q/NONAF
HICKAM NG, HI	C-7A/F-4C/F-4D
HILL AFB, UT	F-4C/F-4D/F-16A/F-16B/P-105B/F-105D/T-33A/CH-3E/CH-53C/DC-130E/HH-53C/HH-1H/AIM-9E/AIM-9J
HOLLOMAN AFB, NM	F-15A/F-15B/T-38A/T-38B/UH-1N
HOMESTEAD BAF, FL	F-4C/F-4D/F-4E/HC-130H/HC-130N/HH-1H/HH-3E/UH-1N/AIM-7E
HULMAN NG, IN	F-4C
ALBROOK AFB, PN	O-2A/UH-1N/NONAF
INCIRLIK AB, TURKEY	C-130E/AIM-7E
JACKSON NG, MS	C-130E/NONAF
JACKSONVILLE NG, FL	F-106A/F-106B/T-33A/ALE-2
JOE FOSS NG, SD	A-7D
SAWYER BAF, MI	B-52H/F-106A/F-106B/T-33A/KC-135A
KADENA BAF, OKINAWA	E-8A/F-4C/F-4D/F-4G/F-15C/CT-39A/HC-130H/HC-130N/HC-130P/HH-53C/KC-135A/KC-135Q/HC-130E/RC-135M/RC-135V/RF-4C
KANAWHA NG, WV	C-130E/NONAF
KEESLER AB, MS	EC-130E/WC-130E/WC-130H
KEFLAVIK AP, ICELAND	F-4E/T-33A/CH-3E/HH-3E/AIM-7E/AIM-9E/AIM-9P
KELLOG NG, MI	O-2A/O-2B
KELLY AFB, TX	C-130B/NONAF
KELLY NG, TX	F-4C/F-15A/T-39A/NONAF
KEY FIELD NG, MS	RF-4C/NONAF
KIRTLAND AFB, NM	A-7D/CH-3E/CH-53C/CT-39A/HC-130H/HC-130N/HC-130P/HH-3E/HH-53B/HH-53C/HH-53H/TH-1F/UH-1N
KIRTLAND ANG, NM	A-7D
KULIS NG, AK	C-130E
KUNSAN AB, KOREA	F-4C/F-4D/AIM-9J/AIM-9P
LAKENHEATH, UK	C-130E/C-130H/F-111F/EC-135A/EC-135H/KC-135A/KC-135Q/RC-135U/RC-135V/NONAF
LAMBERT NG, MO	F-4C/T-33A
LANGLEY AFB, VA	F-15A/F-15B/F-106A/F-106B/T-33A/T-39A/CT-39A/EC-135H/EC-135P/AIM-7F
LAUGHLIN AB, TX	T-37B/T-38A
LEEUWARDEN, NL	F-16A
LINCOLN NG, NB	C-131D/RF-4C
LITTLE ROCK BAF, AR	C-130E/C-130H/C-131D/DC-130E/HH-1H/KC-135A/LGM-25C
LITTLE ROCK NG, AR	KC-135A
RICKENBACKER AFB, OH	C-123K/UC-123K
RICKENBACKER ANG, OH	A-7D/KC-135A
LORING BAF, ME	B-52G/F-106A/T-37B/KC-135A
LUKE AFB, AZ	F-4C/F-15A/F-15B/T-33A/CH-3E/UH-1P
MACDILL AFB, FL	F-4D/RF-4C/UH-1P
MALSTROM 15AF, MT	UH-1F
MANSFIELD NG, OH	C-130B
MARCH 15AF, CA	B-52D/T-38A/HC-130H/KC-135A
MARTIN NG, MD	A-10A/A-37B/C-7A
MARTINSBURG NG, WV	C-130B
MATHER AFB, CA	B-52G/T-37B/T-43A/KC-135A
MAXWELL AFB, AL	C-7A
MCCHORD AFB, WA	C-130E/C-141A/C-141B/F-106A/F-106B/T-33A/AIM-4G
MCCLELLAN AFB, CA	CT-39A/HC-130H/HC-130N/HC-130P/HH-53C/WC-135B
MCCONNELL AFB, KS	F-4D/F-105D/F-105F/KC-135A
MCCONNELL NG, KS	F-4D/F-105D/F-105F
MCENTIRE NG, SC	A-7D/C-130E
MCGHEE NG, TN	KC-135A
MCGUIRE AFB, NJ	C-130E/C-141A/F-105B/RC-135A/NONAF
MCGUIRE NG, NJ	C-131D/F-105B/T-33A/KC-135A
MEMPHIS NG, TN	C-130A
MILDENHALL, UK	C-130H
MINN-ST. PAUL NG, MN	C-130A
ST. PAUL AP, MN	C-130A/NONAF
MINOT 15AF, ND	B-52H/F-106A/F-106B/T-33A/HH-1H/KC-135A/TH-1F/UH-1F
MOODY AFB, GA	F-4E
MOUNTAIN HOME 15AF, ID	F-111A/EF-111A/UH-1N
MYRTLE BEACH AB, SC	A-10A/HH-3E
NELLIS AFB, NV	A-7D/A-10A/C-141A/F-4D/F-4E/F-4G/F-5E/F-15A/F-15B/F-106A/T-38A/RF-4C/UH-1N/WS-213B/YA-7D/AGM-65B/AIM-9E/AIM-9J
NEW ORLEANS NG, LA	F-4C
NEW ORLEANS NAS, LA	A-37B
NIAGARA FALLS NG, NY	C-130A
NIAGARA FALLS AP, NY	C-130A/F-101B/T-33A/RF-101C
N. HIGHLANDS NG, CA	HH-3E
NORTON AFB, CA.	C-141A/T-38A/CT-39A/YC-141B
OFFUTT AFB, NB	C-135A/C-135B/E-4B/T-38A/CT-39A/EC-135C/KC-135A/RC-135A/RC-135M/RC-135U/RC-135V
OLMSTEAD NG, PA	EC-130E
ONTARIO NG, CA	O-2A
OSAN AB, KOREA	F-4D/F-4E/F-5E/CH-3E/HH-3E/OV-10A/RF-4C
OTIS ANG, MA	C-131D/F-106A/F-106B/T-33A/ALE-2
PATRICK AFB, FL	O-2A/CH-3E/OV-10A
PEASE AB, BAF, NH	FB-111A/KC-135A
PEASE NG, NH	KC-135A

WEAPON SYSTEM BY BASE REPORTING NDI
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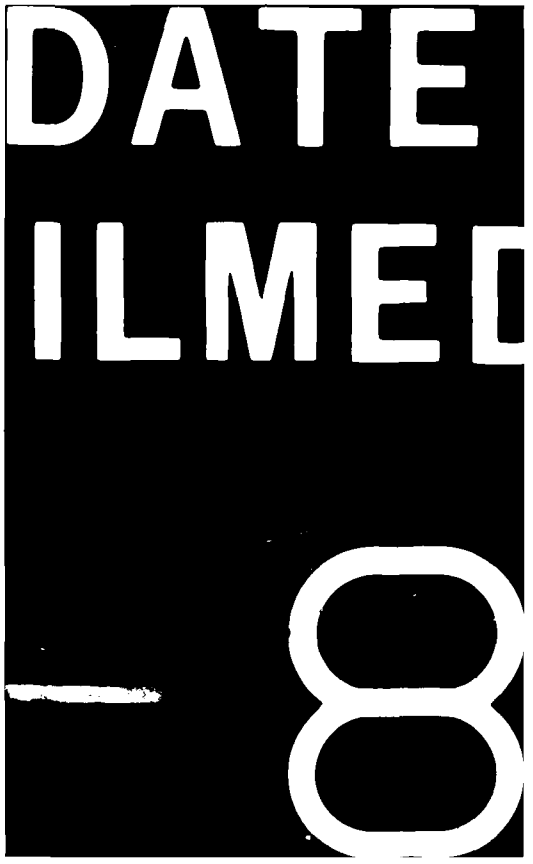
BASE	EQUIPMENT SERVICED
PETERSON, CO	C-141A/T-33A/CT-39A/NONAF
LOCKHEED, AZ	F-104G/TF-104G
PLATTSBURG 8AF, NY	FB-111A/KC-135A/KC-135Q/UH-1N
POPE AFB, NC	C-130A/C-130E/C-130H/NONAF
PORTLAND NG, OR	C-131B/F-101B/T-33A
PORTLAND IAP, OR	HH-1H/UH-1N
PUERTO RICO NG, PR	A-7D/C-131E
RAMSTEIN AB, GER	C-5A/C-130H/C-135B/C-140B/C-141A/F-4E/F-111A/CH-53C/CT-39A/HH-53C/OV-10A/ UH-1N/AIM-7E/AIM-9J/ALQ-119
RANDOLPH AB, TX	T-37B/T-38A/T-39A/CT-39A
REESE AFB, TX	T-37B/T-38A
RENO NG, NV	RF-4C
RHEIN MAIN AD, GER	C-9A/C-130E/C-141A/T-39A/MC-130E/NC-135A
RICHARDS GEBAUR AB, MO	C-130B/C-130E
ROBINS AFB, GA	KC-135A
ROSECRANE NG, MO	C-130A
SALT LAKE CITY NG, UT	KC-135A/NONAF
SCHENECTEDY NG, NY	C-130D/O-2A
SCOTT AFB, IL	C-9A/C-140A/CT-39A
SELFRIDGE AB, MI	A-7D/C-130A/F-4C/T-33A/CH-3E/HC-130H/HC-130N/HH-3E/AIM-7E
SEMBACH ABS, GER	A-10A/CH-53C/OV-10A
SEYMOUR JOHNSON AFB, NC	F-4E/KC-135A/AIM-7E/ALE-38/ALQ-71
SHAW AFB, SC	O-2A/CH-3E/CT-39A/RF-4C
SHEPARD AFB, TX	T-37B/T-38A
SIOUX CITY NG, IA	A-7D
SKY HARBOR NG, AZ	KC-135A
SPANGDAHLEN, GER	F-4C/F-4D/F-4E/F-4G/ALQ-119
SPRINGFIELD NG, OH	A-7D
STANDFORD NG, KY	RF-4C
SUFFOLK APT, NY	HC-130H/HC-130P/HH-3E
TF GREEN NG, RI	C-130A
TINKER AFB, OK	E-3A/E-4A/F-105D/F-105F
TOLEDO NG, OH	A-7D
TORREJON AB, SPAIN	F-4C/F-4D
TRAVIS AFB, CA	C-5A/C-141A/C-141B/KC-135A
TRAVIS AP NG, CA	C-130E
TRUAX NG, WI	A-37B/O-2A
TUCSON NG, AZ	A-7D/C-131B
TULSA NG, OK	A-7D
TYNDALL AFB, FL	F-101B/F-106A/F-106B/T-33A/CH-3E/HH-3E/QF-102A/TF-102A/ALE-2/ALQ-72/PQM-102B
UPPER HEYFORD, UK	F-111E
VAN NUYS NG, CA	C-130B/C-130E
VANCE AFB, CA	T-37B/T-38A
VANDENBURG AFB, CA	UH-1N/LGM-25C
WESTCHESTER NG, NY	O-2A
WESTOVER AFB, MA	C-123K/C-130B/UC-123K
WHEELER AB, HI	O-2A
WHITEMAN AFB, MO	TH-1F/UH-1F
W. ROGERS NG, OK	C-130A/C-130H
WILLIAMS AFB, AZ	F-5B/F-5F/T-37B/T-38A
WILLOW GROVE NG, PA	C-130E/O-2A
WILLOW GROVE NAS, PA	C-130E/O-2A
WOODBRIDGE RAF, UK	HC-130H/HC-130N/HH-53C
WRIGHT-PATTERSON, OH	C-130A/C-135A/C-135B/C-135N/C-137B/C-141A/T-39A/T-39B/CH-3E/CT-39A/EC-135B/ EC-135N/NC-141A/NKC0135A
WRIGHT-PATTERSON AFB, OH	NKC-135A
WURTSMITH 8AF, MI	B-52G/KC-135A
YOKOTA AB, JAPAN	C-5A/C-130E/C-141A/T-39A/CT-39A/UH-1N/UH-1P/WC-135B/PQM-102A/NONAF
YOUNGSTOWN, OH	A-37B
ZARAGOZA, SPAIN	F-4D/KC-135A/UH-1N
ZWEIBRUEKEN, GER	F-4D/F-4E/RF-4C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