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Optimum Repair-Level Analysis (ORLA) and Life Cycle Cost (LCC) Models for the Base and Installation Security System (BISS)

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ABSTRACT

Models for Optimum Repair-Level Analysis (ORLA) and Life-Cycle Cost (LCC) analysis for Base and Installation Security System (BISS) equipment are described. The ORLA model determines the costs of alternative maintenance approaches for selection of the most economic maintenance approach. The LCC model determines the total cost to the Government for the development, acquisition, initial logistics support, and for on-going support of a system over the projected inventory usage period. A unique feature of these models is the marriage of ORLA and LCC which enables LCC to utilize completely the most economic ORLA decision costs. This significantly reduces the overall LCC effort.

CONTENTS

<u>Chapter</u>		<u>Page</u>
I	GENERAL DESCRIPTION	7
	ORLA and LCC Models	7
	ORLA/LCC Model Application	7
	Engineering Change Proposals (ECPs)	8
	ORLA/LCC Model Description	8
	Input Data	8
	Sensitized ORLA	8
II	OPTIMUM REPAIR-LEVEL ANALYSIS MODEL DESCRIPTION	11
	Optimum Repair-Level Analysis (ORLA) Model	11
	Option T Cost: Base-Level Subassembly Discard at Failure	11
	Option TT Cost: Base-Level Assembly Discard at Failure	14
	Option F Cost: Base-Level Subassembly Repair at Failure	16
	Option DD Cost: Depot-Level Subassembly Repair at Failure	18
	Option DF Cost: Depot-Level Assembly Repair by Subassembly Repair at Failure	21
	Option DT Cost: Depot-Level Assembly Repair by Subassembly Discard at Failure	24
III	LIFE CYCLE COST MODEL DESCRIPTION	27
	Life Cycle Cost (LCC) Model	27
	Detailed LCC Model Form I	28
	Development Cost	28
	Acquisition Cost	28
	Hardware Cost	28
	System Test and Management	28
	Technical Data Cost	28
	Site Preparation and Installation Cost	29
	Initial Replacement Spares Cost, Repairable Items	29
	Initial Replacement Spares	29
	Centralized Repair Activity Pipeline	30
	Cost to Replace Nonrepairable Items	30
	Inventory New Item Entry and Supply Management Cost	30
	Support Equipment Cost	31
	Training Cost	31
	Off-Equipment Maintenance Cost	32
	On-Equipment Maintenance Cost	33
	Facilities Cost	33
	Development Cost	33
	Acquisition Cost	33

CONTENTS (Continued)

<u>Chapter</u>		<u>PAGE</u>
	Deployment Site Associated Costs and Depot CSE Cost	34
	ORLA Option Cost	34
	Nonrepairable Item Cost	34
IV	SYMBOLS, DEFINITIONS, AND CROSS-REFERENCES	35
	Exhibit A, ORLA/LCC Definitions	36
	Additional LCC Symbols and Definitions	44
	Cross-References	46
APPENDIX A --	Agency/Contractor Supplied Data (ORLA/LCC CDRL)	49
APPENDIX B --	Standard Factors	59
APPENDIX C --	BISSPO Equipment Data	63

ILLUSTRATIONS

<u>Figure</u>		
II-1	ORLA Option Block Diagram	12
A-1	ORLA Option Block Diagram	53

EXHIBITS

<u>Exhibit</u>		
A	ORLA/LCC Definitions	36
B	Assembly/Subassembly Data	54
C	PSE Data	56
D	New Parts Application Data	57
E	Agency/Contractor Data	58
F	BISSPO/Agency Data	66

OPTIMUM REPAIR-LEVEL ANALYSIS (ORLA) AND LIFE CYCLE COST (LCC)
MODELS FOR THE BASE AND INSTALLATION SECURITY SYSTEM (BISS)

CHAPTER 1
GENERAL DESCRIPTION

ORLA and LCC Models

This document describes the Optimum Repair-Level Analysis (ORLA) and Life Cycle Cost (LCC) models for the Base and Installation Security System (BISS). A relationship normally exists between the ORLA and LCC models in that the majority of cost elements considered in an LCC model are also considered in an ORLA model. This relationship was utilized to the maximum. Common symbols, definitions, and cost equations were developed which allow all ORLA cost equations to be used within the LCC model. Thus, an LCC evaluation becomes an extension of the ORLA evaluation. This reduces the overall effort required for an LCC evaluation by as much as 80 percent. The ORLA and LCC models and their relationship are described in detail in the following subsections.

ORLA is defined as an iterative decision process employing cost analysis which defines the economics for decisions relating to alternative maintenance postures. Considered in the analysis are operational requirements, technical characteristics of the hardware design, and the economics of support. The results identify the repair location, extent of maintenance permitted, and resources necessary to support the repair process for each hardware item subjected to analysis. LCC is defined as the total cost to the government for development, acquisition, initial logistics support, and recurring logistics support of a system.

ORLA/LCC Model Application

The ORLA/LCC models are intended to be employed on BISS equipment in accordance with the Statement of Work (SOW) and the methodology outlined in this report. These models should be applied early in the equipment development cycle, beginning with advanced development and continuing throughout the engineering development and the production phases. ORLA/LCC provides the means for making design and management trade-offs in the interest of minimizing (within specification constraints) total cost of equipment ownership. During the advanced development phase, the models serve as an effective means for eliminating the system concepts of higher cost. They also serve to quantify the effects on cost of different maintenance philosophies.

Although design data are not completely definitized in advanced development or in the early phases of engineering development, the agency/contractor should provide his best estimates based on his knowledge of the equipment. Later in the engineering development, as design data become finalized, input data to the models will be refined. This will result in a subsequent analysis of higher confidence.

Engineering Change Proposals (ECPs)

The ORLA/LCC models should be utilized in preparing Engineering Change Proposals (ECPs) throughout the acquisition of a system. All input variables used to calculate the ORLA/LCC costs for the original configuration and the new or proposed configuration should also be submitted with the ECP. Comparing the ORLA/LCC results against the baseline and proposed configurations will aid the Configuration Control Board in reaching its final decision on the ECP.

ORLA/LCC Model Description*

The common basis shared by the ORLA/LCC models enables cost elements for ORLA to be used as inputs to LCC. Only a few cost elements need to be added to obtain the LCC of a system. These two models are tailored to the BISS maintenance philosophy which states that organizational and intermediate maintenance be accomplished as a base maintenance activity, i.e., both functions are performed by the same maintenance personnel. It also includes the concept of two repairmen and an average travel time of 1 hour to accomplish maintenance at the deployment site.

Because of the type of equipment and its design and maintenance characteristics as well as the BISS maintenance philosophy, ORLA has six repair-level options. These include assembly and subassembly discard and base and depot repair.

Input Data

Exhibits to be supplied by the agency/contractor and by the BISS Program Office (BISSPO) and which must be completed for each ORLA/LCC evaluation, are presented in Appendices A and C. Standard factors are listed in Appendix B. These standard factors are values which remain constant over long intervals for ORLA/LCC evaluations of various systems and for progressive ORLA/LCC evaluations of a system throughout its development phases.

Sensitized ORLA

ORLAs are run to provide guidance in determining the most economic maintenance approach and as a prerequisite to LCC. The first ORLA run(s) for determining the most economic maintenance approach may result in mixed decisions, e.g., repair some subassemblies, discard others. A subsequent ORLA run (for LCC) must then be

*The ORLA model is described in detail in Chapter II and the LCC model in III; symbols and definitions are contained in Chapter IV.

"conducted with a modified K3 (supply administrative cost factor for new parts), K4 (initial and continuing supply management cost for new parts), and CPSE (acquisition cost of peculiar support equipment) which reflects the decisions of the first ORLA. This ORLA run is the true cost. Before this cost is used as input to L4 (ORLA option cost equation III-16) of the LCC, it should be compared to the cost of repairing or discarding all subassemblies (within an assembly type). Thus, the most economic ORLA option cost is determined for a final repair-level decision; cost of this final repair-level decision is the input to the LCC."

CHAPTER II
OPTIMUM REPAIR-LEVEL ANALYSIS MODEL DESCRIPTION

Optimum Repair-Level Analysis (ORLA) Model

The ORLA model described in this report is consistent with AFLCM/AFSCM 800-4 and is presented in a form which can provide direct inputs to the LCC model. The six repair-level cost options that it contains are

1. Option T cost: base-level subassembly discard at failure,
2. Option TT cost: base-level assembly discard at failure,
3. Option F cost: base-level subassembly repair at failure,
4. Option DO cost: depot-level subassembly repair at failure,
5. Option DF cost: depot-level assembly repair by subassembly repair at failure, and
6. Option DT cost: depot-level assembly repair with subassembly discard at failure.

These repair-level options are depicted in Figure II-1 and are defined in the sections which follow.

A. Option T Cost: Base-Level Subassembly Discard at Failure

The discard-at-failure cost for subassemblies, Item I, at base level is computed by

$$\text{Option T cost} = \sum_{i=1}^8 Ti(I) \quad (II-1)$$

where

Ti(I) is the individual cost as defined by each T equation which follows.

Option T includes the cost to fault isolate assembly to the Item I subassembly, to remove and replace the subassembly, to adjust and align, and to verify assembly repair. These functions are identified with base-level maintenance whether the functions are performed at the deployment site or at the base maintenance shop. Also considered in this option are the peculiar support equipment (PSE) items, technical data, and base-level training. Option T cost is determined in accordance with Eq. II-2 through Eq. II-9.

Figure II-1. ORLA Option Block Diagram

Replacement spares cost:

$$T1(I) = 12 \cdot PIUP \left| \frac{UR}{MTBF(I)} \right| NOA(I) \cdot QPA(I) \cdot CAL(I) \quad (II-2)$$

T1(I) is the cost of procuring all Ith sub-assemblies to replace those which fail during the projected inventory usage period (PIUP).

Packing and shipping cost:

$$T2(I) = 12 \cdot PIUP \left| \frac{UR}{MTBF(I)} \right| NOA(I) \cdot QPA(I) \cdot UW(I) \cdot K1 \quad (II-3)$$

T2(I) is the cost of packing and shipping all replacement spare Ith subassemblies during the PIUP.

Base stock level cost:

$$T3(I) = CAL(I) \cdot NB \left| INT \right| 1 + \left| \frac{UR}{MTBF(I)} \right| \left| \frac{NOA(I)}{NB} \right| QPA(I) \cdot K2 \\ + FCLIM \sqrt{\left| \frac{UR}{MTBF(I)} \right| \left| \frac{NOA(I)}{NB} \right| QPA(I) \cdot K2} \quad (II-4)$$

T3(I) is the cost of the base stock level needed to support all Ith subassemblies for the replenishment time, K2.

Supply management and administrative cost:

$$T4(I) = CAMI + \left| PIUP - 1 \right| CANR + PIUP \cdot CSA \left| NB + ND \right| \quad (II-5)$$

T4(I) is the initial and continuing supply system cost for the new Item I subassembly during the PIUP. (This includes the Air Force wide inventory management cost as well as the supply administrative cost at depots and at each base.)

PSE acquisition and development cost:

$$T5(I) = NOA(I) \cdot QPA(I) \cdot CPSET(I) \quad (II-6)$$

T5(I) is the cost of the base PSE required for replacing Item I amortized over all subassemblies in all assemblies that require this support equipment.

PSE maintenance cost for BISS is expected to be negligible compared to other costs. Therefore, in the ORLA model, this cost is assumed to be zero.

Training (Instruction) cost:

$$T6(I) = \frac{[1 + MIMF(PICR-1)]NIMAT \cdot TIMAT [CIMAT + CLMF]NS}{NLI} + \frac{NIMCF \cdot TIMCF [CIMCF + CLMF]}{NLI} \quad (11-7)$$

T6(I) is the cost of training base maintenance personnel to isolate an assembly fault to Item I and to replace it. This cost is amortized over all different subassembly types in all different assembly types taught in the training course. The cost includes the initial instructor training by the agency/contractor, the training of the initial complement of maintenance personnel, and follow-on training.

Technical data cost:

$$T7(I) = \frac{NTDPT}{NLA} [CTDOR + CTDP \cdot NTDPT] \quad (11-8)$$

T7(I) is the cost of preparing and publishing that portion of the technical manual for the assembly that is repaired by replacing Item I. This cost is amortized over all different subassembly types listed in the assembly manual.

Equipment maintenance cost:

$$T8(I) = 12 \cdot PIUP \left| \frac{UR}{MTBF(I)} \right| NOA(I) \cdot QPA(I) [TMCT + TR] CLTP \quad (11-9)$$

T8(I) is the cost of base labor needed to repair the assembly by replacing the Item I subassembly and completing the maintenance forms.

B. Option TT Cost: Base-Level Assembly Discard at Failure

The discard-at-failure cost for assemblies, Item M, at base level is computed by

$$\text{TOTAL COST} = \sum_{M=1}^M \text{TT}(M) \quad (11-10)$$

where

TT(M) is the individual cost as defined by each equation which follows.

TT1(M) is determined in accordance with Eq. 11-11 through Eq. 11-14.

Replacement spares cost:

$$\text{TT1}(M) = 12 \cdot \text{PIUP} \left[\frac{\text{UR}}{\text{MTBF}(M)} \right] \left[\text{NOA}(M) + \text{TC} \cdot \text{CLTR} \right] \quad (11-11)$$

TT1(M) is the cost of procuring all Mth assemblies to replace those which fail during the PIUP. It also includes the cost of base labor needed to complete maintenance tasks.

Packing and shipping cost:

$$\text{TT2}(M) = 12 \cdot \text{PIUP} \left[\frac{\text{UR}}{\text{MTBF}(M)} \right] \left[\text{NOA}(M) \cdot \text{UK}(M) \cdot K1 \right] \quad (11-12)$$

TT2(M) is the cost of packing and shipping all replacement spare Mth assemblies during the PIUP.

Base stock level cost:

$$\text{TT3}(M) = \text{CAL}(M) \cdot \text{NB} \left\{ \text{INT} \left\{ 1 + \left[\frac{\text{UR}}{\text{MTBF}(M)} \right] \left[\frac{\text{NOA}(M)}{\text{NB}} \right] K2 \right. \right. \quad (11-13) \\ \left. \left. + \text{FCLIM} \sqrt{\left[\frac{\text{UR}}{\text{MTBF}(M)} \right] \left[\frac{\text{NOA}(M)}{\text{NB}} \right] K2} \right\} \right\}$$

TT3(M) is the cost of the base stock level needed to support all Mth assemblies for the replenishment time, K2.

Supply management and administrative cost:

$$\text{TT4}(M) = \text{CAMI} + \left[\text{PIUP} - 1 \right] \text{CAMR} + \text{PIUP} \cdot \text{CSA} \left[\text{NB} + \text{ND} \right] \quad (11-14)$$

TT4(M) is the initial and continuing supply system cost for depots and bases to introduce the Mth assembly for the PIUP.

C. Option F Cost: Base-Level Subassembly Repair at Field:

Subassembly repair-at-failure cost for base-level repair of the Item I subassembly is computed by

$$\text{Option F Cost} = \sum_{K=1}^3 FK(I), \quad (11-15)$$

where

$FK(I)$ is the individual cost as defined by each Equation which follows.

Option F includes the cost to fault isolate assembly to the Item I subassembly, to remove and replace the subassembly, to repair the subassembly by part replacement, to adjust and align, and to verify the repair of the subassembly and assembly. These functions are identified with base-level maintenance whenever the functions are performed at the deployment site or at the base maintenance shop. Also considered in this option are the PSE items, technical data, and base-level training. The option F cost is determined in accordance with Eq. 11-16 through Eq. 11-24.

Initial spares cost:

$$F1(I) = \text{CAL}(I) \cdot \text{NB} \left\{ \left[\text{RT} \left(1 + \left| \frac{\text{UR}}{\text{MTBF}(I)} \right| \left| \frac{\text{NOA}(I)}{\text{HB}} \right| \right) \right] \text{GPA}(I) \left[\text{TLF} + [1 - \text{MPPSF}] K^2 \right] \right. \\ \left. + \text{PIULIM} \sqrt{\left| \frac{\text{CP}}{\text{MTBF}(I)} \right| \left| \frac{\text{NOA}(I)}{\text{NB}} \right| \text{GPA}(I) \left[\text{TLF} + [1 - \text{MPPSF}] K^2 \right]} \right\} \quad (11-16)$$

$F1(I)$ is the cost of Item I spares used during the turnaround time, TLF, and the replenishment time, K2, needed to acquire repair parts that are not at the base.

Packing and shipping cost:

$$F2(I) = 12 \cdot \text{PIUP} \left\{ \left| \frac{\text{UR}}{\text{MTBF}(I)} \right| \right\} \text{NOA}(I) \cdot \text{GPA}(I) \cdot K1 \left[\text{UWS} [1 - \text{MFCF}] \right. \\ \left. + \text{UW}(I) \cdot \text{MFCF} \right] \quad (11-17)$$

$F2(I)$ is the cost of packing and shipping replacements for Item I repair parts and for Item I subassemblies condemned during the PIUP.

Supply administrative cost:

$$F3(I) = \text{CSA} \left\{ \text{PIUP} [\text{NB} + \text{ND}] + [\text{NB} \cdot \text{MFN} + \text{ND}] K3(I) \right\} \quad (11-18)$$

F4(I) is the base and depot supply administrative cost of stocking the new Item 1 subassembly and its new parts for the PIUP. This cost takes into account the fraction of new parts of the Item 1 subassembly stocked at the base and the new parts of the Item 1 subassembly stocked at depots. F4(I) provides for anticipated future Air Force program application of each new part.

Supply management cost:

$$F4(I) = \text{CAME} + \text{PIUP} \cdot \text{CAME} + F4(I)$$

(II-19)

F4(I) is the initial and continuing management cost for the new Item 1 subassembly and its new parts. F4(I) provides for anticipated future Air Force program application of each new part.

PE acquisition and development cost:

$$F5(I) = \text{PEACI} + \text{PEACI} + \text{CPEAF(I)}$$

(II-20)

F5(I) is the cost of base PFE required to service Item 1 amortized over all subassemblies in all assemblies that require this support equipment.

Training (instruction) cost:

$$F6(I) = \frac{[1 + \text{MFINF} \cdot \text{PIUP} \cdot 1] \cdot \text{NIMCF} \cdot \text{TIMCF} \cdot [\text{CINCF} + \text{CLDF}] \cdot \text{NB}}{\text{NLT}} \\ + \frac{\text{NIMCF} \cdot \text{TIMCF} \cdot [\text{CINCF} + \text{CLDF}]}{\text{NLT}}$$

(II-21)

F6(I) is the cost of training base personnel to isolate an assembly fault to an Item 1 part and to effect repair by part replacement. This cost is amortized over all different subassembly types in all assembly types taught in the training course and includes the initial instructor training by the agency/contractor, the training of the initial complement of maintenance personnel, and follow-on training.

Technical data cost.

$$F7(I) = \frac{NTDPF}{NLA} \left| CTDOR + CTDP \cdot NTDP \right| \quad (11-22)$$

F7(I) is the cost of preparing and publishing that portion of the base technical manual which applies to the assembly that is repaired by repairing Item I. This cost is amortized over all subassembly types listed in the assembly manual.

Equipment maintenance cost:

$$F8(I) = 12 \cdot PIUP \left| \frac{UR}{MTBF(I)} \right| NOA(I) \cdot QPA(I) \left| TMCF + TR \right| CLTF \quad (11-23)$$

F8(I) is the cost of base labor needed to isolate the fault to an Item I part, to replace the part, and to complete maintenance forms.

Repair materials and replacements cost:

$$F9(I) = 12 \cdot PIUP \left| \frac{UR}{MTBF(I)} \right| NOA(I) \cdot QPA(I) \left| 1.2 \cdot CIP(I) \{1 - MFCF\} + CAL(I) \cdot MFCF \right| \quad (11-24)$$

F9(I) is the cost of Item I repair parts and replacement Item I subassemblies for those condemned. This cost takes into account the fact that subassembly repair consists of replacing an average of 1.2 repair parts.

D. Option DD Cost: Depot-Level Subassembly Repair at Failure

The cost for Item I subassembly repair by the depot, including base-level fault isolation to the subassembly and its shipment to the depot, is computed by

$$\text{Option DD cost} = \sum_{m=1}^{10} DDm(I) \quad (11-25)$$

where

DDm(I) is the individual cost as defined by each DD equation which follows.

Option DD includes the following costs:

1. The cost for each base to fault isolate the assembly to the Item I sub-assembly, to remove and replace the assembly, to adjust and align, and to verify assembly repair,
2. The cost of PSE items, technical data, and training related to base and depot maintenance,
3. The cost of round-trip packaging and shipping of subassembly Item I, and
4. The cost of subassembly Item I repair by the depot.

Option DD cost is determined in accordance with Eq. II-26 through Eq. II-35.

Initial spares cost:

$$DD1(I) = CAL(I) \left[\frac{UR}{MTBF(I)} \right] NOA(I) \cdot OPA(I) \cdot TLD \quad (II-26)$$

DD1(I) is the cost of Item I spares needed for the pipeline time, TLD.

Packing and shipping cost:

$$DD2(I) = 2T2(I) \quad (II-27)$$

DD2(I) is the cost of round-trip shipments of Item I during the PIUP.

Base stock level cost:

$$DD3(I) = T3(I) \quad (II-28)$$

DD3(I) is the cost of the base stock level needed to support all Ith subassemblies for the replenishment time, K2.

Supply management and administrative cost:

$$DD4(I) = F4(I) + CSA \left[PIUP [NB + ND] + ND \cdot K3(I) \right] \quad (II-29)$$

DD4(I) is the initial and continuing supply system cost for the new Item I subassembly and its new parts. This cost includes the

Air Force wide inventory management cost and base and depot supply administrative cost. K3(I) provides for anticipated future Air Force program application of each new part.

PSE acquisition and development cost:

$$DD5(I) = NOA(I) \cdot QPA(I) \cdot CPSEDD(I) + T5(I) \quad (II-30)$$

DD5(I) is the cost of depot PSE required to service Item I amortized over all subassemblies in all assemblies that require this support equipment and T5(I) is the cost of PSE used at base level to repair the assembly by subassembly replacement.

Training (instruction) cost:

$$DD6(I) = \frac{NIMCDD \cdot TIMCDD (CIMCDD + CLCD)}{NLI} + T6(I) \quad (II-31)$$

DD6(I) is the initial agency/contractor cost to train depot-level personnel to isolate an Item I subassembly fault to the failed part and to repair the subassembly by part replacement. This cost is amortized over all different subassembly types in all assembly types taught in the training course. Follow-on training for depot personnel is not included in DD6(I); it is accomplished as on-the-job training. T6(I) is the cost of training base personnel to repair the assembly by subassembly replacement.

Technical data cost:

$$DD7(I) = \frac{NTOPDD}{NLA} \left[CTDOR + CTD P - NTDDD \right] + T7(I) \quad (II-32)$$

DD7(I) is the cost of preparing and publishing that portion of the technical manual related to Item I repair and T7(I) is the cost of that portion of the base-level technical manual for the assembly that is repaired by replacing Item I. This cost, DD7(I), is amortized over all different subassembly types listed in the assembly manual.

Equipment maintenance cost:

$$DD8(I) = 12 \cdot PIUP \left[\frac{UR}{RTBF(I)} \right] NOA(I) \cdot QPA(I) \cdot TMCDD \cdot CLTD + T8(I) \quad (II-33)$$

DD8(I) is the cost of depot labor needed to repair item I and T8(I) is the cost of base labor needed to repair the assembly by replacing the Item I subassembly and completing maintenance forms.

Repair materials and replacements cost:

$$DD9(I) = 12 \cdot PIUP \left| \frac{UR}{MTBF(I)} \right| \left| NOA(I) \cdot QPA(I) \right| \left| 1.2 \cdot CRP(I) [1 - MFCO] + CAL(I) \cdot MFCO \right| \quad (11-34)$$

DD9(I) is the cost of Item I repair parts and replacement Item I subassemblies for those condemned. This cost takes into account the fact that subassembly repair consists of replacing an average of 1.2 repair parts.

Depot safety stock:

$$DD10(I) = CAL(I) \cdot ND \left\{ INT \left| 1 + \left| \frac{UR}{MTBF(I)} \right| \left| \frac{NOA(I)}{ND} \right| \right| QPA(I) \cdot SSD \right. \\ \left. + FCLIM \sqrt{\left| \frac{UR}{MTBF(I)} \right| \left| \frac{NOA(I)}{ND} \right| QPA(I) \cdot SSD} \right\} \quad (11-35)$$

DD10(I) is the cost of establishing the depot safety stock level for the period SSD to support Item I.

E. Option DF Cost: Depot-Level Assembly Repair by Subassembly Repair at Failure

The cost for subassembly repair by the depot where the Mth assembly containing the failed Item I subassembly is shipped to depot is computed by

$$\text{Option DF cost} = \sum_{n=1}^{10} DFn(I) \quad (11-36)$$

where

DFn(I) is the individual cost as defined by each DF equation which follows.

Option DF includes the cost to fault isolate assembly to the Item I subassembly, to remove and replace the subassembly, and to repair the subassembly by part replacement, to adjust and align, and to verify repair of the subassembly and the assembly. Also considered in this option are the PSE items, technical data, and depot-level training. Option DF cost is determined in accordance with Eq. 11-37 through Eq. 11-46.

Initial spares cost:

$$DF1(I) = CAL(M) \left\{ \frac{UR}{MTBF(I)} \right\} NOA(I) \cdot QPA(I) \cdot TLD \quad (II-27)$$

DF1(I) is the cost of spare Mth assemblies needed for the pipeline time, TLD, as defined by the assembly cost and the usage rate/MTBF of the item I subassembly.

Packing and Shipping cost:

$$DF2(I) = 12 \cdot PIUP \left\{ \frac{UR}{MTBF(I)} \right\} NOA(I) \cdot QPA(I) \cdot UW(M) \cdot 2 \cdot F \quad (II-28)$$

DF2(I) is the cost of Mth assembly round-trip shipments during the PIUP as defined by the assembly weight and usage rate/MTBF of the item I subassembly.

Base stock level cost:

$$DF3(I) = TT3(M) \left\{ \frac{MTBF(M)}{MTBF(I)} \right\} QPA(I) \quad (II-29)$$

DF3(I) is the cost of the base stock level needed to support all Mth assemblies shipped for the replenishment time, K2, as defined by the assembly cost and the usage rate/MTBF of item I subassembly.

Supply management and administrative cost:

$$DF4(I) = K4(I) + CSA \cdot ND \left\{ PIUP + K3(I) \right\} + PIUP \cdot CSA \left\{ \frac{NB + ND}{NLA} \right\} \\ + \left\{ CAMI + [PIUP-1] \cdot CANP \right\} \left\{ 1 + \frac{1}{NLA} \right\} \quad (II-40)$$

DF4(I) is the initial and continuing supply system cost for the new item I subassembly, its new parts, and for the new assembly containing item I. This cost includes the Air Force wide inventory management cost and base and depot administrative cost. K3(I) and K4(I) provide for anticipated future Air Force program application of each new part.

Pol. acquisition and development cost:

$$DF5(I) = NOA(I) \cdot QPA(I) \cdot CPSCDF(I) \quad (II-41)$$

DF5(I) is the cost of depot PSE required to return the assembly to service by subassembly Item I repair. This cost is amortized over all subassemblies in all assemblies that require this support equipment.

Training (instruction) cost:

$$DF6(I) = \frac{NIMCDF \cdot TIMCDF (CIMCDF + CLDS)}{NLI} \quad (II-42)$$

DF6(I) is the initial agency/contractor cost to train depot-level personnel to fault isolate an assembly to the Item I part and to repair Item I by part replacement. This cost is amortized over all the different subassembly types in all assembly types taught in the training course. Follow-on training is not included in DF6(I); it is accomplished as on-the-job training.

Technical data cost:

$$DF7(I) = \frac{NTDDPF}{NLA} \left[CTDOR + CTD \cdot NTDDF \right] \quad (II-43)$$

DF7(I) is the cost of preparing and publishing that portion of the technical manual related to Item I repair. This cost is amortized over all different subassembly types listed in the assembly manual.

Equipment maintenance cost:

$$DF8(I) = 12 \cdot PIUP \left[\frac{UR}{NTBF(I)} \right] NOA(I) \cdot QPA(I) \left[TMCDF + TR \right] CLTC \quad (II-44)$$

DF8(I) is the cost of depot labor needed to repair the assembly by Item I subassembly repair and to complete the maintenance forms.

Repair materials and replacement cost:

$$DF9(I) = DD9(I)$$

(II-45)

DF9(I) is the cost of Item I repair parts and replacement Item I subassemblies for those condemned.

Depot safety stock:

$$DF10(I) = CAL(M) \cdot ND \left\{ \text{INT} \left[1 + \frac{UR}{MTBF(M)} \left| \frac{NOA(M)}{ND} \right| \right] SSD \right. \\ \left. + FCILIM \sqrt{\frac{UR}{MTBF(M)} \left| \frac{NOA(M)}{ND} \right|} SSD \left| \frac{MTBF(M)}{MTBF(I)} \right| \right\} QPA(I) \quad (II-46)$$

DF10(I) is the cost of establishing the depot safety stock level for the period SSD to support the Mth assemblies shipped.

F. Option DT Cost: Depot-Level Assembly Repair by Subassembly Discard at Failure

The cost for subassembly discard-at-failure by the depot where the Mth assembly containing the failed Item I subassembly is shipped to depot is computed by

$$\text{Option DT cost} = \sum_{p=1}^{10} DTp(I) \quad (II-47)$$

where

DTp(I) is the individual cost as defined by each DT equation which follows.

Option DT includes the cost to fault isolate assembly to the Item I subassembly, to remove and replace the subassembly, to adjust and align, and to verify assembly repair. Also considered in this option are the PSE items, technical data, and depot-level training. Option DT cost is determined in accordance with Eq. II-48 through Eq. II-57.

Initial spares cost:

$$DT1(I) = DF1(I) \quad (II-48)$$

Packing and shipping cost:

$$DT2(I) = DF2(I) \quad (II-49)$$

Base stock level cost:

$$DT3(I) = DF3(I) \quad (II-50)$$

Supply management and administrative cost:

$$DT4(I) = \left[CAMI + \left\{ PIUP - 1 \right\} CAMA \right] \left[1 + \frac{1}{NLA} \right] + PIUP \cdot CSA \left[ND + \frac{NB + ND}{NLA} \right] \quad (11-51)$$

DT4(I) is the initial and continuing supply system cost for the new Item I subassembly and the new assembly containing Item I during the PIUP.

PSE acquisition and development cost:

$$DT5(I) = NOA(I) \cdot QPA(I) \cdot CPSLPT(I) \quad (11-52)$$

DT5(I) is the cost of depot PSE required for replacing Item I. This cost is amortized over all subassemblies in all assemblies requiring this support equipment.

Training (instruction) cost:

$$DT6(I) = \frac{NIMCDT \cdot CIMCDT}{NLI} \left[\frac{CIMCDT}{NLI} + \frac{CIBDT}{NLI} \right] \quad (11-53)$$

DT6(I) is the initial agency/contractor cost to train depot-level personnel to fault isolate an assembly to Item I and to replace Item I. This cost is amortized over the different subassembly types in all assembly types taught in the training course. Follow-on training is not included in DT6(I); it is accomplished as on-the-job training.

Technical data cost:

$$DT7(I) = \frac{NTDPT}{NLA} \left[CTDOR + CTDPT - NTDDT \right] \quad (11-54)$$

DT7(I) is the cost of preparing and publishing that portion of the technical manual related to Item I replacement. This cost is amortized over all of the different types of subassemblies listed in the assembly manual.

Equipment maintenance cost:

$$DT8(I) = I2 \cdot PIUP \left[\frac{UR}{MTBF(I)} \right] KMA(I) \cdot OPA(I) \left[TMCOT + TR \right] CLTD \quad (11-55)$$

DT8(I) is the cost of depot labor needed to repair the assembly by item I replacement and to complete maintenance forms.

Replacement spares cost:

$$DT9(I) = T1(I) \quad (11-56)$$

DT9(I) is the cost of procuring all Ith sub-assemblies to replace those which fail during the PIUP.

Depot safety stock:

$$DT10(I) = OP10(I) \quad (11-57)$$

CHAPTER III
LIFE CYCLE COST MODEL DESCRIPTION

Life Cycle Cost (LCC) Model

The LCC of a system is the sum of the costs for development, acquisition, initial logistics, and recurring logistics. Specifically, it considers the following costs:

1. Development cost--which comprises all costs incurred by the agency/contractor to develop the system and includes the cost of fabricating engineering models/units. (It excludes costs not directly allocated to the specific task or contract, such as research costs.)
2. Acquisition cost--which includes the agency/contractor price for the WBS hardware, follow-on operational test and evaluation, systems project management, and any form of data contained in DD Form 1424 of the SOW. These data include agency/contractor-produced Technical Orders (TOs) and the quantity publication of these TOs by the agency, contractor and any other government agency.
3. Initial logistics cost--which comprises the cost of introducing new items into the government supply system, initial replacement spares, support equipment, and initial training.
4. Recurring logistics cost--which consists of the system operation and support cost. (It includes the cost for maintenance personnel, parts, and materials to repair recoverable units, replacements for discard units, maintenance of support equipment, and follow-on training.)

The LCC model utilizes the same equations as the ORLA model. In those cases where ORLA equations are applicable without change, the LCC model is expressed in ORLA model elements. In all cases, LCC symbols are ORLA symbols. Chapter IV contains a list of definitions for the LCC symbols.

The LCC model is presented in two forms:

1. Form I--a detailed form, and
2. Form II--a simplified form for ease of programming.

Form I assumes that the LCC model is processed subsequent to an ORLA run and that decisions concerning the disposition of each subassembly and/or assembly have already been made. This means that applicable ORLA equations which include amortizing expressions cannot be used until the expression is purged of amortizing symbols.

Form II of the LCC, which is identical in content to Form I, simplifies programming and uses ORLA outputs directly through procedural differences. This form

assumes that the LCC model is processed subsequent to an ORLA run and that decisions have already been made concerning the level of repair of each subassembly and/or assembly. It also assumes that ORLA has been rerun with inputs that reflect repair-level decisions (including input data for nonrepairable assemblies). Hence, individual option quantities provide true costs and the ORLA outputs can be used in the LCC.

Detailed LCC Model Form I

The detailed Form I LCC model cost elements are described in the following sections.

Development Cost

Development cost, the first element considered, comprises the cost of design and development of the system, fabrication of engineering models/units, development test and evaluation (DT&E), and initial operational test and evaluation (TOT&E). It is determined in accordance with the following cost equation:

$$CE1 = CDS + CASE + CETD + CETI \quad (III-1)$$

Acquisition Cost

The next element considered is acquisition cost, which is the cost to acquire the system and includes modification of engineering models/units reassigned for deployment. It is determined in accordance with the following cost equation:

$$CE2 = CASA + CASC + CMSE + CETP + CMGT \quad (III-2)$$

Hardware Cost -- Hardware cost for CE2 is the total price for production units. Those quantities of hardware produced by associated government agencies are separated from those produced by private industry under government contract.

System Test and Management -- System test cost for CE2 is the agency/contractor cost needed to support the follow-on operational test and evaluation (TOT&E) during the production phase. Management cost for agency-produced hardware is included in the total price of agency production units in CASA. The cost incurred by the agency for management of the production units under contract to private industry is listed separately as CMGT. The contractor management cost is included in the total price for contractor production units in CASC.

Technical Data Cost

The element of technical data cost pertains to the acquisition of any form of data contained in DD Form 1423 and includes agency/contractor produced Technical Orders (TOs) as well as quantity publication by the agency/contractor and any other government agency. This cost element is determined in accordance with the following cost equation:

$$\begin{aligned}
CE3 = & CDD + \sum_{M=1}^{NTT} NTDPO(M) \left| CTDOR + CTDP \cdot NTDO \right| \\
& + \sum_{I=1}^N \left| IFDISC(I) \cdot IFRTSDD(I) \right| NTDPT \left| CTDOK + CTDP \cdot NTDT \right| \\
& + \sum_{I=1}^N IFRTSF(I) \cdot NTDPF \left| CTDOR + CTDP \cdot NTDF \right| \\
& + \sum_{I=1}^N IFRTSDD(I) \cdot NTDPDD \left| CTDOR + CTDP \cdot NTDDO \right| \\
& + \sum_{I=1}^N IFRTSDF(I) \cdot NTDPDF \left| CTDOR + CTDP \cdot NTDF \right| \\
& + \sum_{I=1}^N IFRTSDT(I) \cdot NTDPDT \left| CTDOR + CTDP \cdot NTDDT \right| \quad (III-3)
\end{aligned}$$

Site Preparation and Installation Cost

The site preparation and installation cost comprises the cost for site preparation and for installation and initial alignment of the system. It includes the installation of all cabling associated with the system and any pedestals, bases, poles, or shielding required. It is determined in accordance with the following cost equation:

$$CE4 = CSI \cdot NB \quad (III-4)$$

Initial Replacement Spares Cost, Repairable Items

The initial replacement spares cost for repairable items covers spares initially acquired to stock the base and depot pipelines to meet established support objectives and depot safety stock necessary to protect against random fluctuations in demand. It is determined in accordance with the following cost equation:

$$\begin{aligned}
CE5 = & \sum_{I=1}^N IFRTSF(I) \cdot F1(I) + \sum_{I=1}^N IFRTSDD(I) \left| DD1(I) + DD10(I) \right| \\
& + \sum_{I=1}^N \left| IFRTSDF(I) + IFRTSDT(I) \right| \left| DF1(I) + DF10(I) \right| \quad (III-5)
\end{aligned}$$

Initial Replacement Spares -- Initial replacement spares consist of the quantity of equipment initially required to keep base and depot pipelines sufficiently stocked. It is anticipated that each piece of equipment will consist of replaceable units which, upon failure, will be removed and replaced with a similar serviceable unit. The failed unit will be repaired at the intermediate level, Centralized Repair Activity (CRA), or depot. The required quantity of spare replaceable units is a function of the equipment reliability, utilization, and repair location. Since equipment is not deployed to all bases in equal quantities, an average of the spares per base is applied. CE5 also considers that

depot safety stock, SSD, is maintained for depot repairable units and is available to all bases to protect against random fluctuations in demand. This safety stock is considered in like manner for the CRA. In addition, the first term of equation CE5 provides for a base stock level for units which do not have all spare parts stocked at the base.

Centralized Repair Activity Pipeline -- Initial spares required to fill the pipeline are also included for CRA. The response cycle time for CRA is comparable to the depot response cycle time; the depot terms in DD, DF, and DT apply.

Cost to Replace Nonrepairable Items

The cost to replace nonrepairable items includes procurement of replacement spares for items designated as discard/throwaway for maintenance of a base stock level, packing, and shipping. Since equipment is not deployed to all bases in equal quantities, an average of the spares per base is applied. The cost element is determined in accordance with the following equation:

$$CE6 = \sum_{I=1}^N \text{IFDISC}(I) \left[TT1(I) + T2(I) + T3(I) \right] + \sum_{M=1}^{NTT} \text{IFDISC}(M) \left[TT1(M) + TT2(M) + TT3(M) \right] \quad (II-6)$$

Inventory New Item Entry and Supply Management Cost

The inventory new item entry and supply management cost consists of the nonrecurring cost of introducing new parts and subassemblies into inventory and the recurring cost of maintaining these new part and subassembly items in the inventory throughout the system life (PIUP). It is determined in accordance with the following cost equation:

$$CE7 = NNA \left[CAMI + [PIUP-1] CAMR \right] + TT4(M) \sum_{M=1}^{NTT} \left[\text{IFDISC}(M) + \text{IFRTSDF}(M) + \text{IFRTSDT}(M) \right] + PIUP \cdot CSA \left[NB + ND \right] \sum_{I=1}^N \left[\text{IFDISC}(I) + \text{IFRTSF}(I) + \text{IFRTSDD}(I) \right] + PIUP \cdot CSA \cdot ND \sum_{I=1}^N \left[\text{IFRTSDF}(I) + \text{IFRTSDT}(I) \right] + \sum_{I=1}^N \left[\text{IFRTSF}(I) + \text{IFRTSDD}(I) + \text{IFRTSDF}(I) \right] \left[K4(I) \right] + CSA \cdot ND \cdot K3(I) + CSA \cdot NB \cdot MEPSF \sum_{I=1}^N \text{IFRTSF}(I) \cdot K3(I) \quad (III-7)$$

New parts placed into the inventory for one piece of equipment may be applied to other Air Force equipment. To assure that recurring costs associated with new parts are reasonable, the terms K3(I) and K4(I) are introduced to enable judicious application of PIUP and PIUP-1, respectively.

In those options where the assembly is shipped to depot, Item M assemblies are included in supply management and administrative cost. The symbols IFPTSDT(M) and IFRTSDT(M) apply this cost for any Item I subassembly in the assembly that is designated for option DF or DT.

Support Equipment Cost

Support equipment cost includes PSE cost as well as the cost of additional quantities of common support equipment. PSE cost at the base and depot levels includes development, acquisition (nonrecurring/initial), and operation (recurring) costs. PSE items include all those required for installation, maintenance, or alignment at organizational, intermediate, CRA, and depot levels. It also includes PSE items required for maintenance of prime equipment software and firmware. The common support equipment cost includes only those items which must be procured in additional quantities. This element of cost is determined in accordance with the following cost equation:

$$\begin{aligned}
 CEB = & \sum_{P=1}^{NOI} \left[CAFU(P) \cdot NAFU(P) \cdot NB + CDPU(P) \right] \\
 & + \sum_{P=1}^{NTS} \left[CAPT(P) \cdot NAPT(P) \cdot NB + CDPT(P) \right] \left[IFPST(P) + IFPSDD(P) \right] \\
 & + \sum_{P=1}^{NPS} \left[CAPF(P) \cdot NAFF(P) \cdot NB + CDPF(P) \right] IFPSF(P) \\
 & + \sum_{P=1}^{NDD5} \left[CAPDD(P) \cdot NAFDD(P) \cdot ND + CDPDD(P) \right] IFPSDD(P) \\
 & + \sum_{P=1}^{NDFS} \left[CAPDF(P) \cdot NAFDF(P) \cdot ND + CDPDF(P) \right] IFPSDF(P) \\
 & + \sum_{P=1}^{NDTS} \left[CAPDT(P) \cdot NAPT(P) \cdot ND + CDPDT(P) \right] IFRTSDT(P) \\
 & + CACSB \cdot MFACS \cdot NB + CACSD \cdot MFACS \cdot ND
 \end{aligned} \tag{111-8}$$

Training Cost

Training cost includes both initial training and follow-on training. Initial training is the Type 1 training provided by the agency/contractor for Air Training Command operator and maintenance instructors and operator and maintenance personnel. The agency/contractor provides a length and a "not to exceed" cost for each type of training, in accordance with Eq. 111-9. Follow-on training consists

of Air Force training throughout the program of additional operator and maintenance personnel except those initially trained by the agency/contractor. This element of cost is determined in accordance with the following cost equation:

$$\begin{aligned}
 CE9 = & \left\{ 1 + MFIMF [PIUP-1] \right\} NIOA \cdot TIOA \left\{ CIOA + CLDF \right\} NB \\
 & + TIOC \cdot TIOC \left\{ CIOC + CLDF \right\} \\
 & + \left\{ 1 + MFIMF [PIUP-1] \right\} NIMAO \cdot TIMAO \left\{ CIMAO + CLDF \right\} NB \\
 & + NIMCO \cdot TIMCO \left\{ CIMCO + CLDF \right\} \\
 & + \left\{ 1 + MFIMF [PIUP-1] \right\} NIMAT \cdot TIMAT \left\{ CIMAT + CLDF \right\} NB \\
 & + NIMCF \cdot TIMCT \left\{ CIMCT + CLDF \right\} \left\{ IFIT + IFIDD \right\} \\
 & + \left\{ 1 + MFIMF [PIUP-1] \right\} NIMAF \cdot TIMAF \left\{ CIMAF + CLDF \right\} NB \\
 & + NIMCF \cdot TIMCF \left\{ CIMCF + CLDF \right\} IFIF \\
 & + NIMCDD \cdot TIMCDD \left\{ CIMCDD + CLDD \right\} IFIDD \\
 & + NIMCDF \cdot TIMCDF \left\{ CIMCDF + CLDD \right\} IFIDE \\
 & + NIMCDT \cdot TIMCDT \left\{ CIMCDT + CLDD \right\} IFIDT \\
 & + CAT
 \end{aligned}
 \tag{III-9}$$

Off-Equipment Maintenance Cost

Off-equipment maintenance cost covers maintenance on failed, removed units at base or depot repair facilities. The criteria for designating items as throw-away (or discard) items and for sending removed items to the various levels of maintenance is based on ORLA recommendations. This element of cost is determined in accordance with the following cost equation:

$$\begin{aligned}
 CE10 = & \sum_{I=1}^N IFRISC(I) \cdot T8(I) + \sum_{I=1}^N IFRTSF(I) \left\{ F8(I) + F2(I) + F9(I) \right\} \\
 & + \sum_{I=1}^N IFRSDD(I) \left\{ DD2(I) + DD3(I) + DD8(I) \right\} [1 - IFRISC(I)] \\
 & + DD9(I) + F8(I) \cdot IFRISC(I) \\
 & + \sum_{I=1}^N IFRSDF(I) \left\{ DF2(I) + DF3(I) + DF8(I) \right\} [1 - IFRISC(I)] \\
 & + DF9(I) + F8(I) \cdot IFRISC(I) \\
 & + \sum_{I=1}^N IFRSDT(I) \left\{ DT2(I) + DT3(I) + DT8(I) \right\} [1 - IFRISC(I)] \\
 & + DT9(I) + F8(I) \cdot IFRISC(I)
 \end{aligned}
 \tag{III-10}$$

Off-equipment maintenance cost includes recurring labor, parts, and material costs associated with repair of system/equipment items at base and depot levels, as well as the cost for transportation of items between the base and depot. It also covers maintenance labor necessary for completion of required maintenance

forms, supply transaction records, and transportation forms. Items designated for repair at the CRA are included by means of DD, DF, or DT equations and the term IFRISC(I). Item J one-way transportation cost from base to CRA is the same as from base to depot.

On-Equipment Maintenance Cost

The on-equipment maintenance cost is comprised of the costs for all corrective and preventive (scheduled) maintenance performed on site on system/equipment (as installed). It is determined in accordance with the following equation:

$$CELL = \sum_{I=1}^N 12 \cdot PIUP \cdot UR \cdot NOA(I) \cdot CPA(I) \cdot CLTF \left[\frac{TMO(I)}{MTBF(I)} \right] + 12 \cdot PIUP \cdot UR \cdot NOS \cdot CLTF \left[\frac{TNP}{500} \right] \quad (111-11)$$

TMO and TNP include maintenance personnel transit time round trip from the maintenance shop location to the equipment site.

Facilities Cost

Facilities cost covers the cost of special facilities for system/equipment maintenance. Since it is anticipated that BISS equipment will not require such special facilities, this cost is excluded from the model.

LCC Model Form 11

LCC Form 11 simplifies programming through the use of unchanged ORLA equations. The prerequisite to processing this model is a rerun of ORLA with inputs that reflect repair-level decisions. The LCC system cost is computed by

$$LCC = \sum_{y=1}^5 Ly \quad (111-12)$$

Development Cost*

Development cost is determined in accordance with the following equation:

$$L1 = CEL = CDS + CASE + CETD + CETI \quad (111-13)$$

Acquisition Cost

Acquisition cost is determined in accordance with the following equation:

$$L2 = CE2 = CASA + CASC + CMSE + CETP + CMGT \quad (111-14)$$

*Details on specific costs are given in the previous section.

Deployment Site Associated Costs and Depot CSE Cost

This cost consists of individual costs associated with the deployment site, including depot CSE, and is determined as follows:

$$\begin{aligned}
 L3 = & CDD + \sum_{N=1}^{NTT} NTDP(N) \left[CTDOR + CTDPR \cdot NTDO \right] \\
 & + CE4 \\
 & + CPSE0 \\
 & + MFACS \left[CACSB \cdot NB + CACSD \cdot LD \right] \\
 & + \left[1 + MFIMF \left[PIUP - 1 \right] \right] NIOA \cdot TIOA \left[CIOA + CLDF \right] NB \\
 & + NIOC \cdot TIOC \left[CIOC + CLDF \right] \\
 & + \left[1 + MFIMF \left[PIUP - 1 \right] \right] NIMAO \cdot TIMAO \left[CIMAO + CLDF \right] NB \\
 & + NIMCO \cdot TIMCO \left[CIMCO + CLDF \right] \\
 & + CAT \\
 & + CE11
 \end{aligned} \tag{III-15}$$

where

$$CE4 = CSE \cdot NB$$

$$\begin{aligned}
 CE11 = & \sum_{I=1}^N 12 \cdot PIUP \cdot UR \cdot NOA(I) \cdot OPA(I) \cdot CLTF \left[\frac{TMCO(I)}{STDF(I)} \right] \\
 & + 12 \cdot PIUP \cdot UR \cdot NOS \cdot CLTF \left[\frac{TMP}{SHI} \right]
 \end{aligned}$$

ORLA Option Cost

ORLA option cost is defined by the ORLA equations for each repair-level option and is determined as follows:

$$L4 = CRLUS \tag{III-16}$$

Nonrepairable Item Cost

Nonrepairable item cost is the cost associated with assemblies and sub-assemblies identified as nonrepairable and excluded from ORLA evaluation. It is determined as follows:

$$L5 = \sum_{j=1}^4 TT_j(N) \tag{III-17}$$

This simplified LCC model uses the TT equations for nonrepairable assemblies and subassemblies alike. Whenever subassemblies are identified as nonrepairable and are excluded from ORLA evaluation, the subassembly input data are listed as though they were assemblies with the exception that the input data for NOA(N) are NOA(I) · OPA(I).

CHAPTER IV

SYMBOLS, DEFINITIONS, AND CROSS-REFERENCES

Chapter IV contains an exhibit (Exhibit A) which lists definitions of the cost element symbols used in the OPLA and ICC equations (see Chapters II and III, respectively) and in Exhibits B, C, D, and E (see Appendix A). Also contained in this chapter is a list of ORLA symbols cross-referenced to AFLCM/AFSCM 800-4 symbols. Presentation of these definitions corresponds with Contractor Data Requirements List (CDRL) ORLA/ICC input data requirements.

EXHIBIT A
ORLA/LCC DEFINITIONS

This exhibit provides definitions for cost element symbols used in Exhibits B, C, D, and E (see Appendix A) and in ORLA and FCC. Items which are asterisked (*) are determined by the contractor; the remainder are determined by BISSPO. An LCC in parenthesis (LCC) indicates that the symbol is used only in the LCC model.

<u>Symbol</u>	<u>Definition</u>
C	The Cth item of CSE
CACS	The average acquisition cost of CSE used at:
CACSG*	Each base for the system (LCC)
CACSD*	Each depot for the system (LCC)
C/U*	Acquisition cost per unit of the item being evaluated. For assemblies, this includes the cost of nonrepairable parts, i.e., total assembly cost
CAMI	Initial supply management cost to introduce the item being evaluated into the Air Force inventory in \$/item
CAMP	Annual inventory supply management cost for the item being evaluated in \$/item
CAP	Acquisition cost per unit of the Pth type or group of PSE used on the item being evaluated for the following:
CAPDD*	Option DD (see DD5)
CAPDF*	Option DF
CAPDT*	Option DT
CAPF*	Option F
CAPQ*	Deployment site assembly maintenance (LCC)
CAPT*	Option T
CAS	Total acquisition cost for the system or subsystem being evaluated which is produced by the following:
CASA*	By an agency (LCC)
CASC*	By a contractor (LCC)
CASE*	As engineering models/units (LCC)
CAT*	Total acquisition cost of peculiar training equipment required to support the system, excluding the application of prime mission equipment (LCC)
CDD*	Total cost of contractor technical data contained in DD Form 1423, excluding Technical Orders for the system (LCC)
CDP	Total cost of design and development of the Pth type or group of PSE used on the item being evaluated for the following:
CDPDD*	Option DD (see DD5)
CDPDF*	Option DF
CDPDT*	Option DT

EXHIBIT A (Continued)

<u>Symbol</u>	<u>Definition</u>
CDPF*	Option F
CDPO*	Deployment site assembly maintenance for the system (LCC)
CDPT*	Option T
CDS*	Total cost of design and development of the prime system, excluding costs not directly allocated to the specific task or contract, e.g., research costs and costs identified elsewhere, such as CETS (LCC)
CET	Total agency/contractor costs to provide the required support for the following:
CETD*	Development test and evaluation (DT&E) (LCC)
CLTI*	Initial operational test and evaluation (IOT&E) (LCC)
CLTF*	Follow-on operational test and evaluation (FOT&E) (LCC)
CIMA	Cost of special Air Force training per man per hour, including instruction and training materials for the following:
CIMAF	Option F
CIMAO	Deployment site assembly maintenance (LCC)
CIMAT	Option T
CIMC	Cost per hour per man for initial agency/contractor training at Air Force maintenance personnel (includes direct contractor cost only and does not include travel and per diem) for the following:
CIMCDD*	Option DD
CIMCDF*	Option DF
CIMCDT*	Option DT
CIMCF*	Option F
CIMCO*	Deployment site assembly maintenance (LCC)
CIMCT*	Option T
CIGA	Cost of special Air Force training per man per hour, including instruction and training materials for operator personnel (LCC)
CIGC*	Cost per hour per man for agency/contractor training of Air Force operator personnel (includes direct training cost only; does not include travel and per diem) (LCC)
CLDD	Depot direct labor wage rate (includes salary, fringe benefits, overhead, and lost time and excludes consumable material) in \$/hour
CLDF	Base direct labor wage rate (includes salary, fringe benefits, overhead, and lost time and excludes consumable material) in \$/hour
CLTD	Depot labor wage rate (includes salary, fringe benefits, overhead, lost time, and consumable material) in \$/hour
CLTF	Base labor wage rate (includes salary, fringe benefits, overhead, lost time, and consumable material) in \$/hour
CMGT*	Total management cost expended by an agency for management of production units under contract to private industry (LCC)
CMSE*	Total modification cost for all engineering model/units projected to be modified for reemployment/reassignment (LCC)
CON	Fraction of total operating equipment based within continental United States (dimensionless)

EXHIBIT A (Continued)

	Definition
CPMI	Initial supply management cost to introduce a new part into the Air Force inventory in \$/item
CPMP	Annual inventory supply management cost for a part in \$/year
CTCR	Total acquisition and development cost of all PSI required to test item i amortized over all subassemblies in all assemblies requiring this support equipment for the following:
CPSEDD	Option DD: $\sum_{P=1}^{NDD5} \frac{CAPDD(P) \cdot NAPDD(i, P) \cdot ND + CDPDD(P, i)}{NLPSDD(P)}$
CPSEDF	Option DF: $\sum_{P=1}^{NDF5} \frac{CAPDF(P) \cdot NAPDF(P, i) \cdot ND + CDPDF(P, i)}{NLPSDF(P)}$
CPSEDT	Option DT: $\sum_{P=1}^{NTD5} \frac{CAPDT(P) \cdot NAPDT(P, i) \cdot ND + CDPDT(P, i)}{NLPSDT(P)}$
CPSEF	Option F: $\sum_{P=1}^{NPF5} \frac{CAPF(P) \cdot NAPF(P, i) \cdot NB + CDPF(P, i)}{NLPSF(P)}$
CPSEG	Deployment site assembly maintenance (LCC): $\sum_{P=1}^{NOL} CAPG(P) \cdot NAPO(P) \cdot NB + CDPO(P)$
CPSET	Option T: $\sum_{P=1}^{NT5} \frac{CAPT(P) \cdot NAPT(P, i) \cdot NB + CDPT(P, i)}{NLPS(T)}$
CRP*	Average cost of a part on the i th item
CSA	Annual field supply administrative cost per new item [†] in \$/year
CSF*	Installation cost of systems and equipment (includes initial alignment, installation of associated cabling, installation of any pedestal, base, pole, or shielding, and average site preparation cost per base) (LCC)
CTDOR	Technical data origination cost per page in \$/page
CTDP	Technical data printing and distribution cost per page per copy based on procurement of 1000 copies

[†]A new item is defined as a part or subassembly which requires a new NSN or PSN number, or is a nonstandard part or subassembly which has not been previously used in DTSS special design equipment. Parts previously qualified in DTSS special design equipment are considered standard.

EXHIBIT A (Continued)

CONF

Definition

CONF Confidence for t factor to establish the spares quantity to a defined confidence level. CONF is the Z variable from the equation

$$A = d + Z \sqrt{d}$$

where:

A = minimum acceptable level of spares

d = predicted spares required in direct relation to failures for the period

Z = 4.7411 - 1.7883 log₁₀d, for a 98-percent confidence level

I The Ith item of the price system at a particular indenture of the RBF. (This generally denotes items at the second, third, or fourth levels of the RBF, namely a subassembly)

IFFPA J If new part has future program application factor. Where Jth new part is expected to have future Air Force program application, IFFPA(J) = 1; where the Jth new part has no other program application, IFFPA(J) = FURP

IFFPB J If new part has future program application factor. Where Jth new part is expected to have future Air Force program application, IFFPB(J) = 1; where Jth new part has no other program application, IFFPB(J) = FURP-1

INT The integer value of the expression that follows; it is intended to round off to the nearest lower integer value for spares computation

J The Jth new part introduced into the Air Force inventory

K Total cost for packing and shipping one way. K1 is equal to

$$\begin{aligned} & \left[\text{CON} \left| \text{PSMRCO} + \text{PSLRCO} + \left| \text{PWRCO} \cdot \text{SRCO} \right| \right| \right] \\ & + \left[1 - \text{CON} \right] \left| \text{PSMROS} + \text{PSLROS} + \left| \text{PWRROS} \cdot \text{SROS} \right| \right| \end{aligned}$$

K2 Order and shipping time for one-way shipment. K2 is equal to

$$\left[\text{CON} \left| \text{OSTCO} \right| + \left[1 - \text{CON} \right] \left| \text{OSTOS} \right| \right]$$

K3 Supply administrative cost factor for new parts of Item I subassembly. K3 is equal to

$$\sum_{J=1}^{NFA} \frac{\text{IFFPA}(J,I)}{\text{SL}(I)}$$

K3 includes each Jth new part of the Item I subassembly amortized over the different types of subassemblies within the system on which the Jth new part is used. IFFPA(J,I) takes into consideration whether each new part of the Item I subassembly has anticipated future Air Force program application (see Exhibit B)

EXHIBIT A (Continued)

Symbol	Definition
K4	Initial and continuing supply management cost for new parts of the Item I subassembly. K4 is equal to $\sum_{j=1}^{NFA} \frac{1}{N_i(I,j)} \left[CPM_i(I,j) + 1FFPB(I,j) \cdot CPMR \right]$ <p>% includes the initial and continuing supply management cost of each jth new part of the Item I subassembly amortized over the different types of subassemblies within the system on which the jth new part is used. 1FFPB(I,j) takes into consideration whether or not each new part of the Item I subassembly has anticipated future Air Force Program application (see Exhibit D)</p>
M	Mth assembly of prime system
MAC _{CS}	Fraction of cost of total CSE required at all bases and depot. Effectively, this is the cost of CSE in additional quantity as a result of the loading placed by the system being evaluated (dimensionless)
MFC	Condemnation factor of the Ith item. Fraction of maintenance actions on the Ith item expected to result in condemnation for the following: <ul style="list-style-type: none"> MFC_D Depot level (dimensionless) MFC_B Base level (dimensionless)
MTRP	Fraction annual turnover rate for base maintenance personnel (dimensionless)
MN	Fraction of new parts to be stocked at base level (dimensionless)
MBSN	Fraction of parts to be stocked at base level (dimensionless)
MWMT*	Mean time between failure of the item being evaluated during the PTH in hours
N	Number of separately identifiable agency/contractor-furnished subassembly item is in the system/equipment
NAP	Average number of Pth type SE (includes spares, to be procured to test the Item I per each repair facility) for the following: <ul style="list-style-type: none"> NAPDD* Option DD NAPDF* Option DF NAPDT* Option DT NAPPF* Option F NAPQ* Deployment site assembly maintenance (LCC) NAPT* Option T
NB	Total number of bases to which equipment is deployed
ND	Total number of depots which repair the item being evaluated
NDD\$	Number of separately identifiable agency/contractor-furnished PSE Item Ps as used in option DD (LCC)
NDF\$	The number of separately identifiable agency/contractor-furnished PSE Item Ps as used in option DF (LCC)
NDT\$	The number of separately identifiable agency/contractor-furnished PSE Item Ps as used in option T (LCC)

EXHIBIT A (Continued)

<u>Symbol</u>	<u>Definition</u>
NF4	The number of separately identifiable new parts, Item Ps, as considered in this evaluation (see R3, R4)
NF5	The number of separately identifiable agency/contractor-furnished PSE Item Ps as used in option F (LCC)
NMA	Average number of maintenance personnel to receive Air Force contract training per base for the following:
NMAF	Option F
NMAI	Deployment site assembly maintenance for the system (LCC)
NMAT	Option T
NMC	Total number of maintenance personnel to receive agency/contractor training on the equipment for the following:
NMCB	Option B
NMCH	Option H
NMCHT	Option HT
NMCF	Options F and T (instructor personnel)
NMCH	Deployment site assembly maintenance for the system (contractor personnel) (LCC)
NMO	The number of operator personnel to have live operational training per base for the system (LCC)
NIOC	Total number of operator-instructor personnel to receive agency/contractor training for the system (LCC)
NLA*	Total number of different types of subassemblies within the system on which a Jth new part is used
NLA*	Total number of different types of subassemblies in the assembly
NLT*	Total number of different types of subassemblies in the curriculum of the training course
NLPS	Total number of subassemblies worldwide (excluding spares) tested by the Pth type of PSE in the following:
NLPBD*	Option B
NLPBD*	Option H
NLPST*	Option T
NLPF*	Option F
NLPST*	Option T
NNA*	Number of new Jth subassembly types introduced into the Air Force inventory (dimensionless) (LCC)
NDA	Total number of operating assemblies (excluding spares) containing the item being evaluated
NO1	The number of separately identifiable agency/contractor-furnished PSE Item Ps as used in deployment site assembly maintenance (LCC)
NT5	The number of separately identifiable agency/contractor-furnished PSE Item Ps as used in option T (LCC)
NTD	Total number of copies of technical manuals required for the following:
NTDD	Option D
NTDDF	Option DF

EXHIBIT A (Continued)

Symbol	Definition
NTDDT	Option DT
NTDF	Option F
NTDD	Deployment site assembly maintenance (LCC)
NTDT	Option T
NTDP	Total number of technical manual pages required for the following:
NTDPDB*	Option DB (see DD7)
NTDPDF*	Option DF
NTDPDT*	Option DT
NTDPF*	Option F
NTDPG*	Deployment site assembly maintenance (LCC)
NTDPT*	Option T
NTT	The number of separately identifiable agency/contractor-furnished equipment Item Ms in the system/equipment
OSTCO	Order and shipping time by air in months--continental United States
OSTOS	Order and shipping time by air in months--overseas
P	Refers to the Pth item of PSE
PIUP	The projected inventory usage period in years
PSLRCO	Packing and shipping labor rate in \$/lb--continental United States
PSLROS	Packing and shipping labor rate in \$/lb--overseas
PSMRCO	Packing and shipping material rate in \$/lb--continental United States
PSMROS	Packing and shipping material rate in \$/lb--overseas
PWRCO	Ratio of packaged to unpackaged weight--continental United States (dimensionless)
PWROS	Ratio of packaged to unpackaged weight--overseas (dimensionless)
QPA*	The maximum number of Ith subassemblies within the assembly containing Item I
SHI*	Scheduled maintenance interval in operating hours for the system; the mean time between scheduled (preventive) maintenance action for the system (LCC)
SRCC	One-way air-shipping rate in \$/lb--continental United States base to depot or vice versa
SROS	One-way air-shipping rate in \$/lb--overseas base to depot or vice versa
SSD	Depot safety stock level time in months
TIMA	Total maintenance training hours per man for the Air Force special maintenance training (includes only direct classroom hours) for the following:
TIMAF	Option F
TIMAO	Deployment site assembly maintenance for the system (LCC)
TINAT	Option T

EXHIBIT A (Continued)

Symbol	Definition
TMTG	Total maintenance training hours per man for agency/contractor training of Air Force maintenance personnel (includes only direct classroom hours) for the following:
TMTGDD*	Option DD
TMTGDF*	Option DF
TMTGDT*	Option DT
TMTGF*	Option F (instructor training)
TMTGCO*	Deployment site assembly maintenance for the system (LCC)
TMTGT*	Option T (instructor training)
TTOA	Total operator training hours per man for Air Force special operator training for the system (includes only direct classroom hours) (LCC)
TTAC*	Total operating training hours per man for agency/contractor training of Air Force operational personnel for the system (includes only direct classroom hours) (LCC)
TL	Average logistic time (repair turnaround time) in months for the following:
TLDD	Options DD, DF, and DT
TLF	Option F
TMC	Average manhours to perform a maintenance task in the following:
TMCDD*	Option DD
TMCDF*	Option DF
TMCDT*	Option DT
TMCF*	Option F
TMCG*	Deployment site assembly maintenance time of the system (includes a 1-hour transit time for each base maintenance repairman from his base location to the system installation site and return) (LCC)
TMTCT*	Option T
TMP*	Average manhours in manhours per system to perform a preventive (scheduled) maintenance action of the system (includes 1-hour transit time for each base maintenance repairman from his base location to the system/equipment installation site and return) (LCC)
TR	Average manhours per failure to complete the following records for the system (where $TR = TRE + TRM + TRS + TRT$):
TRE	Off-equipment maintenance records
TRM	On-equipment maintenance records
TRS	Supply transaction records
TRT	Transportation transaction forms
OR	Average operating hours per month
OW*	Weight in pounds of the item being evaluated. (For assemblies, this includes all nonrepairable parts, i.e., the total weight of the assembly)
OWS*	Average weight in pounds of a spare part

Additional LCC Symbols and Definitions

Definitions for the cost element symbols used exclusively in the LCC equations and excluded from Exhibit A follow. The values for these symbols are determined by BISSFO.

CRLOS Total cost for all Item I subassemblies and/or Item M assemblies as defined by the OMLA equations for each of the repair-level options following rerun of OMLA with repair-level decision inputs provided

where

$$\begin{aligned} \text{CRLOS} = & \sum_{i=1}^8 T_i(I) \cdot \text{IFDISC}(I) \\ & + \sum_{j=1}^4 T_j(I) \cdot \text{IFDISC}(M) \\ & + \sum_{k=1}^9 F_k(I) \cdot \text{IFRTSF}(I) \\ & + \sum_{m=1}^{10} DDM(I) \cdot \text{IFRTSDD}(I) \\ & + \sum_{n=1}^{10} DPN(I) \cdot \text{IFRTSDF}(I) \\ & + \sum_{p=1}^{10} DTP(I) \cdot \text{IFRTSDT}(I) \end{aligned}$$

IFDISC If applicable, discard designator. If Ith type of subassembly is designated as discard (i.e., throwaway), $\text{IFDISC}(I) = 1$; if not, then $\text{IFDISC}(I) = 0$. Also, if Mth type of assembly is designated as discard (throwaway), $\text{IFDISC}(M) = 1$; if not, then $\text{IFDISC}(M) = 0$ (LCC)

IFI If applicable, instruction (training) designator:

IFIDD If option ID training is applicable, $\text{IFIDD} = 1$; if not, $\text{IFIDD} = 0$ (LCC)

IFIDF If option DF training is applicable, $\text{IFIDF} = 1$; if not, $\text{IFIDF} = 0$ (LCC)

IFIDT If option DT training is applicable, $\text{IFIDT} = 1$; if not, $\text{IFIDT} = 0$ (LCC)

IFIF If option F training is applicable, $\text{IFIF} = 1$; if not, $\text{IFIF} = 0$ (LCC)

IFIT If option T training is applicable, $\text{IFIT} = 1$; if not, $\text{IFIT} = 0$ (LCC)

IFPS If applicable, PSE designator:

IFPSDD If option DD PSE is applicable, IFPSDD(P) = 1; if not,
IFPSDD(P) = 0 (LCC)

IFPSDF If option DF PSE is applicable, IFPSDF(P) = 1; if not,
IFPSDF(P) = 0 (LCC)

IFPSDT If option DT PSE is applicable, IFPSDT(P) = 1; if not,
IFPSDT(P) = 0 (LCC)

IFPSF If option F PSE is applicable, IFPSF(P) = 1; if not,
IFPSF(P) = 0 (LCC)

IFPST If option T PSE is applicable, IFPST(P) = 1; if not,
IFPST(P) = 0 (LCC)

IFRTS If applicable, return to service designator:

IFRTSC If Centralized Repair Activity (CRA) repair, IFRTSC(I) = 1;
if not, IFRTSC(I) = 0 (LCC)

IFRTSDD If option DD repair, IFRTSDD(I) = 1; if not, IFRTSDD(I) = 0 (LCC)

IFRTSDF If option DF repair, IFRTSDF(I) = 1; if not, IFRTSDF(I) = 0 (LCC)

IFRTSDT If option DT repair, IFRTSDT(I) = 1; if not, IFRTSDT(I) = 0 (LCC)

IFRTSF If option F repair, IFRTSF(I) = 1; if not, IFRTSF(I) = 0 (LCC)

NOS Total number of operating systems deployed excluding spares. (LCC)

Cross-References

In the following list, ORLA symbols are cross-referenced with AFLCM/AFSCM 800-4 symbols.

AFLCM/AFSCM 800-4 ORLA TERMS

DISS ORLA TERMS

BRT	TLF
BSLDO	T3, TT3
BSLDR	DD3, DF3, DT3
BSLFR	F1
CON	CON
DA	DD5, DF5, DT5
DAC	CACS, CAP
DAM	0
DLWR	CLTD
DPL	TLD
DPS	DD2, DF2, DT2
LR	DC6, DF6, DT6
DRF	0
DRL	DC8, DF8, DT8
DRP	D01, DF1, DT1
DSS	SS0, DD10, DF10, DT10
DTD	DD7, DF7, DT7
FA	F5
FAC	CACS, CAP
FAM	0
FF	0
FLWR	CLTF
FPS	F2
FRF	0
FRL	F8
FSA	F3
FT	F6
FTD	F7
II	NTDPPD, NTDPDF, NTDPDT
IAC	CAMJ
IE	T4, TT4, F4, DD4, DF4, DT4
IPC	CPNI
J	NTDPF, NTDPD, NTDPDT
LA	N3A
LCR	T1, TT1
LP	Uses summation of parts
MTBF	MTBF
N	NB, ND
OSTI ^{CON}	OSTCO
OSTI ^{OS}	OSTOS
PIUP ^{OS}	PIUP
PSLR	PSLRCO
PSLR ^{CON}	PSLRCS
PSMR ^{OS}	PSMRO
PSMR ^{CON}	PSMRCO
PSMR ^{OS}	PSMROS
PWR ^{CON}	PWRCO
PWR ^{CS}	PWROS
QPA	QPA
RAC	CAMR
SM	F9, DD9, DF9, DT9
RWH	TMC
RPC	CPNR
RPS	T2, TT2
SA	CSA
SC	CRP
SR ^{CON}	SRCO

AFLCM/AFSCM 600-4
ORLA TERMS

SR OS
 SW
 TD
 UC
 UR
 UW
 VD
 VF
 W
 X
 YD
 YI
 ZD
 ZI

BISS
ORLA TERMS

SROS
 UWS
 CTDOR
 CAL
 UR
 UW
 MFIMD
 MFIMF
 NIMA
 NIMCDD, NIMCDF, NIMCDT
 TIMCDD, TIMCDF, TIMCDT
 CIMCDD, CIMCDF, CIMCDT
 TIMA
 CIMA

APPENDIX A
Agency/Contractor Supplied Data
(ORLA/LCC CDRG)

APPENDIX A
Agency/Contractor Supplied Data
(OPLA/LCC CDRL)

Introduction

BISEPO will perform the OPLA/LCC analysis after it obtains the required input data from the contractor. OPLA will be used to determine which of six possible repair options (TT, P, T, DD, DF, or DT) is most cost-effective. Figure A-1 presents a block diagram of these options.

The OPLA/LCC CDRL symbols for which values must be provided by the agency/contractor are formatted in Exhibits B, C, D, and E. Instructions on the proper use of these exhibits are included.

Instructions

Exhibits B through E require inputs from the contractor and the SPO. Non-contractor inputs are indicated by placement of parentheses around the cost element symbol in the heading.

Exhibit B: Assembly/Subassembly Data, Sheet 1 of 2

A separate completed Exhibit B Sheet 1 is required for each M assembly and its subassemblies. Each assembly (M) in the system or subsystem shall be identified with a two-digit consecutive number 01 to 99. Each subassembly (I) within each assembly shall start with 01. For example, the second subassembly of the 24th assembly would be numbered 2402.

TMCT is included in the assembly section of Exhibit B since it is an assembly variable. The other values of TMC, e.g., TMCT, are included in the assembly section since they are average values for the assembly. The number of hours included in TMCT takes into consideration the two-man rule whenever applicable.

The values of K3 and K4 are obtained from Exhibit D and from the equations for K3 and K4 in Exhibit A.

If a PSE is used to support a subassembly, the number of the PSE from Exhibit C shall be indicated in the PSE column of Exhibit B.

Exhibit B: Assembly/Subassembly Data, Sheet 2 of 2

One completed Exhibit B Sheet 2 is required for each system or subsystem being evaluated. Each nonrepairable assembly and subassembly shall be identified in the

Figure A-1. ORLA Option Block Diagram

[illegible]

EXHIBIT B
ASSEMBLY SUBASSEMBLY DATA
SHEET 2 OF 2

SYSTEM/SUBSYSTEM:

[illegible]

SYSTEM/SUBSYSTEM:

[illegible]

NOTE: All PSE required to fault isolate to the assembly should be listed under MAPD and CAPD. The model assumes that this same PSE will be available for options TT, DD, or DF. However, some of this same equipment may be needed at the depot for options DD, DF, and CF and should be considered.

EXHIBIT C
AGENCY/CONTRACTOR DATA

SYSTEM/SUBSYSTEM: _____

SYMBOL	VALUE	SHORT DESCRIPTION*
CACSB		Average acquisition cost of CSE used at each base
CACSD		Average acquisition cost of CSE used at each depot
CASA		System acquisition cost, agency produced
CASC		System acquisition cost, contractor produced
CASE		Engineering models acquisition cost
CAT		Training equipment, acquisition cost
CDD		Data cost
CDS		Design and development cost of prime system
CETD		DT&E test support by contractor
CETI		DT&E test support by contractor
CETP		DT&E test support by contractor
CIMCDD		Training cost per hour per man, maint. personnel, this option
CIMCDF		
CIMCDT		
CIMCF		
CIMCO		
CIMCT		
CIOC		Training cost, operator personnel, contractor
CMSE		Modification cost for engineering models
CTDOR		Tech data, origination cost/pg
CTDP		Tech data, printing and distribution cost/pg
HL	See Exhibit C	Different types of subassemblies new part used
HLI		Total number of different subassemblies in training course
INA		Number of new subassembly types introduced into inventory
SMT		System mean time between preventive maintenance
TIMCDD		Training hours per man, maint. personnel, this option
TIMCDF		
TIMCDT		
TIMCF		
TIMCO		
TIMCT		
TIOC		Training hours per man, operator personnel
UNW		Average weight of a spare part in pounds

*Short description provided as an aid in filling these forms. Refer to definitions in Exhibit A.

APPENDIX B
Standard Factors

APPENDIX B
Standard Factors

Standard factors are values which remain constant over long intervals for various system ORLA/LCC evaluations and for progressive ORLA/LCC evaluations of a system throughout its development phases. Factors applicable to BISS are provided in the following list. They must be updated as changes are established or received. (Reference AFLC/ACR letter dated 07 January 1977 to AFALD/XRS on subject AFLCM/AFSCM R00-A standard cost factors.)

Symbol	Value
CAMI	\$145.11/item (includes \$104.20 initial supply management cost plus \$40.91 average cost to enter a new item into the Air Force supply system.)
CASB	\$104.20/year
CIMAP	\$3.75/man-hour (\$150/man-week)
CIMAG	\$1.75/man-hour (\$150/man-week)
CIMAT	\$1.75/man-hour (\$150/man-week)
CIOA	\$4.75/man-hour (\$150/man-week)
CIDD	\$9.23/man-hour
CLDE	\$8.11/man-hour
CLTD	\$15.52/man-hour
CLTE	\$13.97/man-hour
CPMI	\$145.11/item (includes \$104.20 initial supply management cost plus \$40.91 average cost to enter a new item into the Air Force supply system.)
CPMR	\$104.20/year
CSA	\$37.63/year/item (includes \$17.63/year field supply administration cost plus \$20/year average base supply ADP management cost per item.)
CTDOR	\$250/page
CTDP	\$0.01/page/copy based on procurement of 1000 copies.
MPACS	0.01 for small equipment loading, e.g., point sensors 0.10 for large equipment loading.
MFCD	0.01
MPCE	0.02
MPIMP	0.15
MPN	1.0

APPENDIX B (Continued)

Symbol	Value	
MSF	1.0	
OSTCO	0.27 month	
OSTOS	0.51 month	
PUP	10 years	
PSLPCG	\$0.3330/pound	
PSLROS	\$0.4155/pound	
PSPPCG	\$0.99875/pound	
PSPPRS	\$0.12317/pound	
PSPCG	1.285	
PSROS	1.436	
SPCG	\$0.3886/pound	
SPRS	\$0.5733/pound	
SOD	1.0 month	
TLD	1.5 months	
TLE	0.13 month	
TRE	0.24 hour	TR = 0.73
TEN	0.08 hour	
TRS	0.25 hour	
TET	0.16 hour	
UR	720 operating hours/month (unless informed otherwise)	

APPENDIX C

BISSPO Equipment Data

APPENDIX C
BISPO Equipment Data

The symbols for which BISPO must provide values are listed in Exhibit F. This exhibit provides a short description of each each element symbol as an aid in understanding and completing the form. Exhibit F must be completed for each ORCA/LCC evaluation performed.

FIGURE 1
R/C/P/BG/NC/ DATA

SYSTEM/SUBSYSTEM:

ITEM #	UNIT	SHORT DESCRIPTION*
1		Agency management cost of production unit contract
2		Fraction of operating equipment based within continental US
3		System installation cost
4		Total number bases, equipment deployed
5		Total number depots
6		Average no. maint. men req'd if special trng/lage this option
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*Short description provided as an aid in filling these forms. Refer to definitions in Exhibit A.

**Normally two instructors receive agency/contractor training. When situation warrants, this value should be increased by number of maintenance men receiving agency/contractor training.