

**CONTRACTOR DATA REQUIREMENT LIST**  
(1 Data Item)

Form Approved  
OMB No. 0704-0188

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A. CONTRACT LINE ITEM NO.	B. EXHIBIT A	C. CATEGORY: TDP _____ TM _____ OTHER _____ MISC _____
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D. SYSTEM/ITEM NPOESS CONCEPT VAL	E. CONTRACT/PR NO.	F. CONTRACTOR TO BE DETERMINED
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1. DATA ITEM NO. A014	2. TITLE OF DATA ITEM DESIGN-TO-COST/LIFE CYCLE COST AND VARIANCE	3. SUBTITLE
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4. AUTHORITY (Data Acquisition Document No.) DI-FNCL-80449/T	5. CONTRACT REFERENCE	6. REQUIRING OFFICE ADA
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7. DD 250 REQ	9. DIST STATEMENT REQUIRED C	10. FREQUENCY BLK16	12. DATE OF FIRST SUBMISSION BLK 16	14. DISTRIBUTION		
8. APP CODE		11. AS OF DATE BLK 16	13. DATE OF SUBSEQUENT SUBMISSION BLK 16	a. ADDRESSEE	b. COPIES	
					Draft	Final
					Reg	Repro

16. REMARKS  2 (cont) ANALYSIS REPORT  4 (cont) See attachment.  10,11,12,13 (cont) Data will be submitted 60 days prior to contract completion.  *Distribution shall be one file transferred via the NPOESS Electronic Bulletin Board (EBB).  Letter of transmittal (LT) to NPOESS (DMO) on each submittal.	NPOESS (DMO)	0	1	0
	15. TOTAL ----->	000	001	000

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

G. PREPARED BY	H. DATE	I. APPROVED BY	J. DATE
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# DATA ITEM DESCRIPTION

Form Approved  
OMB No. 0704-0188

1. TITLE  Design-to-Cost/Life Cycle Cost and Variance Analysis Report		2. IDENTIFICATION NUMBER  DI-FNCL-80449	
3. DESCRIPTION/PURPOSE 3.1 Report conveys to the government the contractor Design-to-Cost (DTC)/Life Cycle Cost (LCC) estimates. The data will be used to evaluate and establish design-to-unit production cost and Life Cycle Cost (LCC) goals; measure contractor performance toward meeting established DTC and LCC goals; identify and record DTC/LCC problems; and provide timely, reliable DTC information for use in evaluating proposed design, design-to-cost, and LCC changes.			
4. APPROVAL DATE (YYMMDD) 870930	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR) F/AD/ACC	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
7. APPLICATION/INTERRELATIONSHIP 7.1 This data item description contains the format and content preparation instructions for the data product generated by the specific and discrete task requirement as delineated in the contract. 7.2 These reports are applicable for use on contracts of any size when the unit production and/or operational support costs are an important criteria in the cost effectiveness of the weapon system. These reports can be required at various levels of detail depending on the potential dollar savings to the Government in relation to the cost of data collection and analysis. <p style="text-align: right;">(Continued on Page 2)</p>			
8. APPROVAL LIMITATION		9a. APPLICABLE FORMS	9b. AMSC NUMBER F4225
10. PREPARATION INSTRUCTIONS 10.1 <u>Reference Documents.</u> The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices, and reissues, shall be as specified in the contract.  10.2 <u>Content.</u> The Design-to-Cost/Life Cycle Cost and Variance Analysis Report shall include the following sections:  10.2.1 <u>Executive Summary.</u> The executive summary shall be limited to one page, briefly describing the program and stating the results and conclusions of the report.  10.2.2 <u>Table of Contents, List of Figures and List of Tables.</u>  10.2.3 <u>Introduction.</u> Brief description of the weapon system in terms of schedule phase, program requirements, etc.  10.2.4 <u>Groundrules and Assumptions.</u> This section shall describe key assumptions made in the costing of the system including quantities, schedule production rates, state of technology, program base year, inflation rates, hardware and software configuration. Also listed shall be: (1) items that are not included in the estimate, such as Government Furnished Equipment (GFE) or other items that make up the weapon system but are not under the contractor's control and (2) General and Administrative (G&A) and fee percentages. <p style="text-align: right;">(Continued on Page 2)</p>			
11. DISTRIBUTION STATEMENT  DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.			

7. APPLICATION/INTERRELATIONSHIP (Cont'd)

7.3 This DID supersedes DI-F-30211.

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10. PREPARATION INSTRUCTIONS (Cont'd)

10.2.5 Contract Work Breakdown Structure. This section shall list the Contract Work Breakdown Structure (WBS) down to the level as specified in the Statement of Work. If the WBS is not specified, the WBS used shall conform to the guidelines in MIL-STD-881.

10.2.6 Methodology. The methodology section shall include a discussion of the methods used to generate the cost estimate for each WBS element. Learning curve first unit cost, slopes and type of curve (unit or cumulative average) shall be stated along with backup information used to determine these parameters. This section shall make up the bulk of the report containing enough information to substantiate the entire estimate. Included shall be discussions of any analogies, why they are used, and how the actual costs were modified to fit the new components. If manhour buildups are used, discussions shall center on the rationale used for manloading levels.

10.2.7 Results. The results section shall contain the contractor's DTC estimate in base year dollars by the WBS listed in the assumption section. All costs should be fully burdened with overhead, G&A and fee in base year dollars. The costs shall be shown for all phases of the program, i.e., Validation, Full-Scale Engineering Development (FSED), Production, and Operations and Support (O&S) unless otherwise specified. Actual cost shall be used upon phase completion. In addition, a summary level time phased estimate shall be submitted for Research and Development (R&D) and production.

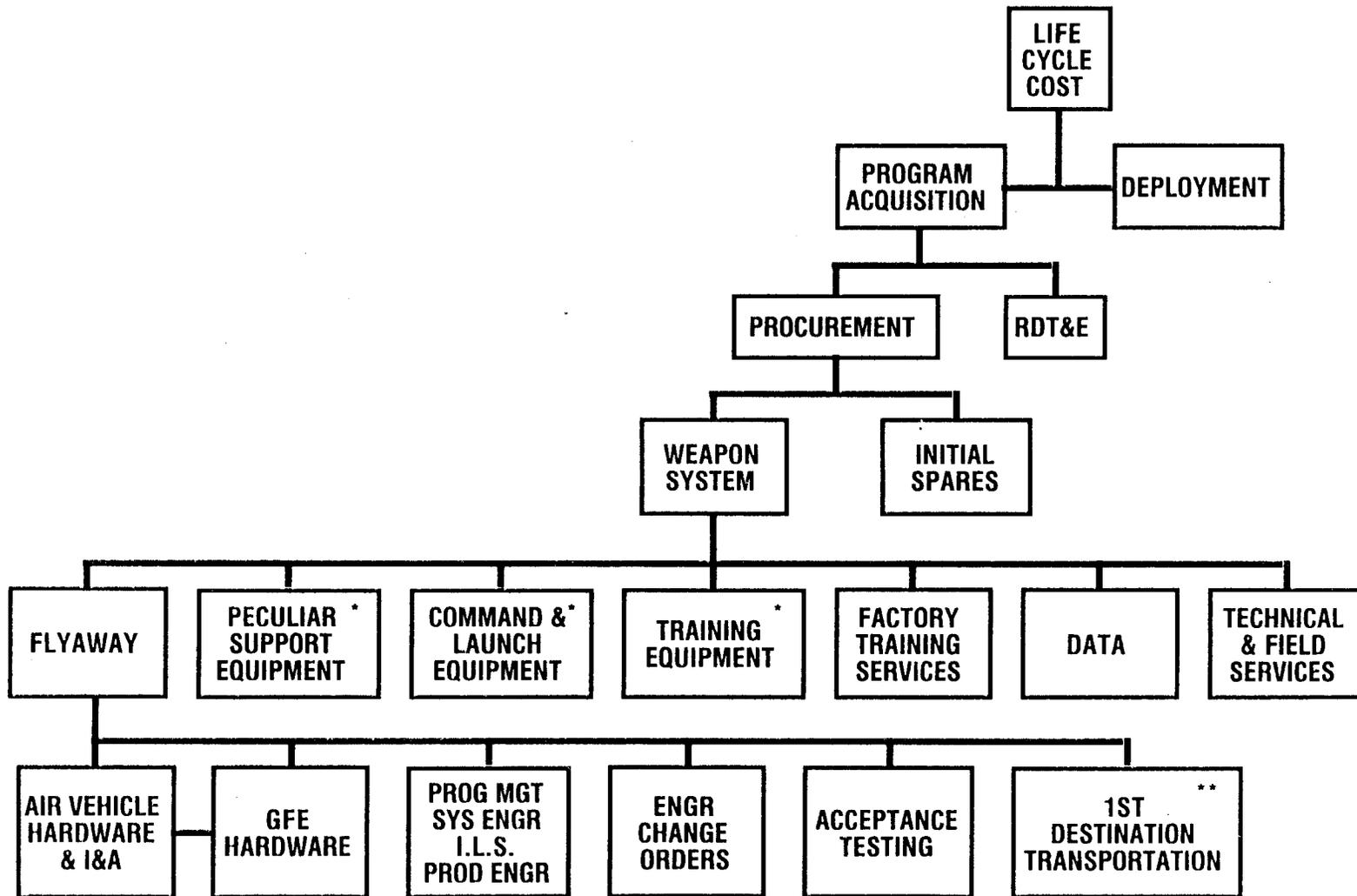
10.2.8 Conclusion. This section shall include cost of alternative designs, trade studies, pending engineering changes, and accuracy or confidence levels of the results section.

10.2.9 Variance. This section shall identify changes from the previous report using the same WBS as the remainder of the report and discussing the reason for each change. Categories of changes include changes in program due to design, updates of estimates, quantity changes, and schedule updates. Identify specifically what changed since the last report and why. An example would be an estimating change in learning curve slope from 90% to 92% based on actual data for the first several lots of this program.

10.3 Breakout of LCC and Variance Report Example. A breakout of LCC is provided in figure 1 and an example of variance report is presented in Figure 2.

10.4 Security Classification. Report is to be unclassified where possible. If classified information must be included, it shall be placed in a separate annex. Exception would be those cases where the report would make no sense if the classified information were removed.

10.5 Format. Reports shall be of reproducible quality on either 8"x10 1/2" or 8 1/2"x11" bond paper. Foldouts shall be kept to a minimum, but are desired for schedule and funding spread diagrams where the larger size is needed for readability.



\* INCLUDES DESIGN, TOOLING, TEST EQUIPMENT, HARDWARE FABRICATION, UNIT ACCEPTANCE, AND I&A.

\*\*INCLUDED UNLESS A SEPARATE BUDGET LINE ITEM.

FIGURE 1. LCC BREAKOUT

## DESIGN-TO-COST VARIANCE REPORT

CONTRACT DTC WORK BREAKDOWN STRUCTURE							PROGRAM	CONTRACT NO.		DTC REPORT AS OF:	DATE PREPARED:								
WBS CODE	WORK BREAKDOWN STRUCTURE LEVEL						ORIGINAL DTC GOAL NOTE (a)	CURRENT DTC GOAL NOTE (b)	PREVIOUS DTC ESTIMATE NOTE (c)	LATEST DTC ESTIMATE NOTE (d)	DTC VARIANCE (c - d) NOTE (e)	DESIGN GOAL VARIANCE NOTE (f)							
	1	2	3	4	5	6						WEIGHT	RELIABILITY	MAINTAINABILITY	LIFE CYCLE COST				

- NOTES:**
- (a) ORIGINAL DTC GOAL: BASELINE DESIGN-TO-COST GOAL AT INCEPTION OF FSD CONTRACT
  - (b) CURRENT DTC GOAL: BASELINE DESIGN-TO-COST GOAL UPDATED FOR SUCH THINGS AS ENGINEERING CHANGES, REALLOCATION DUE TO DESIGN, SCHEDULE, ETC.
  - (c) PREVIOUS DTC ESTIMATE: CONTRACTOR'S LAST REPORTED ESTIMATE REFLECTING "THEN" CURRENT DESIGN STUDIES
  - (d) LATEST DTC ESTIMATE: CONTRACTOR'S LATEST DESIGN TO ESTIMATE BASED ON CURRENT DESIGNS, LOGISTICS REQUIREMENTS, SCHEDULE, ETC
  - (e) DTC VARIANCE: COST DIFFERENCE BETWEEN PREVIOUS DTC ESTIMATE (c) AND CONTRACTOR'S LATEST DTC ESTIMATE
  - (f) DESIGN GOAL VARIANCE: INDICATE VARIANCE IN THOSE ELEMENTS AFFECTED BY DESIGN CHANGES FROM PREVIOUSLY REPORTED DESIGN REPORTS HAVING AN EFFECT (+/-) ON WEIGHT, RELIABILITY, MAINTAINABILITY, AND/OR LIFE CYCLE COST

FIGURE 2. Sample Variance Report

CDRL A014

4 (cont)

Preparation Instructions, Part II - Cost Data--this section replaces the Preparation Instructions section of the DID:

1. The Design to Cost/Life Cycle Cost Report shall be a stand-alone document. All pertinent schedules, study results, etc., shall be included as a part of this document. The Life Cycle Cost Estimate (LCCE) shall be clearly documented to allow an independent analyst to assess the reasonableness of the costs presented.
2. Costs shall be based on procurement quantities necessary to meet the operational life of the program, and shall include all future phases of the program--Engineering Manufacturing & Development, Production, and Operations & Support. The costs shall be displayed in both fiscal year dollars and then year dollars, to include overhead, general and administrative expense, and estimated fee or profit as applicable.
3. The estimate shall be organized by WBS element.
4. The LCC shall be presented at the 70th Percentile Confidence level. The cost-risk analysis supporting the development of this 70th percentile level shall utilize valid techniques and acceptable statistical approaches to distribution range development and summarization. This cost-risk analysis will be fully documented, to include narratives explaining all methodologies used to determine risk magnitudes, translations of risk magnitudes into cost impacts and spreadsheets or other electronic formats containing calculations, algorithms, etc. that fully support an understanding of the performance of the cost-risk analyses. This cost-risk analysis shall support and be identifiable to the cost estimates. The cost-risk analysis shall include but is not limited to the following areas of risk: **Design and Engineering, Technology, Cost Estimating, Manufacturing, Schedule, Supportability, Integration and Threat**. Cost risk quantification shall be performed and developed at the system, system segment, subsystem, component and/or estimating level as appropriate. (If the quantification is performed at a level above that of the estimating level, explain the rationale for that selection.) Ranges and distributions due to cost-risk considerations shall be developed at these levels: All areas of risk shall be summarized and combined in a statistically correct manner to provide a summary level distribution for total system life cycle cost from which the 70th percentile cost shall be derived. (See AF Risk Analysis Handbook, Vol. 1: Cost Risk; and Cost-Risk Identification and Management System (CRIMS) manual for acceptable methodologies. Available from SMC/FMC Cost Library @ (310)336-0131.)
5. The LCC Estimate documentation shall be prepared as follows:

- I. Executive Summary (Ten Pages maximum)

1. Total Estimate/Purpose
  - No more than one page that discusses how this estimate was prepared
  - Bottom line total value of the estimate at the 70th percentile confidence level in Then Year dollars.
2. Estimate Summary and Time Phasing
  - Top level estimate summary (i.e., by major segment: launch vehicle, space segment, C3, IDPS, etc) and phase (i.e. EMD, Production, & O&S)
  - Point Estimate (i.e., the sum of initial estimates from cost models/methodologies, prior to any dollars added to them for risk impacts), ranges, and 70th percentile confidence estimate.
  - Phased in Base Year (BY) and Then Year (TY) dollars (use the latest OSD inflation rates and tables).
3. Issues/Content
  - Discuss program and estimate contents at government WBS level or lower levels as deemed appropriate.
  - Program Schedule
  - Major Factors Bearing on Estimate
    - Cost drivers (i.e. high cost elements of estimate, Risk Drivers, etc.)
  - Business base considerations
  - Trade analyses
  - Describe Risk Drivers with respect to (but not limited to) the following uncertainty category risk areas: Design and Engineering, Technology, Manufacturing, Schedule, Cost Estimating, Integration, Supportability, and Threat
  - Key ground rules and assumptions
  - Sensitivities
4. Programmatic Alternatives
  - Solutions to issues addressed in Section 3 above.
  - Sensitivity Analyses/Excursions (e.g., changes in the estimate due to changes in major cost drivers and risk drivers).

## II. Detailed Documentation

#### A. Overview

1. Purpose of Estimate
2. Name and telephone number of point of contact for the Life Cycle Cost Estimate.
3. Description of program
4. Scope of Estimate
5. Major cost factors bearing on the estimate
6. Risk areas assessments: Describe Risk Drivers with respect to (but not limited to) the following uncertainty category risk areas: Design and Engineering, Technology, Manufacturing, Schedule, Cost Estimating, Integration, Supportability, and Threat.
7. Program schedule
8. Ground rules and assumptions: This section shall describe key assumptions made in the costing of the system including quantities, schedule production rates, state of technology, hardware and software configuration. Also listed shall be: (1) items that are not included in the estimate, and (2) General and Administrative (G&A) and fee percentages.
9. The Overview will contain a bottom line total value of the estimate in Then Year dollars and a phased total estimate in Then Year dollars by acquisition phase (i.e. EMD, Production, and O&S)
10. The Overview shall describe the Summary and Detailed WBS section. It will describe how the Summary and Detailed WBS section is organized by life cycle phase. The Overview will continue by describing the detailed spreadsheets in the Summary and Detailed WBS section. The detailed spreadsheets will show estimates down to the lowest level, (no higher than the lowest Government WBS level), and all calculations will be provided on hard copies or in electronic format (MS-Excel 5.0 on 3.5" floppy disks).
  - All spreadsheets will be traceable to the documentation so as to ensure the reviewers ability to replicate the estimates as described.

**B. Summary and Detailed WBS Content.**

1. The estimate will be performed at the Government WBS level. The content of the estimate shall be consistent with the Government WBS dictionary.
2. Each level shall contain:
  - an acquisition phase identification
  - a phasing approach explanation
  - a phased estimate by year in program Base Year (BY) and Then Year (TY) dollars
  - a phased estimate by year for a To Complete (TC) category in program Base Year (BY) and Then Year (TY) dollars
  - an estimating approach explanation
  - a risk assessment explanation
  - an identification of sources of data
  - all estimates use the latest OSD inflation rate tables
3. Estimating approaches will be presented at all levels. "Roll-up" is acceptable as a description of the methodology if the level was not the level at which the estimate was accomplished. If the estimate was performed below the level of the Government WBS, then the explanation of lowest level of the Government WBS can be a detailed summary explanation of all lower level WBS element estimating methodologies. The detailed WBS documentation content includes the WBS name and number, the acquisition phase, the estimating approach, risk assessment (if done at that level), and source of data.
  - The fiscal years for the beginning of each phase are identified.
  - The lower level WBS element estimates are identified in FY and TY dollars as totals for EMD, Production, and O&S phase categories.

- A detailed basis of estimate is provided for each of the lower level WBS elements and includes the following: logical, sequential development of the estimate, cost quantification of risk, methodology, logic and rationales, and source/use/limitations of data utilized in derivation of the estimates.
  - Calculations/steps are presented and pointers are used to highlight calculations/steps not done at these detail levels (e.g., cost quantification of risk) to identify at what levels they were performed.
  - "Risk assessment performed at lower level" is an acceptable explanation if cost quantification of risk was performed at lower levels of the WBS. However, cost quantification of risk is described in detail at the WBS levels where the risk assessment was performed.
  - The detailed spreadsheets will show estimates down to the lowest level, and all calculations will be provided on hard copies and in electronic format (MS-Excel 5.0, 3.5" floppy disks)
  - The detailed spreadsheets will be traceable to the documentation so as to enable the reviewers to replicate the estimates as described.
4. The lower level WBS element estimating methodologies contain the estimating approaches used, such as analogies, parametrics, factors, allocation schemes, learning curves, first unit cost, slopes and type of curve (unit or cumulative average) cost-risk techniques, etc. Justify the use of all factors, models, tools, formulas, etc. Enable an independent estimator to replicate the estimate as described,
5. Key cost drivers are summarized at the lowest WBS level.
6. Global pointers are used to identify where explanations for risk, key drivers, estimating approaches, etc., are described if the explanations are not described at the level currently being discussed.