BOEING MILITARY AIRPLANE COMPANY

INTEGRATED COST/SCHEDULE MANAGEMENT SYSTEM

LEAD ENGINEER/COST ACCOUNT MANAGER OVERVIEW

ROGER CLAWSON
PP+C SYSTEMS
6-7106 K80-05

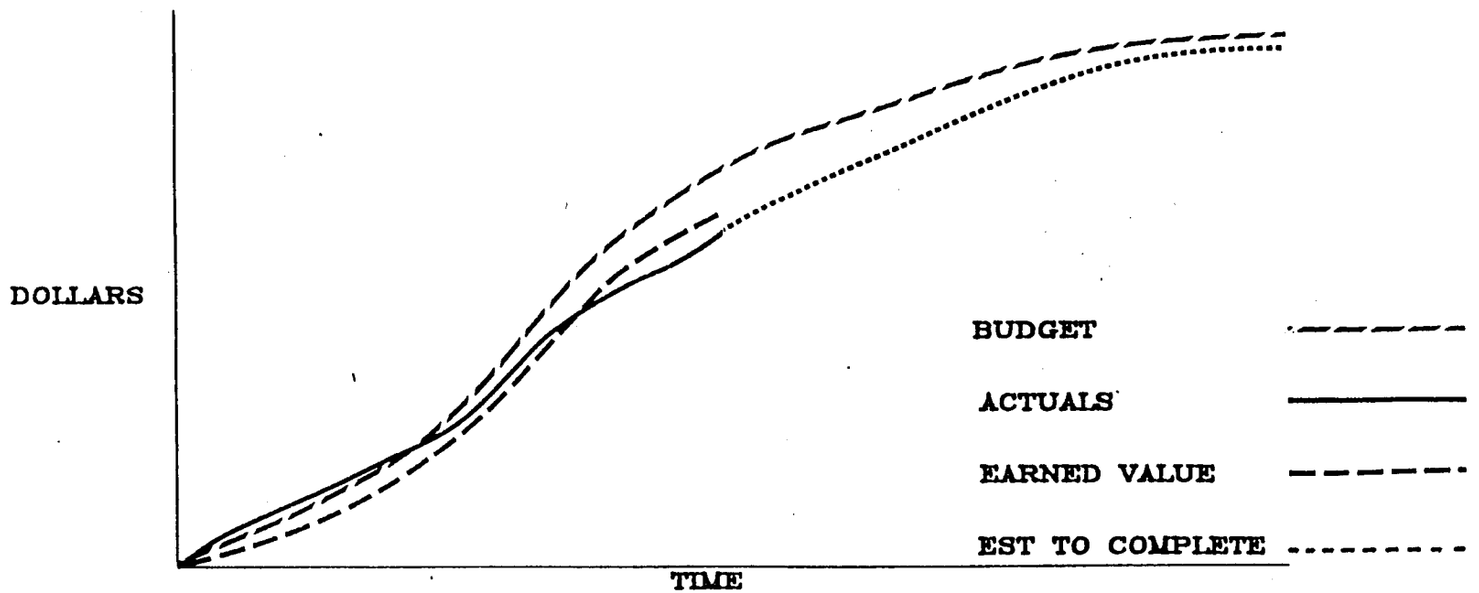
OBJECTIVES

GENERAL OVERVIEW OF BMAC COST/SCHEDULE MANAGEMENT SYSTEM AS APPLICABLE TO LEAD ENGINEERS AND FIRST-LEVEL MANAGERS.

GENERAL OVERVIEW OF AEMIS REPORTING SYSTEM AS APPLICABLE TO LEAD ENGINEERS AND FIRST-LEVEL MANAGERS.

C/SCSC (COST/SCHEDULE CONTROL SYSTEM CRITERIA) IS THE TITLE OF THE CRITERIA AGAINST WHICH A MANAGEMENT SYSTEM IS EVALUATED BY THE GOVERNMENT.

IC/SMS (INTEGRATED COST/SCHEDULE MANAGEMENT SYSTEM) IS THE BMAC SYSTEM BEING EVALUATED. IC/SMS RELATES COST AND SCHEDULE PERFORMANCE TO A BUDGET BASELINE (PMB). (D3-9102-1)



- C/SCSC REQUIRES THAT AN AIR FORCE VALIDATION TEAM WITNESS AN ON-SITE DEMONSTRATION OF THE CONTRACTORS C/SCSC SYSTEM TO DETERMINE IF THE DESCRIBED SYSTEM IS BEING UTILIZED

- THE COMPANY, DCAA, AND THE LOCAL AFPRO ALL PERFORM SURVEILLANCE TO INSURE CONTINUED COMPLIANCE

- SUBSEQUENT APPLICATIONS MAY REQUIRE ADDITIONAL AIR FORCE REVIEW ON ALL NEW CONTRACTS WITH C/SCSC REQUIREMENTS. THIS ADDITIONAL REVIEW IS CALLED A SAR Subsequent Application Review

- THE PROGRAM MANAGER IS PRIMARILY RESPONSIBLE FOR IMPLEMENTING IC/SMS ON HIS PROGRAM(S)

- THE COST ACCOUNT MANAGER WILL BE THE PRIMARY POINT OF CONTACT DURING ALL REVIEWS OF SYSTEM APPLICATION

COST ACCOUNT MANAGER TRAINING

FORMAL COST ACCOUNT MANAGER TRAINING IS THE RESPONSIBILITY OF THE SYSTEMS SURVEILLANCE ORGANIZATION IN FINANCE (FRANK COUCH, 526-2460, K93-13).

STANDARD COURSE IS FOUR HOURS IN LENGTH AND INCLUDES A WRITTEN TEST.

BASIC ELEMENTS

WORK AUTHORIZATION

PLANNING & SCHEDULING

BUDGETING

ACCOUNTING

PERFORMANCE MEASUREMENT

VARIANCE ANALYSIS

ESTIMATES AT COMPLETION

REPORTING

TERMS AND ACRONYMS

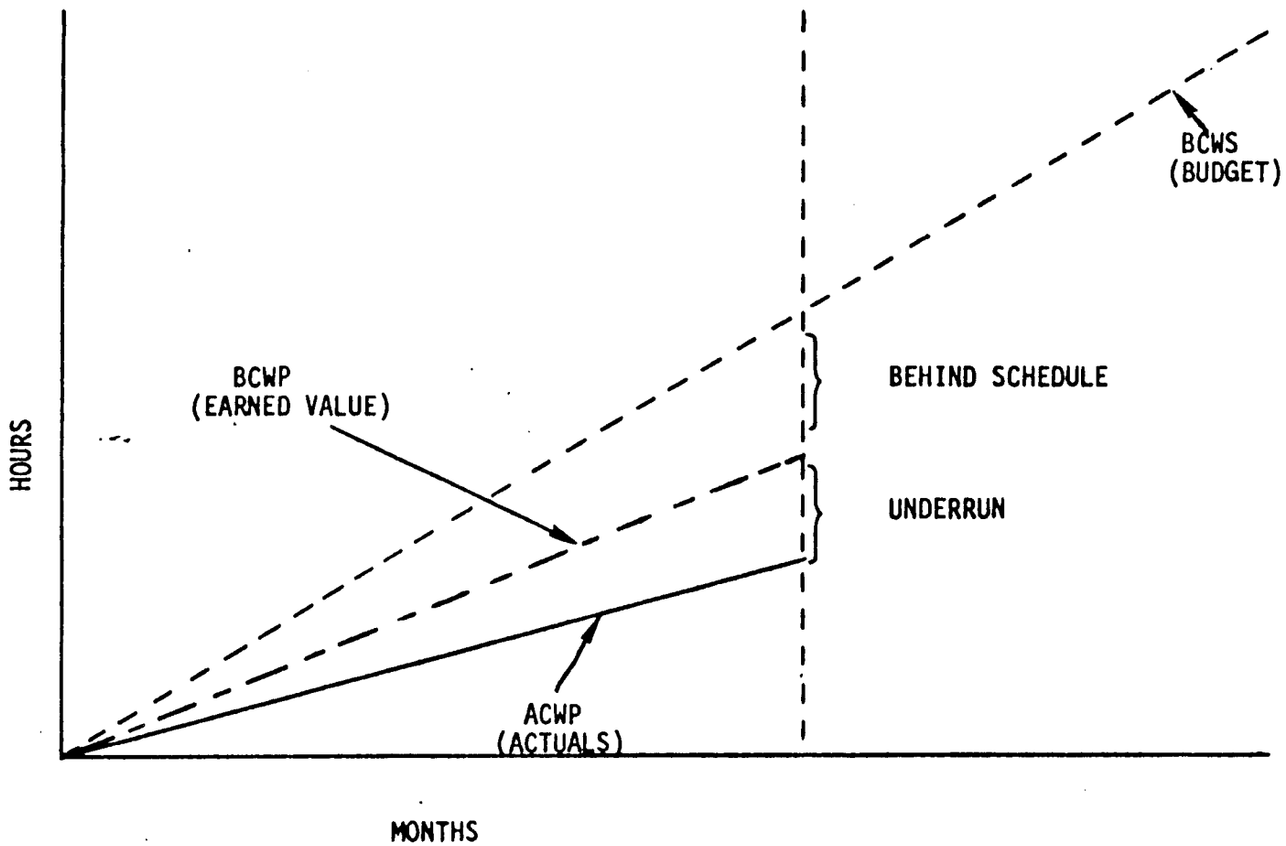
BCWS	BUDGETED COST of WORK SCHEDULED TIME–PHASED BUDGET PLANNED WORK PROGRESS
BCWP	BUDGETED COST of WORK PERFORMED EARNED VALUE ACTUAL WORK PROGRESS
ACWP	ACTUAL COST of WORK PERFORMED ACTUALS ACTUAL COSTS EXPENDED
MEAC	Management Estimate At Completion

CONCEPT OF EARNED "VALUE"

- AN ATTEMPT TO QUANTIFY THE AMOUNT OF WORK ACCOMPLISHED, EXPRESSED IN THE SAME TERMS AS BUDGET AND ACTUAL CHARGES.

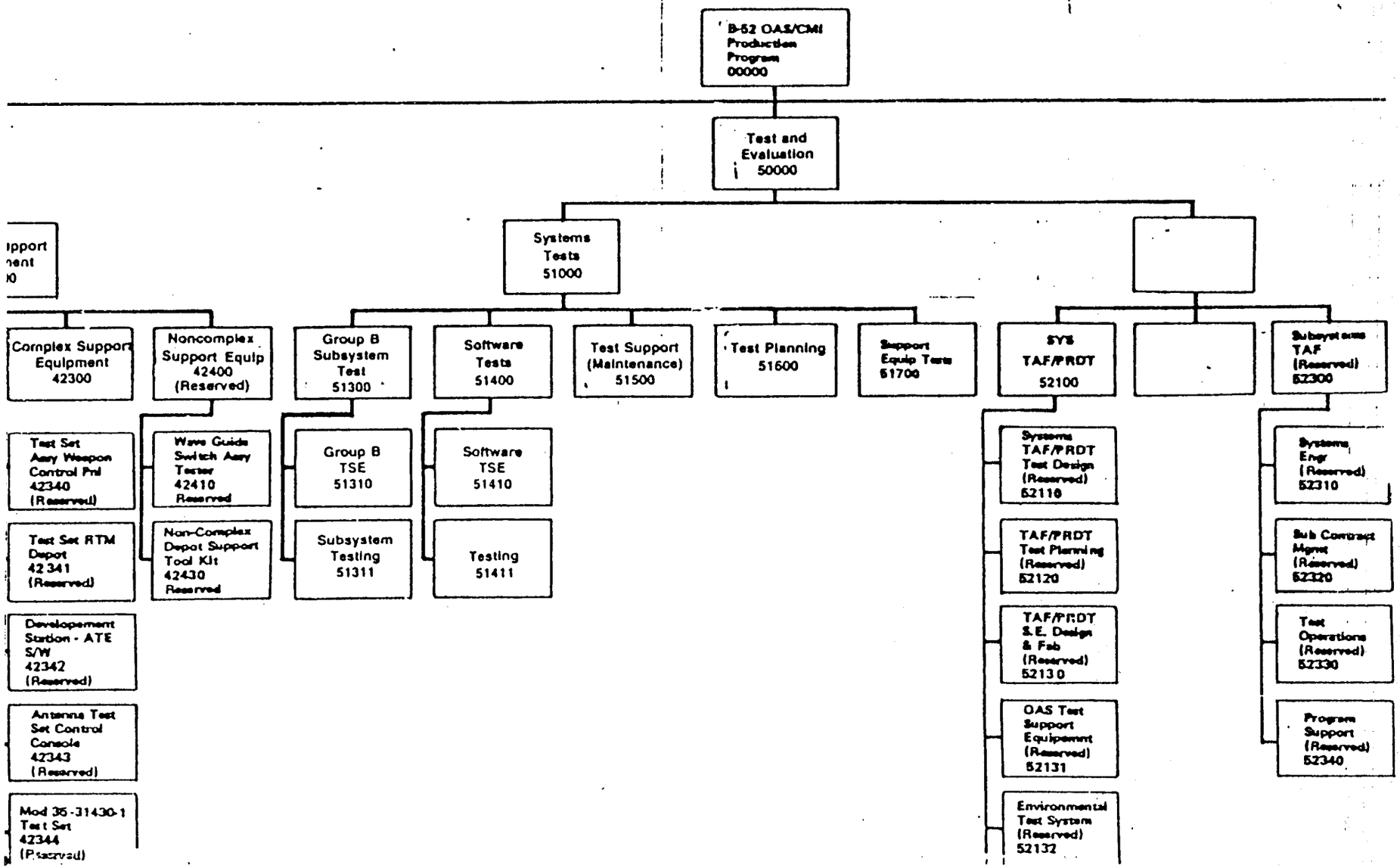
- PROVIDES METHOD FOR ANALYSIS OF SCHEDULE AND COST POSTIONS RELATED TO BUDGETS AND ACTUALS.

C/SCSC ANALYSIS



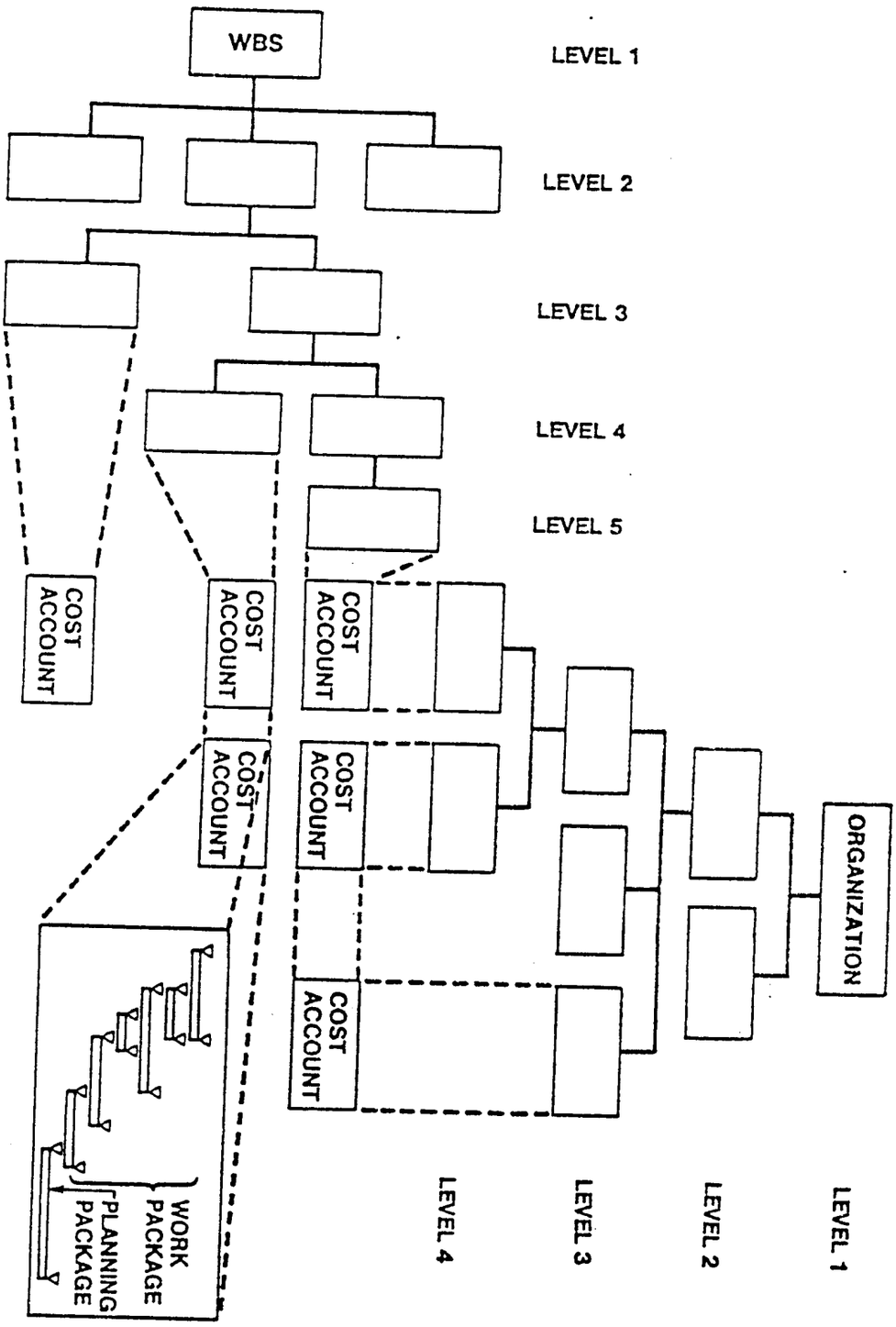
WORK BREAKDOWN STRUCTURE (WBS)

A PRODUCT ORIENTED FAMILY TREE DIVISION OF HARDWARE, SOFTWARE, SERVICES, AND OTHER WORK TASKS THAT ORGANIZES, DEFINES, AND GRAPHICALLY DISPLAYS THE PRODUCT TO BE PRODUCED AS WELL AS THE WORK TO BE ACCOMPLISHED. THE CUSTOMER PROVIDED BREAKDOWN AT UPPER SUMMARY LEVELS (NORMALLY DOWN TO LEVEL 3) IS CALLED A PROJECT SUMMARY WORK BREAKDOWN STRUCTURE. THE CONTRACTOR DEVELOPED BREAKDOWN AT LOWER LEVELS TO REFLECT THE WAY WORK IS TO BE ACCOMPLISHED IS CALLED A CONTRACT WORK BREAKDOWN STRUCTURE (CWBS)


B-52 OAS/CMI Production Program 00000
Test and Evaluation 50000
Systems Tests 51000
Complex Support Equipment 42300
Noncomplex Support Equip 42400 (Reserved)
Group B Subsystem Test 51300
Software Tests 51400
Test Support (Maintenance) 51500
Test Planning 51600
Support Equip Tests 51700
SYS TAF/PRDT 52100
Subsystems TAF (Reserved) 52300
Test Set Assy Weapon Control Pnl 42340 (Reserved)
Test Set RTM Depot 42341 (Reserved)
Developement Station - ATE S/W 42342 (Reserved)
Antenna Test Set Control Console 42343 (Reserved)
Wave Guide Switch Assy Tester 42410 Reserved
Non-Complex Depot Support Tool Kit 42430 Reserved
Group B TSE 51310
Subsystem Testing 51311
Software TSE 51410
Testing 51411
Systems TAF/PRDT Test Design (Reserved) 52110
TAF/PRDT Test Planning (Reserved) 52120
TAF/PRDT S.E. Design & Fab (Reserved) 52130
OAS Test Support Equipemnt (Reserved) 52131
Environmental Test System (Reserved) 52132
Systems Engr (Reserved) 52310
Sub Contract Mgmt (Reserved) 52320
Test Operations (Reserved) 52330
Program Support (Reserved) 52340

COST ACCOUNTS

- ★ WHERE FUNCTIONAL RESPONSIBILITY EXISTS
- ★ WHERE SCHEDULES AND BUDGETS ARE ESTABLISHED
- ★ WHERE COSTS ARE ACCUMULATED
- ★ WHERE PERFORMANCE MEASUREMENT IS CONDUCTED
- ★ WHERE MEAC'S ARE GENERATED
- ★ WHERE VARIANCE ANALYSIS IS PERFORMED


WBS
LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COST ACCOUNT
COST ACCOUNT
COST ACCOUNT
COST ACCOUNT
COST ACCOUNT
COST ACCOUNT
COST ACCOUNT
ORGANIZATION
LEVEL 4
LEVEL 3
LEVEL 2
LEVEL 1
WORK PACKAGE
PLANNING PACKAGE

B-1B PROGRAM CONTROL MATRIX

LOT IV

● SUMMARY COST ACCOUNT

WBS CODE	WORK BREAKDOWN STRUCTURE LEVEL 1	2	3		WORK ORDER
C31000	*			AVIONICS SYSTEM SEGMENT	
C31100		*		SYSTEM HARDWARE & SOFTWARE	
C31110			*	INTEGRATION & ASSEMBLY	L7F00
C31110			*	RADAR DATA TERMINAL	L7F22
C31110			*	PARYLENE INCORPORATION	L7F27
C31120			*	NAVIGATION & WEAPONS DELIV.	L7F01
C31120			*	PYLON CONTROL UNIT	L7F24
C31130			*	AVIONICS CONTROL COMPLEX	L7F02
C31140			*	CONTROLS & DISPLAYS	L7F03
C31150			*	COMMUNICATIONS	L7F04
C31160			*	SENSORS	L7FQ5
C31170			*	PENETRATION AIDS	L7F06
C31180			*	SOFTWARE	L7F07
C31200		*		TRAINING	L7F08
C31400		*		PECULIAR SUPPORT EQUIPMENT	
C31410			*	ORGANIZATIONAL/INTERMEDIATE	L7F09
C31440			*	DEPOT PSE	L7F10
C31490			*	OTHER PSE	L7F11
C31500		*		TEST & EVALUATION	
C31510			*	DEVELOPMENT TEST & EVAL.	L7F12
C31530			*	OPERATIONAL TEST & EVAL.	L7F13
C31570			*	TEST FACILITIES	L7F20
C31600		*		SYSTEM ENGR/PROJECT MGMT	
C31610			*	SYSTEM ENGINEERING	L7F15
C31620			*	PROJECT MANAGEMENT	L7F16
C31620			*	CORRECTION OF DEFICIENCIES	L7F29
C31630			*	ILS	L7F17
C31700		*		DATA	L7F18
C31800		*		SITE ACTIVATION	L7F23
				MANAGEMENT RESERVE	
				UNDISTRIBUTED BUDGET	

RESPONSIBLE ORGANIZATION

LABOR | NON LABOR

ENGR DIRECT | ENGR DD | MISC DD | OPERATIONS | MAT'L DOC | MAT'L IDWA | BCS | TRVL

MCS ELEMENTS CODES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
B-1 ENGINEERING L1AW															●	●			●						●					●				●								
GFP L2GC															●	●			●									●		●				●								
CENTRAL ENGINEER L1PS															●	●														●				●								
MAN TECH - ENGR L2MA															●	●			●						●			●		●				●								
B-1 LOGISTICS L1QE															●	●			●						●					●				●								
SPARES L1QS															●	●			●						●					●				●								
TECH PUBS L2MA															●	●			●						●					●				●								
B-1 DOs L1QE															●	●			●						●					●				●								
CENTRAL DOs L1QS															●	●			●						●					●				●								
PRGM MGMT DOs L1QH															●	●			●						●					●				●								
LIAISON L1QX															●	●			●						●					●				●								
METROLOGY L1QX															●	●			●						●					●				●								
MAN TECH DD L1QX															●	●			●						●					●				●								
ILS BATCH DD L1FQ															●	●			●						●					●				●								
MANUFACTURING L1PA															●	●			●						●					●				●								
QUALITY ASSURANCE L1MA															●	●			●						●					●				●								
MAN TECH - MFG L2MB															●	●			●						●					●				●								
MFG DOC L1FK															●	●			●						●					●				●								
MATERIEL DIRECT L2GA															●	●			●						●					●				●								
MAT'L BUYER L2GB															●	●			●						●					●				●								
FINANCE L2MC															●	●			●						●					●				●								
VCA L6QX															●	●			●						●					●				●								
MFG DOC L2KB															●	●			●						●					●				●								
MATERIEL DIRECT L2QA															●	●			●						●					●				●								
MAT'L BUYER L6TT															●	●			●						●					●				●								
FINANCE L6TJ															●	●			●						●					●				●								
VCA MUAX															●	●			●						●					●				●								
MATERIAL X75C															●	●			●						●					●				●								
DIRECT ASSIST BURD XUDX															●	●			●						●					●				●								
TASK SUPPORT X78A															●	●			●						●					●				●								
BCS ENGR X78B															●	●			●						●					●				●								
BCS OPS X78D															●	●			●						●					●				●								
BCS-MCS T77X															●	●			●						●					●				●								
TRAVEL T70X															●	●			●						●					●				●								
TRAVEL DD XUXX															●	●			●						●					●				●								
OVERHEAD XURC															●	●			●						●					●				●								
UNDER LIMIT CHANGES XUWP															●	●			●						●					●				●								
PLANNING POOL XUYY															●	●			●						●					●				●								
MANAGEMENT RESERVE XUWU															●	●			●						●					●				●								
U.D.B.															●	●			●						●					●				●								

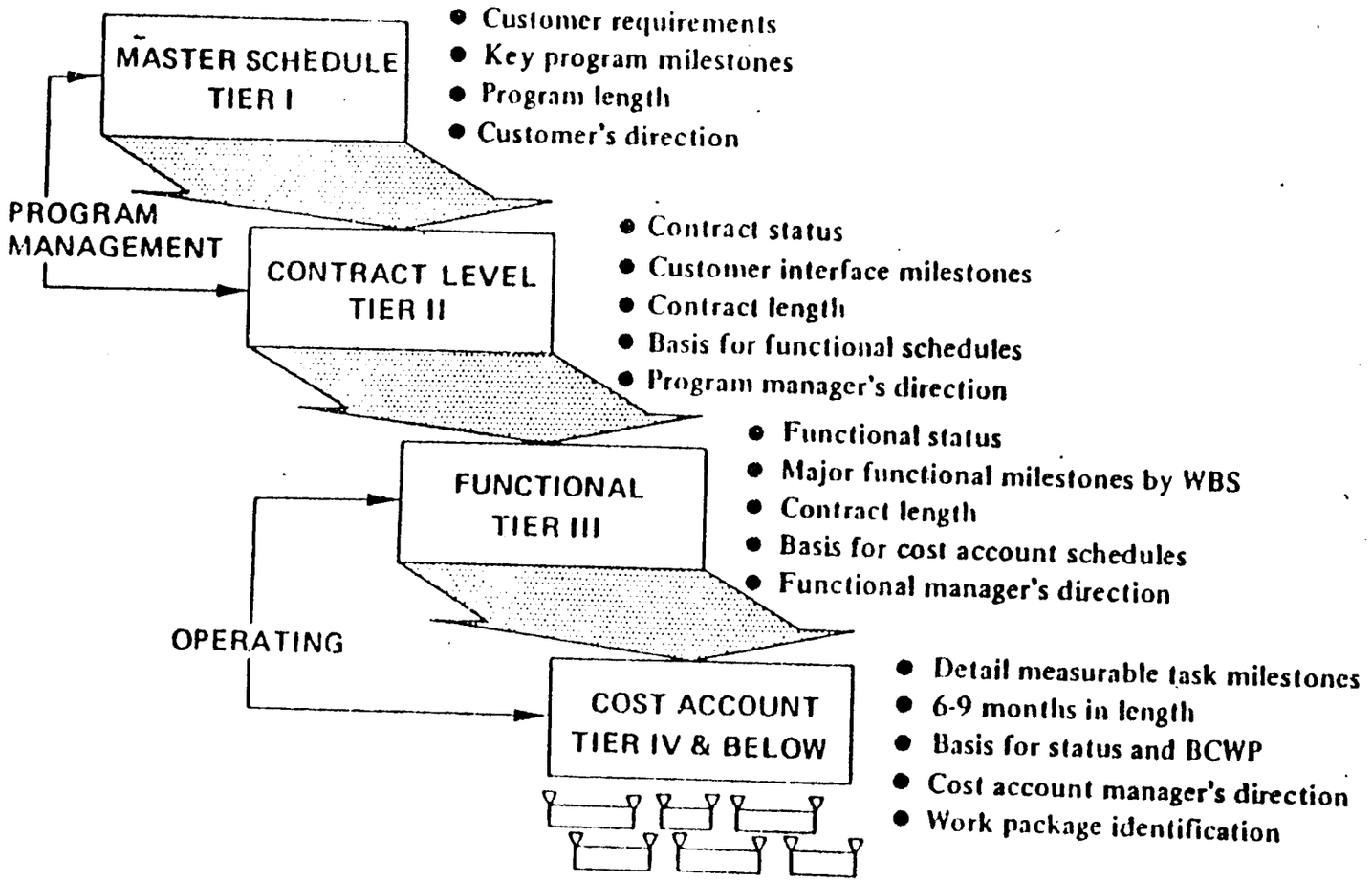
10/8/85

PROGRAM BUDGET MATRIX
B-52 OAS/CMI
PRODUCTION LOT II

OAS TEST & EVALUATION

WBS CODE	WBS TITLE	WORK ORDER	70310 OAS TEST PLANNING & SUPPORT	70321 TEST OPERATIONS	70322 ITE OPERATIONS	70351 SYSTEMS INTEGRATION	70353 LAB OPERATIONS SUPPORT	70352 INSTRUMENTATION RESULTS/DATA R & E	70355 LAB SUPPORT	TOTAL
13410 13412-15	CONTROL-INDICATOR	33102						900		900
13511	CONV. SIGNAL DATA	33103						540		540
13512	CONV. SIGNAL DATA	33104						540		540
13513	CONV. SIGNAL DATA	33105						540		540
13514	CONV. SIGNAL DATA	33106						540		540
14131	DECODER - RECEIVER	33107						1400		1400
15111	FSIE	33114						1400		1400
16200	BURN-IN SIE	33115						340		340
41316	SYSTEMS AVIONICS TESTER	33152						675		675
51310	GROUP B ESE	33127						150		150
51311	SUBSYSTEMS TESTING	33127			13448		6811			20258
51500	TEST SUPPORT (PAINT)	33137			1683	1933	3617			7233
51620	TEST PLANNING	33138		8920						8920
51700	SUPPORT EQUIPM TESTS	33138		1419	1200	9450	2048	5756		15293
61150/51	SYSTEMS ENGINEERING	33140					720			720
71154	TECH PUBS PLANNING	33156			2055			2055		4110
	TOTAL			10739	18386	6383	2808	18519	7065	65700

Scheduling


MASTER SCHEDULE
TIER I
• Customer requirements
• Key program milestones
• Program length
• Customer's direction
PROGRAM
MANAGEMENT
CONTRACT LEVEL
TIER II
• Contract status
• Customer interface milestones
• Contract length
• Basis for functional schedules
• Program manager's direction
FUNCTIONAL
TIER III
• Functional status
• Major functional milestones by WBS
• Contract length
• Basis for cost account schedules
• Functional manager's direction
OPERATING
COST ACCOUNT
TIER IV & BELOW
• Detail measurable task milestones
• 6-9 months in length
• Basis for status and BCWP
• Cost account manager's direction
• Work package identification

- COST ACCOUNT BUDGETS ARE DEVELOPED FROM WHATEVER DATA SOURCE IS AVAILABLE -- TASK SHEETS, PACM DETAIL SHEETS, ETC.

- THESE BUDGETS ARE RELEASED ON EWI'S, ALONG WITH A BRIEF WORK STATEMENT AND START/COMPLETE DATES

- A COST/SCHEDULE PLAN (TIER IV) IS DEVELOPED FOR EACH COST ACCOUNT BY ASSIGNING TIME SPREAD BUDGETS AND SIGNIFICANT MILESTONES TO THE WORK PACKAGES MAKING UP THE COST ACCOUNT

- THESE PLANS MUST FALL WITHIN THE SCHEDULE CONSTRAINTS OF THE UPPER TIER SCHEDULES FOR THE PROGRAM

ENGINEERING WORK INITIATOR

EWI NO.	ENG 101600	
REV LTR	DATE	APPROVAL
Orig	1-25-84	
A	3-8-84	
B	5-23-84	
C	7-18-84	

PROGRAM	CHIEF ENG/ENG MGR APPROVAL
ICSMS/1760	W. Key
CHANGE	COORDINATING GROUP APPROVAL
AUTHORIZING INSTRUMENT F33657-82-C-0263	PREPARATION VERIFIED BY D. Deines/M. Weaver

TITLE

Integrated Conventional Stores Mgmt System
Integration and Assembly

CC	WO	INT	SER	INC	CONTRACT TYPE
14	3A500	0	101600	AA	FPI

WBS A10160
Start: 1-3-84 Complete: 6-30-85

ORGN NO	ORGANIZATION NAME	BUDGET	
7A220	Support Equip Design & STE		3933
7A250	Packaging Design		2187
7A300	Software Design		5467
7A422	Group A Requirements	1374	1708
7A161	Group A Avionics/Elect		443
	Total	1374	13404

WORK DESCRIPTION: Include documents, reports, schedules, admitted contractual and management established milestones. Use continuous sheets as necessary.

BUN 10-A

This EWI includes all engineering effort required to integrate the B-52/ICSMS/MIL-STD-1760 Carrier Aircraft Equipment (CAE) and supporting elements with the aircraft

Includes effort to provide engineering, services, and materials required to install the CAE on the baseline B-52G aircraft at the contractor's facility for conduct of development activities and functional check flight.

Includes effort to design and modify or fabricate the Special Tooling and Special Test Equipment (STE) required during the FSD, including SILTF Software and develop ASITS. This effort includes the following level 4 sub-elements:
A10160.01 Carrier A/C Mod
A10160.02 CAE Installation
A10160.03 FSD Special Tooling and Special Test Equipment (STE)

7A220 Design and control modification or fabrication of special tooling and Special Test Equipment (STE) required during development, including SILTF hardware.

7A250 Define packaging requirements and provide inputs into the installation and assembly of the new and modified equipment.

7A300 Design and check out new developed software for the SILTF computer and for the avionics test equipment including ASITS.

7A422 Control the installation and assembly effort through requirements documented in the Class II Modification Document.

17

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WORK PACKAGES (WP)

WORK PACKAGES ARE DETAILED SHORT-SPAN JOBS OR MATERIAL ITEMS THAT ARE NATURAL SUBDIVISIONS OF THE TASK TO BE ACCOMPLISHED. WORK PACKAGES HAVE THE FOLLOWING CHARACTERISTICS:

* REPRESENTS UNITS OF WORK AT THE LEVELS WHERE WORK IS PERFORMED
* IS A DISCRETE SEGMENT OF WORK
* IS ASSIGNABLE TO A SINGLE ORGANIZATION
* HAS A SCHEDULED START AND COMPLETION DATE REPRESENTATIVE OF PHYSICAL ACCOMPLISHMENT
* HAS A BUDGET EXPRESSED IN TERMS OF DOLLARS OR LABOR HOURS
* HAS SIZE AND DURATION LIMITED TO RELATIVELY SHORT SPANS OF TIME TO MINIMIZE WORK IN PROCESS AND PROVIDE FOR ACCURATE STATUSING OF THE COST ACCOUNT PROGRESS
* IS INTEGRATED WITH DETAIL AND HIGHER LEVEL SCHEDULES

THE SUM OF WORK PACKAGE BUDGETS PLUS ANY PLANNING PACKAGE BUDGETS MUST EQUAL THE TOTAL COST ACCOUNT BUDGET AND THEIR SCHEDULE MUST BE RELATED TO THE PARENT COST ACCOUNT SCHEDULE

next

PLANNING PACKAGES

- FUTURE EFFORT AT THE COST ACCOUNT LEVEL NOT YET IDENTIFIED TO A WORK PACKAGE IS A PLANNING PACKAGE
- EACH PLANNING PACKAGE MUST IDENTIFY THE EFFORT TO BE ACCOMPLISHED WITH THE ALLOCATED BUDGET
- WORK PACKAGES ARE DEVELOPED FROM PLANNING PACKAGES
- PLANNING PACKAGES SHOULD BE CONVERTED IN TO WORK PACKAGES IN A TIMELY MANNER, NORMALLY SIX (6) TO NINE (9) MONTHS PRIOR TO THE OPENING OF THE FIRST WORK PACKAGE DEVELOPED FROM THE PLANNING PACKAGE
- PLANNING PACKAGE BUDGET NOT CONVERTED INTO WORK PACKAGES AT THE CONCLUSION OF WORK PACKAGE PLANNING IS TRANSFERED TO MANAGEMENT RESERVE
- AT ANY POINT IN TIME THE SUMMATION OF WORK PACKAGE BUDGETS AND PLANNING PACKAGE BUDGETS MUST EQUAL THE TOTAL COST ACCOUNT BUDGET

THREE TYPES OF EFFORT

o DISCRETE	MILESTONES - SHORT-SPAN JOBS - DISTINGUISHED FROM OTHER JOBS - BEGINNING AND END DATES.
o LEVEL OF EFFORT	NOT IDENTIFIED TO A DISCRETE TASK BUT MAY BE IDENTIFIED AND PLANNED AS SUPPORT TO THE CONTRACT.
o APPORTIONED (D.D. ONLY)	EFFORT THAT BY ITSELF IS NOT READILY DIVISIBLE INTO SHORT-SPAN WORK PACKAGES BUT WHICH IS RELATED IN DIRECT PROPORTION TO OTHER EFFORT.

ENGINEERING DETAIL SCHEDULE DATA SHEET

AEMIS CNTL. NO. 3 3 4 3 1 4 x 0 0 0 0 6 2 9 0 0 x 0 0 ORG. NO. 80100
EWI NO. 62900 COST ACCOUNT MGR. R. CLAWSON DATE 9-4-81
PROJECT ENGINEER J. DANIELS DATE 9-4-81 PAGE 1 OF 1 JOB-A 09-01-81 JOB-C 07-29-82 REVISION DATE ____ REASON FOR REVISION ____

TITLE
B-52 OAS FSD WBS 62900 TEST ADAPTER

ORG. START 09-01-81 ORG. COMP 07-29-82

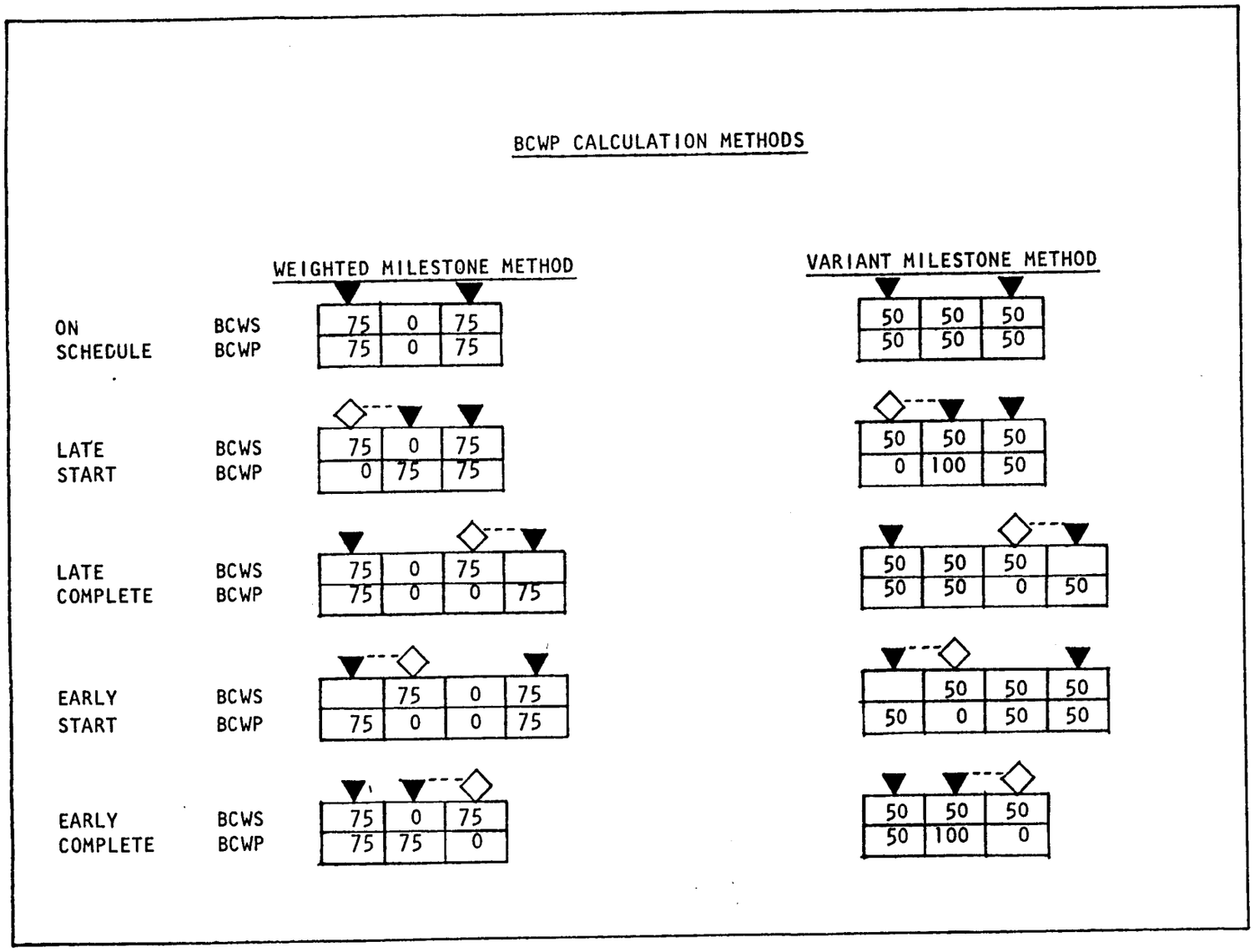
WP NO.	WP TYP	MS NO.	TIER	WP/MS DESCR (25 SPACES)	SCHED DATE	PLOT CODE	1981 S	1981 O	1981 N	1981 D	1982 J	1982 F	1982 M	1982 A	1982 M	1982 J	1982 J	1982 A	1982 S	1982 O	1982 N	1982 D	1983 J	1983 F	1983 M	1983 A	1983 M	1983 J	1983 J	1983 A	1983 S	1983 O	1983 N	1983 D
				WEEKS			5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5	4	4	5
				COST ACCT. CUTOFF DATE			01	29	26	31	28	25	01	29	27	01	29	26	30	28	25	30	27	24	31	28	26	30	28	25	29	27	24	29
				KEY MILESTONES																														
001	M			DESIGN REQMTS DOC			100	80																										
		01	4	START	09-01-81																													
		02	4	COMPLETE	10-29-81	U																												
002	M			DETAIL DESIGN					80	80	80	80																						
		01	4	START	10-30-81																													
		02	4	RELEASE EAMR	12-15-81	T																												
		03	4	RELEASE DRAWING	02-15-82	R																												
003	L			SUPPORT DESIGN REVIEWS				20	20	20																								
004	P			SUSTAINING ENGINEERING									50	50	50	50	50																	
		01	4	START	02-26-82																													
		02	4	COMPLETE	07-29-82																													
BUDGETED COST OF WORK SCHEDULED				BCWS	810		100	100	100	100	80	80	50	50	50	50	50																	
MANHOUR SCHEDULE				MEAC	810		100	100	100	100	80	80	50	50	50	50	50																	
MANPOWER SCHEDULE																																		
							S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
							1981				1982												1983											

E 416.2 Rev 10 81

PERFORMANCE MEASUREMENT TECHNIQUES (ENGINEERING)

WEIGHTED MILESTONE	BUDGET ASSIGNED TO EACH MILESTONE. BCWP CREDIT TAKEN UPON COMPLETION OF MILESTONES.
VARIANT MILESTONE	BUDGET DISTRIBUTED ACCORDING TO RESOURCE PLAN. START AND COMPLETE MILESTONES REQUIRED. INTERIM MILESTONES ASSIGNED WHERE APPROPRIATE. NO MORE THAN TWO CONSECUTIVE MONTHS WITHOUT A MILESTONE. BCWP CREDIT TAKEN UPON COMPLETION OF MILESTONES WHEN THEY ARE PRESENT. FOR MONTHS WITHOUT MILESTONES, BCWP CREDIT TAKEN UPON PASSAGE OF TIME, PROVIDED PREVIOUS MILESTONES ARE COMPLETED.
LEVEL OF EFFORT (LOE)	NO MILESTONES. BCWP CREDIT TAKEN BY THE PASSAGE OF TIME.
APPORTIONED	BCWP CREDIT TAKEN IN THE SAME RATIO AS BCWP FOR THE APPORTIONING BASE.

FIGURE 22


BCWP CALCULATION METHODS
WEIGHTED MILESTONE METHOD
VARIANT MILESTONE METHOD
ON SCHEDULE
BCWS
BCWP
75 0 75
75 0 75
50 50 50
50 50 50
LATE START
BCWS
BCWP
75 0 75
0 75 75
50 50 50
0 100 50
LATE COMPLETE
BCWS
BCWP
75 0 75
75 0 0 75
50 50 50
50 50 0 50
EARLY START
BCWS
BCWP
75 0 75
75 0 0 75
50 50 50
50 0 50 50
EARLY COMPLETE
BCWS
BCWP
75 0 75
75 75 0
50 50 50
50 100 0

REPLANNING OF A COST ACCOUNT MAY BE ACCOMPLISHED AS FOLLOWS:

- ADDITIONAL BUDGETS MAY BE AUTHORIZED BY BUN OR BAT, BUT ONLY FOR ADDITIONAL WORK

- BUDGET REDUCTIONS MAY BE AUTHORIZED BY BUN OR BAT, BUT ONLY FOR REDUCTIONS IN WORK

- BUDGET RESPREADS MAY BE AUTHORIZED BY BAT, BUT ONLY FOR UNOPENED WORK PACKAGES OUTSIDE THE 30-DAY FREEZE PERIOD (aren't scheduled for at least another 30 days)

- EXCEPTIONS TO THESE RESTRAINTS MAY BE GRANTED BY THE CUSTOMER

[illegible] is to preserve a [illegible] for the customer.

COST ACCOUNT MEAC

- MEAC'S ARE BASED ON CUMULATIVE BCWP AND ACWP, KNOWLEDGEABLE PROJECTIONS OF FUTURE PERFORMANCE AND ESTIMATES OF THE COSTS FOR THE WORK REMAINING TO BE ACCOMPLISHED BY EACH COST ACCOUNT

- MEACs ARE PREPARED FREQUENTLY ENOUGH TO PROVIDE IDENTIFICATION OF FUTURE COST PROBLEMS, ON TIME FOR CORRECTIVE AND PREVENTIVE ACTIONS, BOTH INTERNALLY AND BY THE CUSTOMER.

- BMAC PREPARES "GRASSROOTS" MEACs QUARTERLY.

- THE COST ACCOUNT MANAGER GENERATES MEAC'S AT THE COST ACCOUNT LEVEL

- COST ACCOUNT MEACs ARE COMPARED WITH COST ACCOUNT BUDGET

- COST ACCOUNT MEACs ARE GENERATED IN A RATIONAL AND CONSISTENT MANNER

GRASSROOTS MEAC FLOW

THE CONTRACT MEAC IS THE SUMMATION OF THE "PRICED" COST ACCOUNT MEACS

MEAC FLOW FROM THE COST ACCOUNT LEVEL TO THE PROGRAM LEVEL:

* COST ACCOUNT MANAGER GENERATES COST ACCOUNT(S) MEAC(S)
* FUNCTIONAL MANAGER REVIEWS COST ACCOUNTS' MEACS
* COST ACCOUNT MANAGER UNDERSTANDS/ ACKNOWLEDGES FUNCTIONAL MANAGER'S REVIEW AND ADJUSTMENTS
* PROGRAM MANAGER REVIEWS SUMMARIZED FUNCTIONAL MEAC
* FUNCTIONAL MANAGER UNDERSTANDS/ ACKNOWLEDGES PROGRAM MANAGER'S REVIEW AND ADJUSTMENTS
* COST ACCOUNT MANAGER UNDERSTANDS/ ACKNOWLEDGES PROGRAM MANAGER'S REVIEW AND ADJUSTMENTS
* FUNCTIONAL MANAGERS TRANSMIT PROGRAM MANAGER APPROVED MEACS TO PROGRAM FINANCE FOR PRICING AND INCORPORATION INTO MCS SYSTEM
* PROGRAM FINANCE REPORTS "NEW" MANAGEMENT ESTIMATE AT COMPLETION IN THE "LATEST REVISED ESTIMATE" COLUMN OF THE CPR FORMATS

H14

Management Estimate at Completion

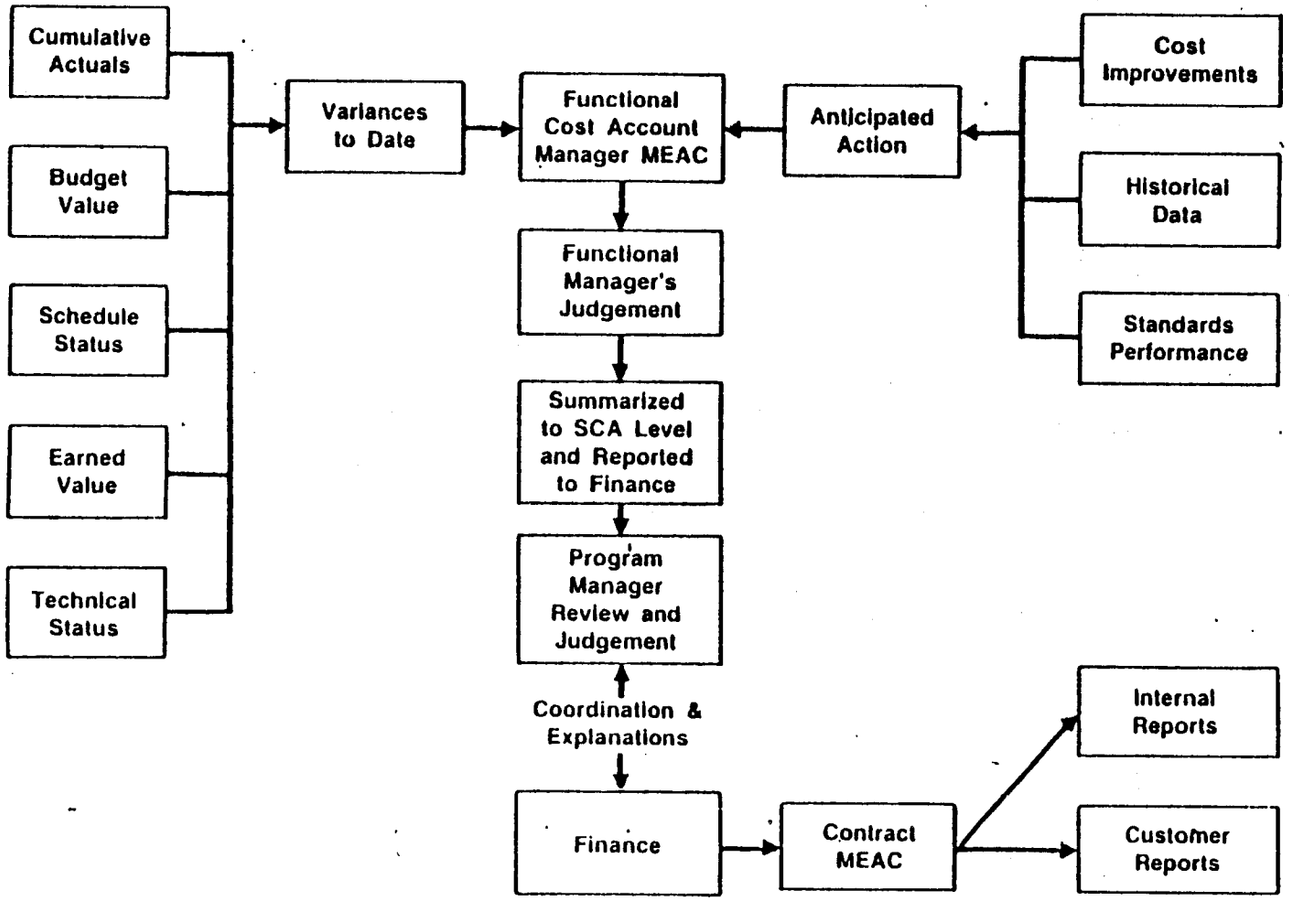


FIGURE 14

IG820235-12

VARIANCE ANALYSIS

* PROGRAM REPORTING THRESHOLDS ARE ESTABLISHED BY CONTRACT
* COST ACCOUNT THRESHOLDS ARE ESTABLISHED BY THE PROGRAM MANAGER

EACH COST ACCOUNT MANAGER SHOULD BE ABLE TO DEMONSTRATE THE CAPABILITY TO:

* IDENTIFY AND ISOLATE PROBLEMS CAUSING SCHEDULE VARIANCES
* IDENTIFY AND ISOLATE PROBLEMS CAUSING COST VARIANCES
* IDENTIFY POTENTIAL OR ACTUAL COST UNDERRUNS OR OVERRUNS

Δ VARIANCE ANALYSIS IS REQUIRED MONTHLY FOR THOSE COST ACCOUNTS WHICH HAVE SCHEDULE, COST, OR AT COMPLETITION VARIANCES THAT EXCEED THE THRESHOLDS ESTABLISHED BY THE PROGRAM MANAGER

→ SOME PROGRAMS REQUIRE BOTH CUM TO DATE AND CURRENT PERIOD COST AND SCHEDULE VARIANCE ANALYSIS REPORTING

VARIANCE ANALYSIS REPORT (VAR)

THE VARIANCE ANALYSIS REPORT IDENTIFIES:

* SCHEDULE VARIANCE
* COST VARIANCE
* AT COMPLETION COST VARIANCE
* REASON(S) FOR THE VARIANCE(S)
* THE IMPACT OF THE VARIANCE(S) ON THE CONTRACT PERFORMANCE
* THE CORRECTIVE ACTION TO BE TAKEN AS A RESULT OF THE VARIANCE(S)

Δ VARIANCE ANALYSIS SERVES AS A PROBLEM IDENTIFIER FOR BOTH INTERNAL MANAGEMENT AND THE CUSTOMER. THE VAR SHOULD PROVIDE MANAGEMENT AND THE CUSTOMER A DETAILED UNDERSTANDING OF THE CURRENT AND POTENTIAL TROUBLE AREAS WITHIN THE PROGRAM

✓ COST ACCOUNT VARS MAY BE REVIEWED BY THE CUSTOMER AS A PART OF C/SCSC SURVEILLANCE

ELEMENTS OF VARIANCE ANALYSIS

BCWP – BCWS
(2 - 1 = A)

SCHEDULE PERFORMANCE
+ INDICATES AHEAD OF SCHEDULE
– INDICATES BEHIND SCHEDULE

BCWP – ACWP
(2 - 3 = B)

COST PERFORMANCE
+ INDICATES UNDERRUN TO BUDGET
– INDICATES OVERRUN TO BUDGET

BAC – MEAC
(4 - 5 = C)

AT COMPLETION COST PERFORMANCE
+ INDICATES POTENTIAL UNDERRUN
– INDICATES POTENTIAL OVERRUN

monthly

E-4161

VARIANCE ANALYSIS REPORT

CONTRACT NUMBER	REPORT DATE
F33657-78-C-0500	

WBS REPORTING LEVEL/COST ACCOUNT DESCRIPTION	COST ACCOUNT MANAGER	REPORT NUMBER
34509 137100 - OPERATIONAL PROGRAMS		FOR PERIOD ENDING 5-24-79
FUNCTIONAL ORG./ORGANIZATION	FUNCTIONAL MANAGER	

PERFORMANCE DATA REQUIRING ANALYSIS

CUM BCWS		CUM BCWP		CUM ACTUALS		VARIANCE IN HOURS		VARIANCE IN DOLLARS	
HOURS	DOLLARS	HOURS	DOLLARS	HOURS	DOLLARS	SCHEDULE	COST	SCHEDULE	COST
14,021 (1)		12,867 (2)		17,935 (3)		(1,154) (A)	(5,068) (B)		

REMARKS

AT COMPLETION					
BUDGET (5)		LATEST ESTIMATE		VARIANCE (C)	
HOURS	DOLLARS	HOURS	DOLLARS	HOURS	DOLLARS
49,572 (4)		57,703		(8,131)	

REASON FOR VARIANCE

Schedule variance: 3 tier IV milestones were not completed on schedule due to late engineering
Cost variance: Late engineering dictated working excessive overtime
At completion variance: Total task greater than originally planned

IMPACT OF VARIANCE

Late delivery of software
Budget overrun

CORRECTIVE ACTION

Schedule: Complete WP 53 MS 02, 66 MS 02, 70 MS 02 in June.
Cost: Add high quality software engineers to improve productivity to complete product within budget.

	COST ACCOUNT MANAGER SIGNATURE	FUNCTIONAL MANAGER SIGNATURE
☐ NEW PROBLEM AREA ☐ PREVIOUS PROBLEM AREA ☐ PROBLEM RESOLVED	DATE SIGNED	DATE SIGNED

VAR SUMMARY

1. EXPLAIN ALL THE VARIANCES THAT EXCEED THE PROGRAM THRESHOLD
2. DO NOT MERELY RESTATE THE PROBLEM
3. MAKE SURE THAT THE EXPLANATION SUPPORTS THE DATA DISPLAYED
4. BE COMPLETE
5. REMEMBER THAT VARS ARE SUBJECT TO REVIEW BY BOTH INTERNAL MANAGEMENT AND THE CUSTOMER

➡ RECENT SUBSEQUENT APPLICATION REVIEWS HAVE CONCENTRATED ON THE VARIANCE ANALYSIS REPORTS SUBMITTED BY THE COST ACCOUNT MANAGERS AND HOW THIS DATA IS REFLECTED IN THE PROBLEM ANAYLSIS REPORT FORMAT OF THE COST PERFORMANCE REPORTS (CPR)

COST ACCOUNT REPORTING

AUTOMATED ENGINEERING MANAGEMENT INFORMATION SYSTEM (AEMIS)

AN AUTOMATED SYSTEM FOR COST AND SCHEDULE VISIBILITY OF ENGINEERING, ILS AND T&E ACTIVITY AT THE COST ACCOUNT (TIER IV) LEVEL, IN TERMS OF LABOR HOURS

The Automated Engineering Management Information System (AEMIS) was first developed in 1965 and converted to one of Boeing-Wichita's first on-line systems in 1972. In 1981, a major update was completed incorporating an entirely new data base design.

The system incorporates the Boeing Integrated Cost/Schedule Management System as defined in D3-9102-1, "Boeing Military Airplane Company Integrated Cost and Schedules Management System - Military Systems."

The system is used throughout the Boeing Military Airplane Company (Wichita, Seattle, and Huntsville) whether or not C/SCSC is a contractual requirement.

FUNCTIONS OF AEMIS

ENGINEERING CONTROL:

- ENGINEERING DESIGN
- INTEGRATED LOGISTICS SUPPORT
- TEST AND EVALUATION

PERFORMANCE (HOURS)

COST ACCOUNT INFORMATION AND DATA
- BUDGET PLAN (BCWS)
- EARNED VALUE (BCWP)
- ACTUALS (ACWP)
- MEAC
- WORK PACKAGES
- PLANNING PACKAGES
- LOE

TIER IV MILESTONES
- STATUS
- DELINQUENCIES
- LOOK-AHEAD

VARIANCE ANALYSIS
- CURRENT MONTH
- CUM-TO-DATE
- SCHEDULE
- AT COMPLETION
- COST

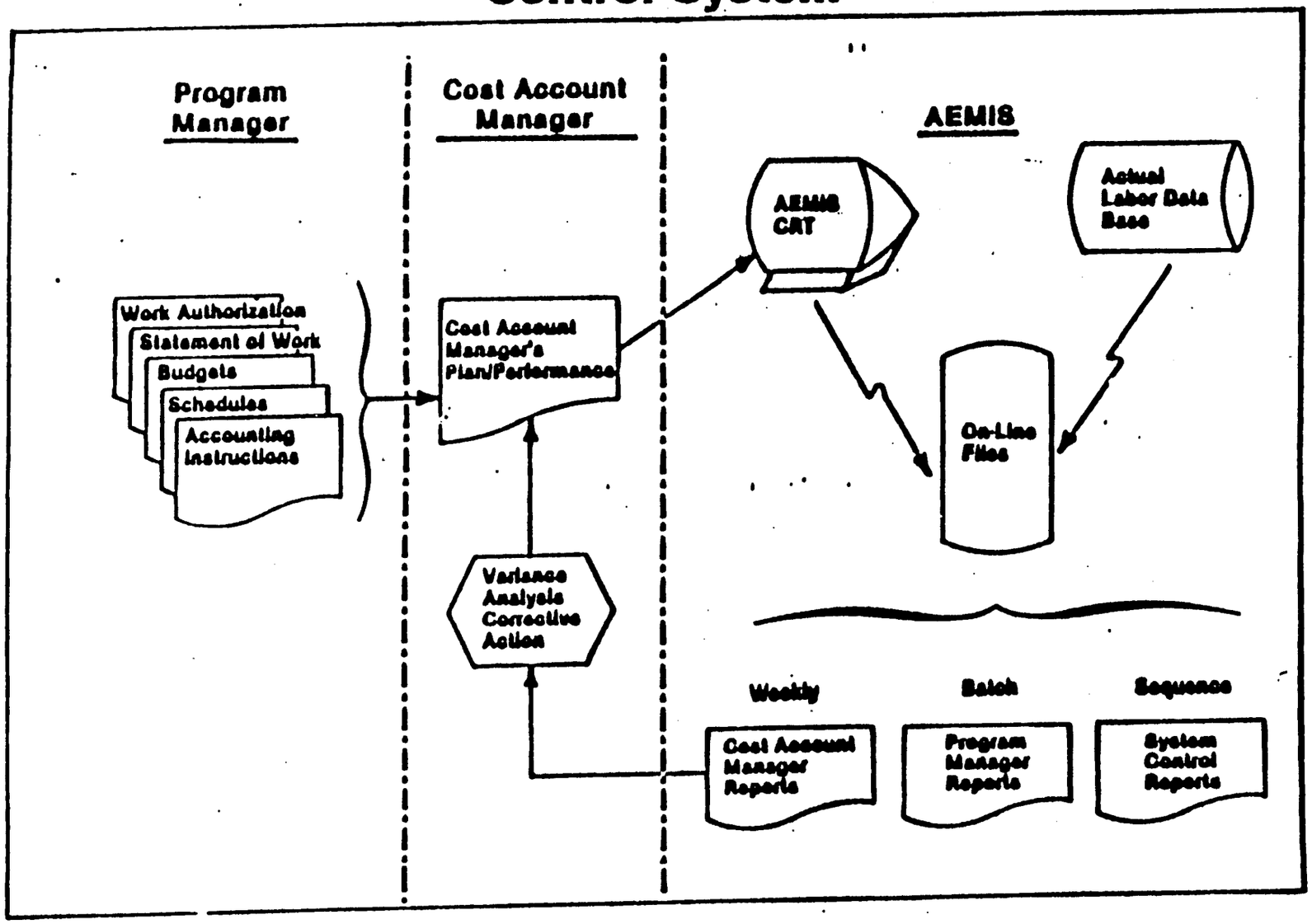
WORK LOAD (HOURS/HEADS)

AUTHORIZED CONTRACTS
- BCWS
- MEAC

ANTICIPATED FUTURE BUSINESS
- MEAC

HEADCOUNT FORECAST REPORTING
- COST ACCOUNT
- ORG TOTALS
- FUNCTIONAL TOTALS

Engineering Cost/Schedule Control System



ON-LINE INPUTS

- ALL AEMIS DATA ELEMENTS EXCEPT ACTUALS AND BCWP ARE INPUT THROUGH HOST-CONNECTED TERMINALS ON A FULLY ON-LINE BASIS, USING CICS SCREENS

- THEREFORE, BCWS SPREADS, MEAC'S, MILESTONE DATES, ETC., MAY BE ADDED, REVISED, OR DELETED AT ANY TIME DURING THE MONTH

- REQUEST FILES FOR BATCH REPORTS AND CHARTS ARE ALSO MAINTAINED ON-LINE

AEMIS Date Table

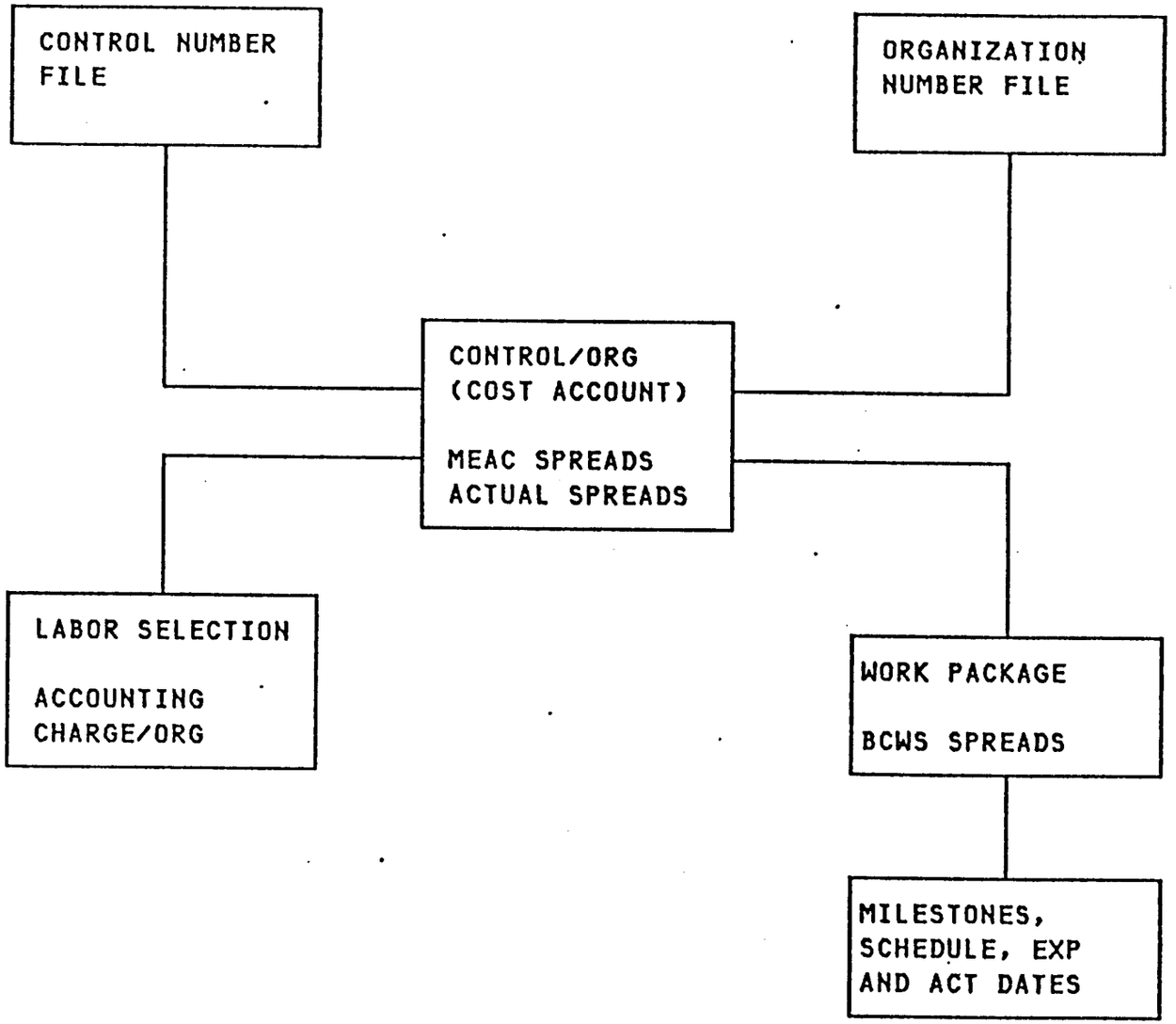
Because of the weekly cycle of labor inputs, AEMIS uses the same Boeing accounting calendar used by Finance as the basis for all system calculations.

This accounting calendar works as follows:

- All weeks begin on Friday and end on Thursday.
- The months of March, June, September, and December contain 5 weeks, all other months contain 4 weeks.
- Every 5 years (1980, 1985, 1990 etc.) the month of January is assigned 5 weeks instead of 4. There may be exceptions to this rule, but the accounting calendar will provide the exact dates for each month.
- Each month is assigned an effectivity factor for headcount conversion based on the number of work days in each month and historical data on the amount of sick leave and vacation time used.

This data is accumulated into a table within AEMIS.

- AEMIS DATA IS SINGLE RESOURCE -- LABOR HOURS
- DATA IS MAINTAINED FOR ENGR, T&E, AND ILS FUNCTIONS
- AEMIS CONTAINS COST ACCOUNT DATA ONLY -- NO RESERVES
- D.D. DATA IS GENERALLY NOT INCLUDED
- AEMIS DATA IS KEYED TO A "CONTROL NUMBER" WHICH HAS THE SAME STRUCTURE AS THE ACCOUNTING CHARGE NUMBER, EXCEPT THAT X'S MAY BE USED TO SUMMARIZE SEVERAL ACCOUNTING CHARGES INTO ONE CONTROL NUMBER



AEMIS Data Base Structure

THE TIER IV PLAN CONTAINS THE FOLLOWING:

- BUDGET SPREAD (BCWS) FOR EACH WORK PACKAGE
- MEAC SPREAD FOR THE TOTAL COST ACCOUNT
- SCHEDULE DATES FOR EACH MILESTONE

AS THE WORK PROGRESSES, THE FOLLOWING DATA IS ADDED:

- ACTUAL LABOR CHARGES AT THE COST ACCOUNT LEVEL
- ACTUAL COMPLETION DATES FOR EACH MILESTONE

EARNED VALUE (BCWP) IS CALCULATED USING ONE OF THREE METHODS:

- LEVEL-OF-EFFORT (LOE)
- APPORTIONED (APPROVED FOR D.D. ONLY)
- MEASURED

LABOR INTERFACE

- LABOR CHARGES ARE FED INTO AEMIS THROUGH AN INTERFACE WITH THE FINANCE LABOR SYSTEM DURING THE WEEK-END BATCH PROCESS

- AEMIS PICKS UP LOAN ORG, ACCOUNTING CHARGE, CURRENT HOURS, CUM HOURS, AND SOURCE CODE

- THIS LABOR IS THEN MATCHED AGAINST THE FILE OF VALID CONTROL NUMBERS IN AEMIS, AND THE ACTUAL VALUES ARE UPDATED

- UNMATCHED LABOR IS PUT ON AN EXCEPTION REPORT

WEEKLY BY NAME LABOR AUDIT REPORT
LOAN ORG BY SSN BY WORK ORDER FOR PERIOD 03-20-87 THRU 03-26-87

LOAN ORG	HOME ORG	EMPLOYEE NAME	SSN	PC	WORK ORDER	FRI REG	FRI O/T	SAT REG	SAT O/T	SUN REG	SUN O/T	MON REG	MON O/T	TUE REG	TUE O/T	WED REG	WED O/T	THU REG	THU O/T	NON CURRENT REG	NON CURRENT O/T	TOTAL REG	TOTAL O/T
77620	77620	HAHN STEVEN E	960148962	4G	S/LA									1.7								1.7	
77620	77620	HAHN STEVEN E	960148962	4G	03002									2.8		4.7		3.5				11.0	
77620	77620	HAHN STEVEN E	960148962	4G	37RAM	8.0						8.0		3.5		3.3		4.5				27.3	
TOTAL FOR HAHN STEVEN E						8.0						8.0		8.0		8.0		8.0				40.0	
77620	77620	HOLT JAY	028951412	20	S/LB							1.1										1.1	
77620	77620	HOLT JAY	028951412	20	VAC	8.0																8.0	
77620	77620	HOLT JAY	028951412	20	3C090							6.9		8.0		4.0						18.9	
77620	77620	HOLT JAY	028951412	20	3R302											4.0		8.0				12.0	
TOTAL FOR HOLT JAY						8.0						8.0		8.0		8.0		8.0				40.0	
77620	00MSA	NO EMPLOYEE NAME	00000		306RM															28.1		28.1	
TOTAL FOR NO EMPLOYEE NAME																				28.1		28.1	
77620	7H322	OVERBEY ROBERT G	363149778	4G	3R302							8.0		8.0		3.7		7.0				26.7	
TOTAL FOR OVERBEY ROBERT G												8.0		8.0		3.7		7.0				26.7	
77620	77620	THOMAS JAY M	073451060	4G	PERBU							2.0						.5				2.5	
77620	77620	THOMAS JAY M	073451060	4G	03002	7.0						5.0		7.0		5.0		4.5				28.5	
77620	77620	THOMAS JAY M	073451060	4G	37RAM	1.0						1.0		1.0		3.0		3.0				9.0	
TOTAL FOR THOMAS JAY M						8.0						8.0		8.0		8.0		8.0				40.0	
77620	77620	THOMPSON TRENT A	650050390	4G	PERBU									3.0		1.0						4.0	
77620	77620	THOMPSON TRENT A	650050390	4G	3R302	8.0						8.0		5.0		7.0		8.0				36.0	
TOTAL FOR THOMPSON TRENT A						8.0						8.0		8.0		8.0		8.0				40.0	
77620	77620	TODD MARTY	576951364	4G	VAC							8.0		8.0		8.0		8.0				32.0	
77620	77620	TODD MARTY	576951364	4G	37RAM	8.0																8.0	
TOTAL FOR TODD MARTY						8.0						8.0		8.0		8.0		8.0				40.0	
LOAN ORG 77620						40.0						48.0		48.0		43.7		47.0		28.1		254.8	

BCWP CALCULATION

- A WEEKLY BATCH UPDATE IS RUN TO CALCULATE MONTHLY BCWP
- BCWP ASSOCIATED WITH MILESTONES IS CREDITED IN THE WEEK THE MILESTONES ARE COMPLETED
- LOE AND VARIANT MILESTONE BUDGETS ARE CREDITED AT THE END OF THE MONTH
- ANY RETROACTIVE BCWS OR MILESTONE STATUS INPUTS WILL CAUSE BCWP TO BE RECALCULATED RETROACTIVELY

MEAC

MANAGEMENT ESTIMATE AT COMPLETION

- AUTHORIZED MEAC
  - GRASS ROOTS MEAC UPDATE
  - REVIEWED/REVISED QUARTERLY (IF NEEDED)
    - COST ACCOUNT MANAGER
    - CHIEF ENGINEER/TEST/LOGISTICS
  - APPROVED BY THE PROGRAM MANAGER
  - UPDATED FOR CLASS I CHANGES (BUDGETED)

- CALCULATED MEAC
  - BASED ON INITIAL AUTHORIZED MEAC
  - UPDATES MONTHLY
  - MONTH-END - REPLACES MONTHLY MEAC WITH ACTUALS
  - ACTUALS THROUGH LATEST MONTH PLUS REMAINING AUTH MEAC

- REPORTED
  - ORGANIZATION SCHEDULES/STATUS REPORTS
  - PROGRAM SCHEDULES/STATUS REPORTS

COST ACCOUNT REPORTS

- ORGANIZATION SCHEDULE WITH DETAIL
- ORGANIZATION SCHEDULE WITHOUT DETAIL
- ORGANIZATION STATUS REPORT
- ORGANIZATION MILESTONE REPORT
- VARIANCE ANALYSIS REPORT
- CHARTS

PDA ESM20048-R002 EXT 6-3319 L. OSBURN A&WSI ENGR ESM-200-C1

WEEK ENDING 11-20-86 ORGANIZATION SCHEDULE WITH DETAIL BY CNTL NO. ESM253A PAGE 24

CAT 1 W. KEENE/G. SAWYER 7A406 V-22 SYSTEMS ENGINEERING ORG-A 07-05-85 ORG-C 12-01-91

12-3Q003-X000-015530-XAA V-22 FSD INTERFACE UNITS W/O 3Q003 JOB-A 07-05-85 JOB-C 12-01-91

			MEAC HRS	ACT HRS	BCWS HRS	O/T ACT
BUDGET	7336	CUR WEEK	175	68.1	19	16.8
AUTH MEAC	7336	NON-CURR		.8		
CALC MEAC	9434	CUM	7299	7083.3	6430	1453.9

EARNED VALUE STATUS THRU 10-30-86

	BCWS	BCWP	ACT
CUR MO	0	83	582.6
CUM	6373	6373	6774.7

CUM-INDICES COST 0.94 SCHED 1.00

ELEMENT	YEAR	JAN	JUL	AUG	SEP	OCT	NOV	DEC
LABOR HRS BCWS	1985	0		15	15	169	355	369
LABOR HRS BCWP		0		15	15	169	355	369
LABOR HRS ACTUAL		0		15	15	169	355	369
LABOR HRS MEAC		0		15	15	169	355	369
LABOR HRS BCWS	1986	936			268	0	73	0
LABOR HRS BCWP		936			90	83	0	0
LABOR HRS ACTUAL		936			750	583	309	0
LABOR HRS MEAC		936			750	583	664	535
LABOR HRS BCWS	1987	0			55	55	55	0
LABOR HRS MEAC		379			55	55	56	0
HEADCOUNT BCWS	1985	.0			.1	1.2	2.5	3.4
HEADCOUNT BCWP		.0			.1	1.2	2.5	3.4
HEADCOUNT ACTUAL		.0			.1	1.2	2.5	3.4
HEADCOUNT MEAC		.0			.1	1.2	2.5	3.4
HEADCOUNT BCWS	1986	6.2			1.5	.0	.5	.0
HEADCOUNT BCWP		6.2			.5	.6	.0	.0
HEADCOUNT ACTUAL		6.2			4.3	4.0	2.8	.0
HEADCOUNT MEAC		6.2			4.3	4.0	4.8	4.2
HEADCOUNT BCWS	1987	.0			.3	.4	.4	.0
HEADCOUNT MEAC		2.7			.3	.4	.4	.0
OVERTIME ACTUAL	1985	0			0	22	46	104

7A406

ORGANIZATION SCHEDULE WITH DETAIL

USED PRIMARILY BY THE COST ACCOUNT MANAGER

UPDATES WEEKLY

PROVIDES DATA BY COST ACCOUNT AND BY TOTAL ORGANIZATION INCLUDING:

- TOTAL BUDGET
- TOTAL AUTHORIZED AND CALCULATED MEACS
- CURRENT WEEK AND CUMULATIVE MEAC, BCWS AND ACTUALS INCLUDING OVERTIME
- MONTH END VALUES FOR CURRENT MONTH AND CUMULATIVE BCWS, BCWP AND ACTUALS
- TIMESPREAD BCWS, MEAC, ACTUALS AND HISTORICAL BCWP IN HOURS AND HEADCOUNT

PROVIDES THE FOLLOWING DATA BY COST ACCOUNT:

- ALL WORK PACKAGES AND ASSOCIATED TIMESPREAD BCWS INCLUDING MEASURED, LOE AND PLANNING PACKAGES
- ALL MILESTONES ASSOCIATED WITH MEASURED PACKAGES AND THEIR SCHEDULED DATES
- ALL COMPLETION DATES ON CLOSED MILESTONES AND EXPECTED COMPLETION DATES ON DELINQUENT MILESTONES

PDA ESM20040-R002 EXT 6-3319 L. OSBURN A&WSI ENGR ESM-200-C1

WEEK ENDING 11-20-86 ORGANIZATION SCHEDULE WITH DETAIL BY CNTL NO. ESM253A PAGE 27

CAT 1 W. KEENE/G. SAWYER 7A406 V-22 SYSTEMS ENGINEERING ORG-A 07-05-85 ORG-C 12-01-91

12-3Q003-X000-015530-XAA V-22 FSD INTERFACE UNITS W/O 3Q003 JOB-A 07-05-85 JOB-C 12-01-91

WRK PKG	DESCRIPTION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
012 M	CIPS DEVELOPMENT	1986	0	0	0	0	0	0	0	0	5	0	2	0

PKG	M/S	TIER	PLOT	DESCRIPTION	SCHEDULE	EXPECTED	ACTUAL
012	01	4		START	09-01-86		09-01-86
012	02	4		INITIAL DRAFT	11-15-86	11-15-86	11-15-86
012	03	4		REVIEW COMPLETE	12-15-86		
012	04	4		COMPLETE	12-25-86		

WRK PKG	DESCRIPTION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
013 M	CIPS MAINTENANCE	1987	0	2	0	2	0	0	0	0	0	0	0	0

PKG	M/S	TIER	PLOT	DESCRIPTION	SCHEDULE	EXPECTED	ACTUAL
013	01	4		START	01-30-87		
013	02	4		INITIAL RELEASE	03-15-87		
013	03	4		COMPLETE	04-30-87		

WRK PKG	DESCRIPTION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
014 M	CIPS UPDATES	1987	0	0	0	0	2	0	2	0	0	0	0	0

PKG	M/S	TIER	PLOT	DESCRIPTION	SCHEDULE	EXPECTED	ACTUAL
014	01	4		START	05-01-87		
014	02	4		COMPLETE	07-30-87		

WRK PKG	DESCRIPTION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
015 P	ANOMALY RESOLUTION	1987	0	0	0	172	153	70	52	55	55	55	55	0

PKG	M/S	TIER	PLOT	DESCRIPTION	SCHEDULE	EXPECTED	ACTUAL
015	01	4		START	04-10-87		
015	02	4		COMPLETE	11-25-87		

WRK PKG	DESCRIPTION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
016 M	SPEC BASELINE	1986	0	0	0	0	0	0	0	0	50	0	0	0

PKG	M/S	TIER	PLOT	DESCRIPTION	SCHEDULE	EXPECTED	ACTUAL
016	01	4		START	08-29-86		08-29-86
016	02	4		COMPLETE	09-25-86	10-03-86	10-03-86

WRK PKG	DESCRIPTION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
017 M	INTERFACE BASELINE	1986	0	0	0	0	0	0	0	0	116	0	0	0

7A406

MTO ESM20848-R884 MAIN TERM. OPR. IPB 3 - KCN-81 - K75-85 ESM-200-C1

WEEK ENDING 03-15-84 ORGANIZATION SCHEDULE WITHOUT DETAIL PAGE 67

CAT 1 M. HARP 0888GCDX MATERIALS & STANDARDS ORG-A 12-15-82 ORG-C 10-30-85

GROUP CODE 888XXX LOT V PROD FPI TOTAL PROGRAM

			MEAC HRS	ACT HRS	BCWS HRS	O/T ACT
BUDGET	15682	CUR WEEK	97	117.8	117	.0
AUTH MEAC	15977	NON-CURRENT		.0		.0
CALC MEAC	16254	CUM	11432	11465.5	12015	32.0

EARNED VALUE STATUS THRU 02-23-84

	BCWS	BCWP	ACT
CUR	494	494	811.5
CUM	11664	11664	11137.5

CUM INDICES

COST 1.05 SCHED 1.00

ELEMENT	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LABOR HRS BCWS	1983	70	375	540	760	1085	1260	1088	1095	1172	952	895	926
LABOR HRS BCWP		70	375	540	760	1085	1260	1088	1095	1172	952	895	926
LABOR HRS ACTUAL		70	412	604	831	853	880	929	1267	1298	791	788	766
LABOR HRS MEAC		70	413	605	832	853	880	930	1268	1299	791	789	766
LABOR HRS BCWS	1984	1040	494	585	421	421	401	347	346	292	238	198	168
LABOR HRS BCWP		1040	494	0	0	0	0	0	0	0	0	0	0
LABOR HRS ACTUAL		833	811	324	0	0	0	0	0	0	0	0	0
LABOR HRS MEAC		833	812	487	471	438	441	407	407	422	360	258	188
LABOR HRS BCWS	1985	120	120	130	70	55	40	30	25	25	10	0	0
LABOR HRS MEAC		170	170	160	120	156	100	90	88	88	80	0	0
HEADCOUNT BCWS	1983	.5	2.5	2.9	5.1	6.9	7.4	7.8	7.7	6.8	6.6	6.4	6.4
HEADCOUNT BCWP		.5	2.5	2.9	5.1	6.9	7.4	7.8	7.7	6.8	6.6	6.4	6.4
HEADCOUNT ACTUAL		.5	2.8	3.2	5.5	5.8	5.2	6.8	8.9	7.5	5.4	5.7	5.3
HEADCOUNT MEAC		.5	2.8	3.2	5.5	5.8	5.2	6.8	8.9	7.5	5.4	5.7	5.3
HEADCOUNT BCWS	1984	7.7	3.3	3.1	2.8	2.9	2.3	2.5	2.4	1.7	1.6	1.4	1.1

ESM20026-R003 ORGANIZATION STATUS REPORT ESM233 ESM-200-C1 PDA

WEEK-ENDING 11-20-86 PAGE 3776

ORG: PDA EXT 6-3319 L. OSBURN A&WSI ENGR

ORGANIZATION NUMBER 7A406 V-22 SYSTEMS ENGINEERING ORG MANAGER W. KEENE/G. SAWYER

CNTRL NO AND DESCRIPTION	BUDGET	AUTH MEAC	CALC MEAC	VARIANCE AT COMPL	CURR WEEK ACTS	NON-C WEEK ACTS	CURR WEEK MEAC	CURR WEEK BCWS	CUM ACTUALS	CUM MEAC	CUM BCWS	CURR O/T ACTS	N-CURR O/T ACTS	CUM O/T ACTS	#CUM INDICES# AS OF 10-30-86 SCHED	COST
71-02427-X000-36E146-X09	450	450	333	0	0	0	0	0	333	333	450	0	0	4	1.00	1.36
V-22 1986 CAPITAL ASSETS																
82-03002-0000-000002-100	0	0	18	0	0	0	0	0	18	18	0	0	0	6	0.00	0.00
IR&D/B&P OVERHEAD																
82-03002-0000-000097-000	0	0	52	0	0	0	0	0	52	52	0	0	0	0	0.00	0.00
OA PAID TRAINING																
12-3Q000-X000-012100-XAA	6874*	6874	8210	0	94	0	89	85	5275	5288	4703	34	0	1237	1.00	0.89
V-22 FSD ELEC POWER SUBSYS-WIRING-W/O 3Q000																
12-3Q001-X000-015320-XAA	2501	2501	2413	0	30	0							0	91	1.00	1.35
V-22 FSD MULTI-FUNCT. RADAR-W/O 3Q001																
12-3Q001-X000-015330-XAA	3913	3913	4389	0	5								0	30	1.00	1.90
V-22 FSD FWD LOOKING INFRARED-W/O 3Q001																
12-3Q001-X000-015340-XAA	350	350	611	0									0	31	1.00	0.56
V-22 FSD RADAR CNTR MEASURES-W/O 3Q001																
12-3Q001-X000-015350-XAA	600	600	645	0									0	46	1.00	0.81
V-22 FSD MISSILE CNTR MEASURES-W/O 3Q001																
62-3Q001-X000-015330-XAA	300	300	300	0									0	0	0.00	0.00
V-22 FSD FWD LOOKING INFR. W/O 3Q001-OFF-SITE																
12-3Q002-X000-016790-XAA	500	500	395	0										27	1.00	3.01
V-22 FSD AFCS-FLT CONTROL INTEG-WO 3Q002																
12-3Q003-X000-015510-XAA	500	500	645	0										27	1.00	1.09
V-22 FSD PRIMARY PROCESSOR-WO 3Q003																
12-3Q003-X000-015530-XAA	7336	7336	9434	0	6									1454	1.00	0.94
V-22 FSD INTERFACE UNITS W/O 3Q003																
12-3Q003-X000-015540-XAA	1700	1700	1382	0	0									24	1.00	2.77
V-22 FSD DATA TRANSFER SYSTEM-WO 3Q003																
12-3Q003-X000-015560-XAA	219	219	150	0	0									4	1.00	1.47
V-22 FSD DD 1553B MULTIPLEX BUSW/O 3Q003																
12-3Q004-X000-017340-XAA	1111	1111	1161	0	19								0	40	1.00	1.11
V-22 FSD CMDS-MULTI-FUNCT.DISPLAY-W/O 3Q004																
12-3Q004-X000-017350-XAA	5424	5424	5377	0	0								0	45	1.00	1.26
V-22 FSD CMDS-CONTROL DISP. UNITS-W/O 3Q004																
12-3Q004-X000-017360-XAA	3698	3698	3656	0	24								0	34	1.00	1.29
V-22 FSD COCKPIT MGMT/DISP-PROC'R-W/O 3Q004																
12-3Q005-X000-015140-XAA	470	470	766	0	1	0	1					0	0	93	1.00	0.74
V-22 FSD VHF/UHF COM EQUIP-W/O 3Q005																

ORGANIZATION STATUS REPORT

USED PRIMARILY BY THE COST ACCOUNT MANAGER

UPDATES WEEKLY

PROVIDES SUMMARY DATA FOR EACH COST ACCOUNT PLUS THE TOTAL OF ALL COST ACCOUNTS BY ORGANIZATION INCLUDING:

- TOTAL BUDGET
- TOTAL AUTHORIZED AND CALCULATED MEACS
- CURRENT WEEK AND CUMULATIVE MEAC, BCWS AND ACTUALS INCLUDING OVERTIME
- MONTH END SCHEDULE AND COST INDICES

DA ESM2002$-R006 EXT 6-3319 L. OSBURN A&WSI ENGR ESM-200-C1

ORG MILESTONE REPORT

WEEK ENDING 11/20/86 PAGE 946

ORDC PDA

ORGANIZATION: 7A406 DESCRIPTION: V-22 SYSTEMS ENGINEERING MGR: W. KEENE/G. SAWYER

CONTROL GROUP CODE: 003ZDE DESCRIPTION: V-22 FSD-DATA HNDLG EQUIP W/O 3Q003 ENGR (LIAB)

CONTROL NUMBER	PKG	MS	TIER	PC	PACKAGE DESCRIPTION	M/S DESCRIPTION	* * * * *M/S DATES * * * * * SCHEDULED	EXPECTED	ACTUAL
12 3Q003 X000 015530 XAA	011	02	4		PPS UPDATES	COMPLETE	11/27/86	11/26/86	11/26/86
12 3Q003 X000 015530 XAA	012	03	4		CIPS DEVELOPMENT	REVIEW COMPLETE	12/15/86	__/__/__	__/__/__
12 3Q003 X000 015530 XAA	012	04	4		CIPS DEVELOPMENT	COMPLETE	12/25/86	__/__/__	__/__/__
12 3Q003 X000 015510 XAA	007	02	4		RESOLVE ANOMALIES	COMPLETE	12/29/86	__/__/__	__/__/__
12 3Q003 X000 015540 XAA	004	01	4		CIDS [illegible]	START	01/08/87	__/__/__	__/__/__
12 3Q003 X000 015540 XAA	007	01	4		RE[illegible]	[illegible]T	01/10/87	__/__/__	__/__/__
12 3Q003 X000 015530 XAA	013	01	4				01/30/87	__/__/__	__/__/__
12 3Q003 X000 015540 XAA	010	01	4				02/10/87	__/__/__	__/__/__
12 3Q003 X000 015530 XAA	018	01	4				02/15/87	__/__/__	__/__/__

ORG MILESTONE REPORT
(90 DAY LOOK AHEAD)

USED PRIMARILY BY THE COST ACCOUNT MANAGER

UPDATES WEEKLY

PROVIDES A 90 DAY LOOK AHEAD OF ALL MILESTONES BY ORGANIZATION BY WORK ORDER

SHOWS EXPECTED COMPLETION DATES ON DELINQUENT MILESTONES

STATUS PROVIDED BY COST ACCOUNT MANAGERS IS INPUT INTO THE AEMIS SYSTEM AND DETERMINES THE BCWP CALCULATIONS

SRP

CRDC SRP DESC STRATEGIC RADAR PROG. IP83 - KCN-01 - K75-35
PROG CODE AK TITLE: B-52 STRATEGIC RADAR

MONTH ENDING DATE 84-03-29

V A R I A N C E A N A L Y S I S R E P O R T

CONTROL NO 14-75232-X000-2610XX-XAA
TITLE: B52 RADAR WBS 2610 RADAR RMS UPDATE

ORGANIZATION 7A412 MGR R. PRUITT
TITLE: RADAR SYS ENGR

CURRENT MONTH			VARIANCE		CUMULATIVE TO DATE			VARIANCE		AT COMPLETION		
BCWS	BCWP	ACTUAL	COST	SCHED	BCWS	BCWP	ACTUALS	COST	SCHED	BUDGET	MEAC	VAR
250	250	110	140	0	28461	28143	20143	8000	(318)	29345	21140	8205

REASON FOR VARIANCE

IMPACT OF VARIANCE

CORRECTIVE ACTION

COST ACCT MGR_____ DATE_____ FUNCTIONAL MGR_____ DATE_____

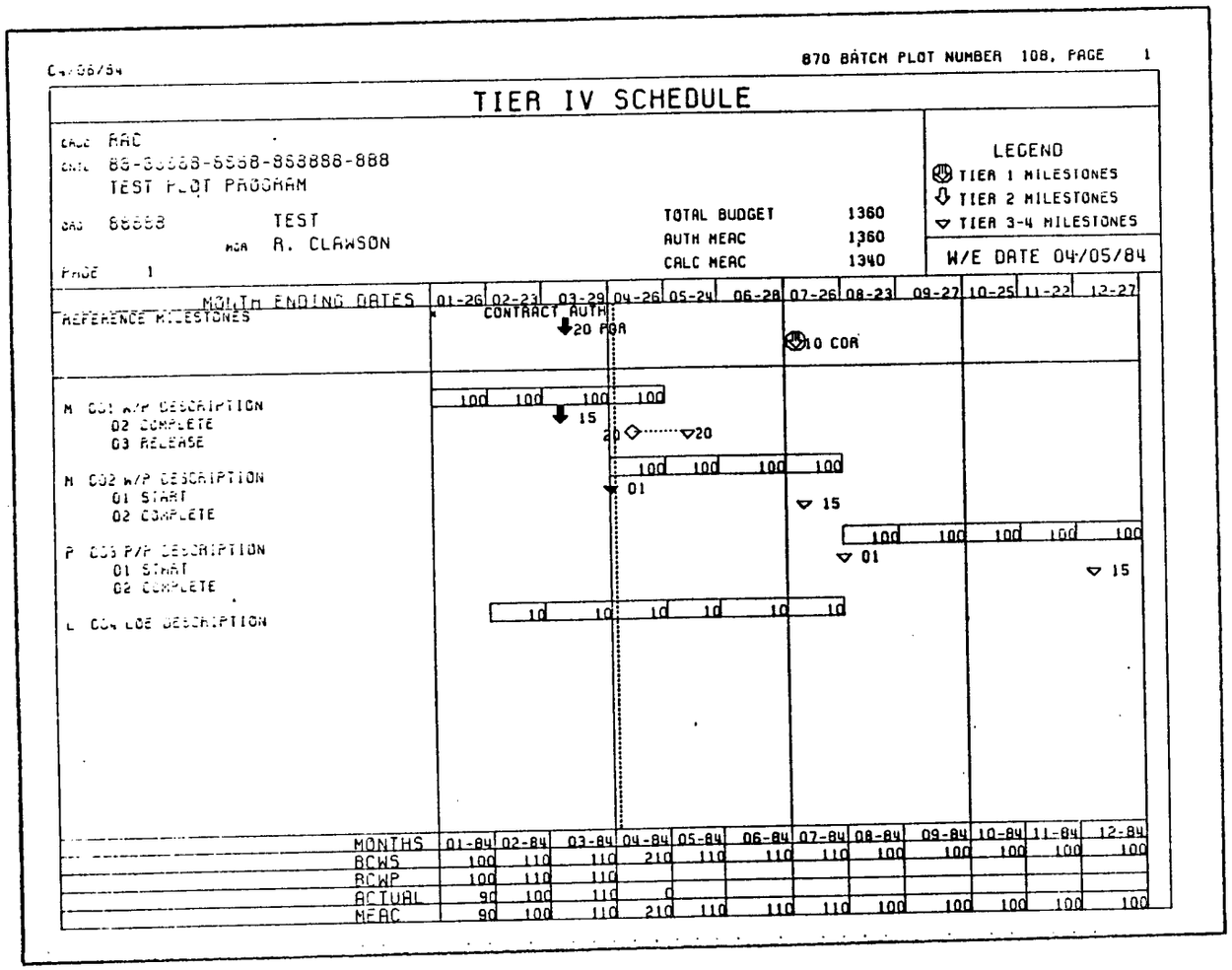

870 BATCH PLOT NUMBER 108, PAGE 1
TIER IV SCHEDULE
CALC RAC
CALC 88-88888-8888-888888-888
TEST PLOT PROGRAM
CAS 88888 TEST
MGR R. CLAWSON
PAGE 1
TOTAL BUDGET 1360
AUTH MEAC 1360
CALC MEAC 1340
LEGEND
TIER 1 MILESTONES
TIER 2 MILESTONES
TIER 3-4 MILESTONES
W/E DATE 04/05/84
MONTH ENDING DATES
01-26 02-23 03-29 04-26 05-24 06-28 07-26 08-23 09-27 10-25 11-22 12-27
REFERENCE MILESTONES
CONTRACT AUTH
20 FOR
10 COR
M C01 W/P DESCRIPTION
02 COMPLETE
03 RELEASE
M C02 W/P DESCRIPTION
01 START
02 COMPLETE
P C03 P/P DESCRIPTION
01 START
02 COMPLETE
L C04 LOE DESCRIPTION
MONTHS 01-84 02-84 03-84 04-84 05-84 06-84 07-84 08-84 09-84 10-84 11-84 12-84
BCWS 100 110 110 210 110 110 110 100 100 100 100 100
BCWP 100 110 110
ACTUAL 90 100 110 0
MEAC 90 100 110 210 110 110 110 100 100 100 100 100

FIGURE 44.4

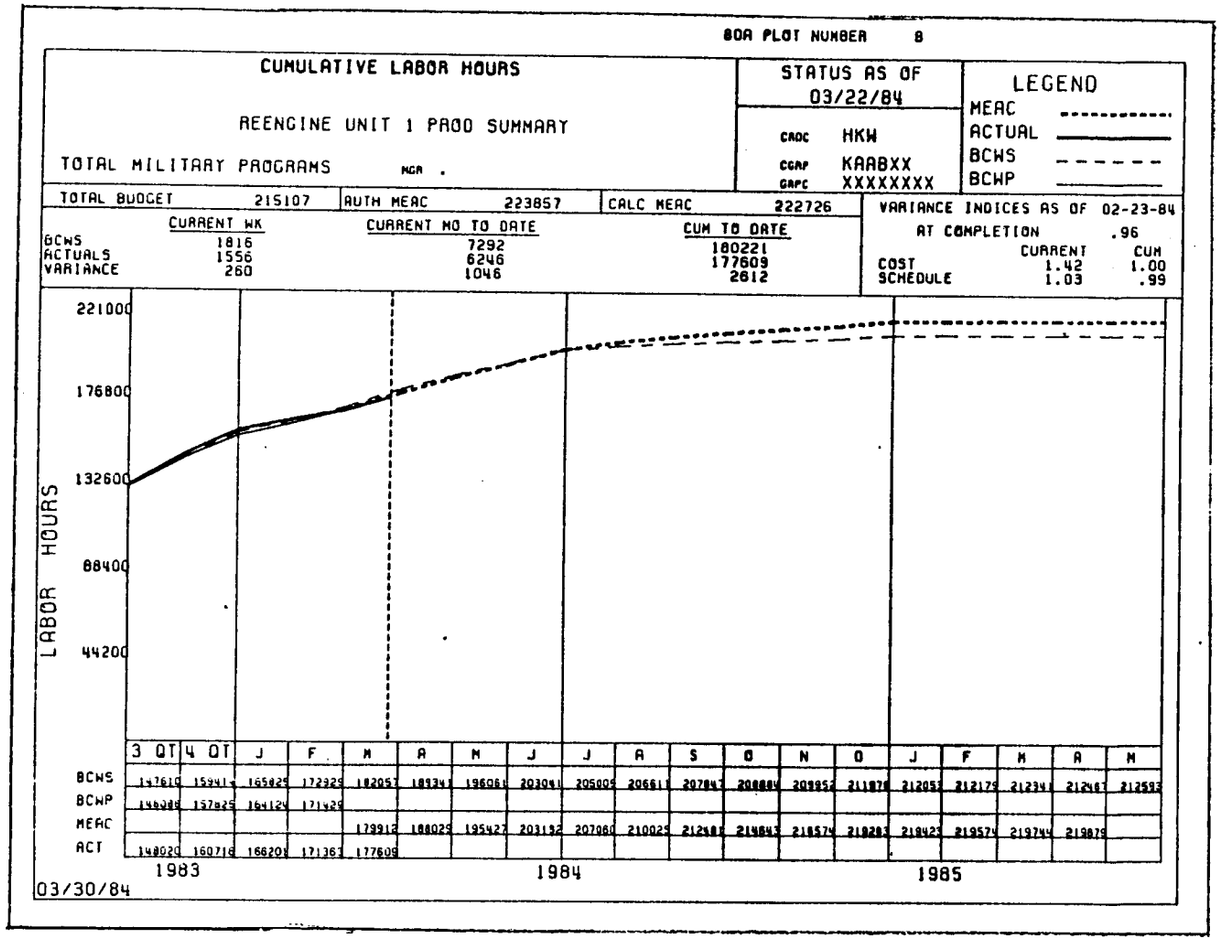

BOA PLOT NUMBER 8
CUMULATIVE LABOR HOURS
REENGINE UNIT 1 PROD SUMMARY
TOTAL MILITARY PROGRAMS
STATUS AS OF 03/22/84
CAOC HKW
CGAP KAABXX
CAPC XXXXXXXX
LEGEND
MEAC
ACTUAL
BCWS
BCWP
TOTAL BUDGET 215107
AUTH MEAC 223857
CALC MEAC 222726
VARIANCE INDICES AS OF 02-23-84
AT COMPLETION .96
CURRENT WK
CURRENT MO TO DATE
CUM TO DATE
BCWS 1816 7292 180221
ACTUALS 1556 6246 177609
VARIANCE 260 1046 2612
CURRENT CUM
COST 1.42 1.00
SCHEDULE 1.03 .99
LABOR HOURS
221000
176800
132600
88400
44200
3 QT 4 QT J F M A M J J A S O N O J F M A M
BCWS 147610 159411 165825 172325 182057 189341 196081 203041 205009 206611 207847 208884 209952 211878 212053 212175 212341 212467 212593
BCWP 146088 157825 164124 171429
MEAC 179912 188025 195427 203152 207080 210025 212481 214843 216574 218283 219423 219574 219744 219879
ACT 148020 160718 166201 171361 177609
1983
1984
1985
03/30/84

FIGURE 41

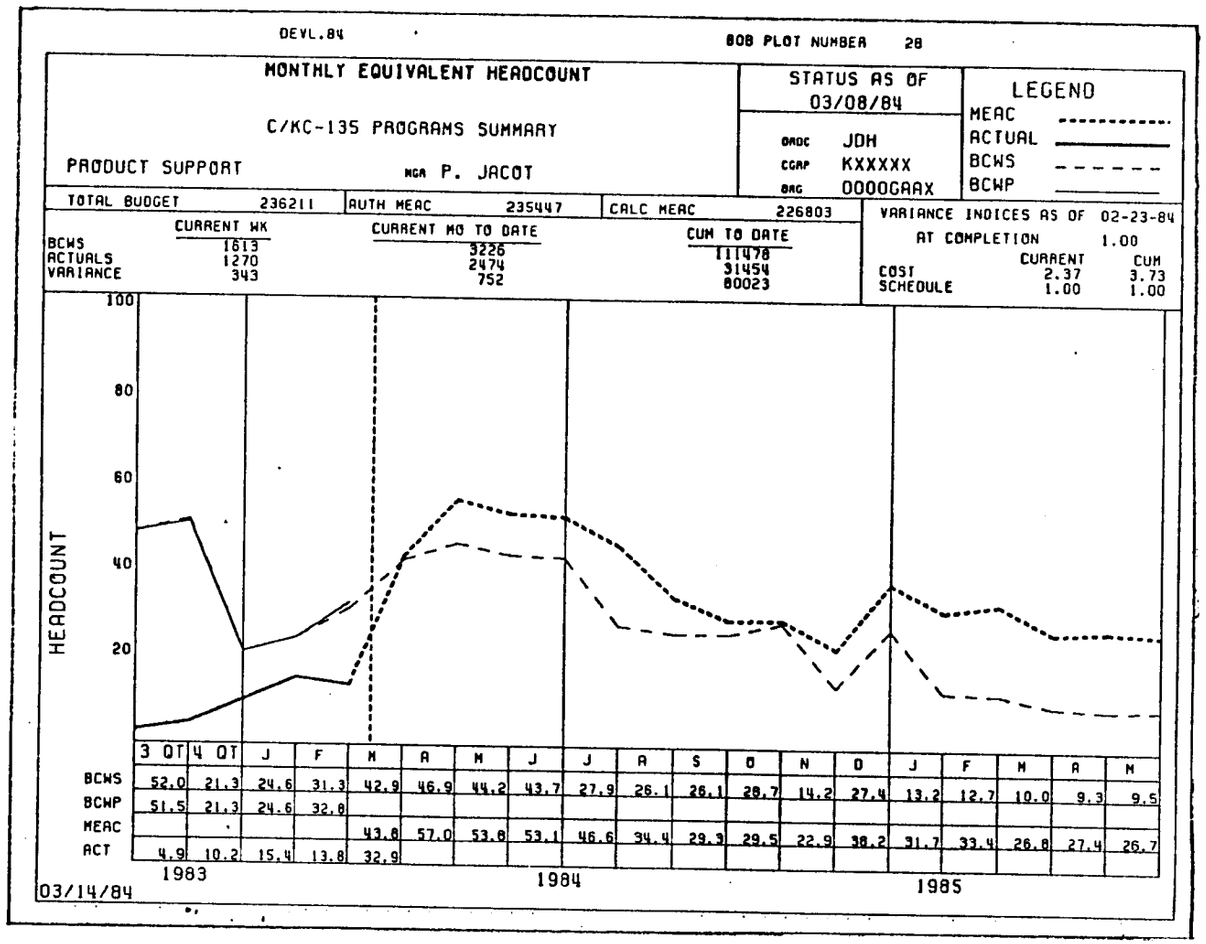

DEVL.84
BOB PLOT NUMBER 28
MONTHLY EQUIVALENT HEADCOUNT
C/KC-135 PROGRAMS SUMMARY
PRODUCT SUPPORT
MGR P. JACOT
STATUS AS OF 03/08/84
ORDC JDH
CGAP KXXXXX
BRG 0000GAAX
LEGEND
MEAC
ACTUAL
BCWS
BCWP
TOTAL BUDGET 236211
AUTH MEAC 235447
CALC MEAC 226803
CURRENT WK
CURRENT MO TO DATE
CUM TO DATE
BCWS 1613 3226 111478
ACTUALS 1270 2474 31454
VARIANCE 343 752 80023
VARIANCE INDICES AS OF 02-23-84
AT COMPLETION 1.00
CURRENT CUM
COST 2.37 3.73
SCHEDULE 1.00 1.00
HEADCOUNT
100
80
60
40
20
3 QT 4 QT J F M A M J J A S O N D J F M A M
BCWS 52.0 21.3 24.6 31.3 42.9 46.9 44.2 43.7 27.9 26.1 26.1 28.7 14.2 27.4 13.2 12.7 10.0 9.3 9.5
BCWP 51.5 21.3 24.6 32.8
MEAC 43.8 57.0 53.8 53.1 46.6 34.4 29.3 29.5 22.9 38.2 31.7 33.4 26.8 27.4 26.7
ACT 4.9 10.2 15.4 13.8 32.9
1983
1984
1985
03/14/84

FIGURE 42

FIGURE 43

CROC HKW

CNTL 12-71885-X000-000000-XXX

R.E. APU QUICK START SYSTEM WBS 1110 GK

GRPC XXXXXXX TOTAL MILITARY PROGRAMS MGR A. M. S. GOO

MILESTONE TYPE ALL

LEGEND

SCH ☐ ACT ▒

DATE 04/22/82

MILESTONE STATUS WEEKLY

TOTAL MST	740
SCHEDULED	135
COMPLETE	108
DELINQUENT	37
COMP AHEAD	10

8A610/RC
DISK 1/G8

CRDC HKW CGRP KAACXX

REENGINE UNITS 2-10 SUMMARY (EXCLUDING PROPOSALS)

GRPC XXXXXXXX TOTAL MILITARY PROGRAMS MGR A. M. S. GOO

MILESTONE TYPE S DRAWING D-IE

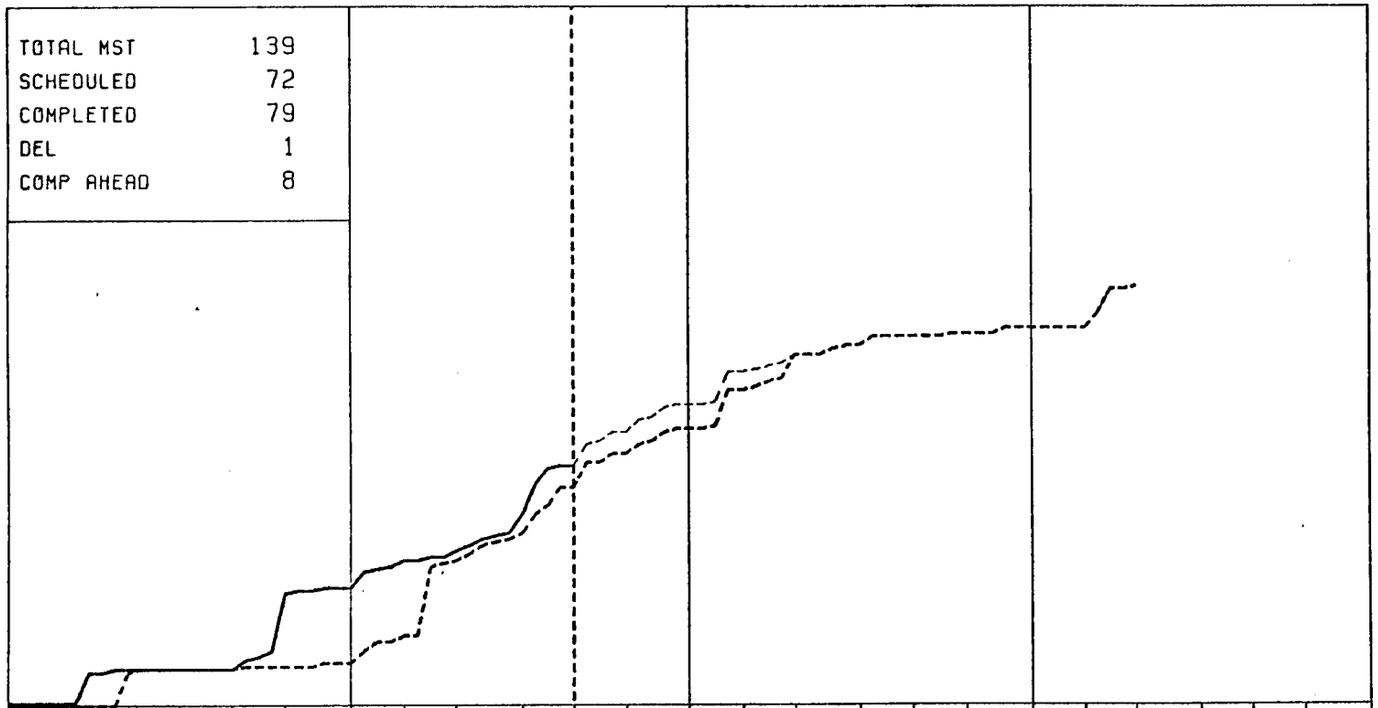
LEGEND

SCHEDULED ---------
ACTUAL ———————
EXPECTED _ _ _ _ _

DATE 04/29/82

MILESTONE STATUS CUMULATIVE

TOTAL MST	139
SCHEDULED	72
COMPLETED	79
DEL	1
COMP AHEAD	8

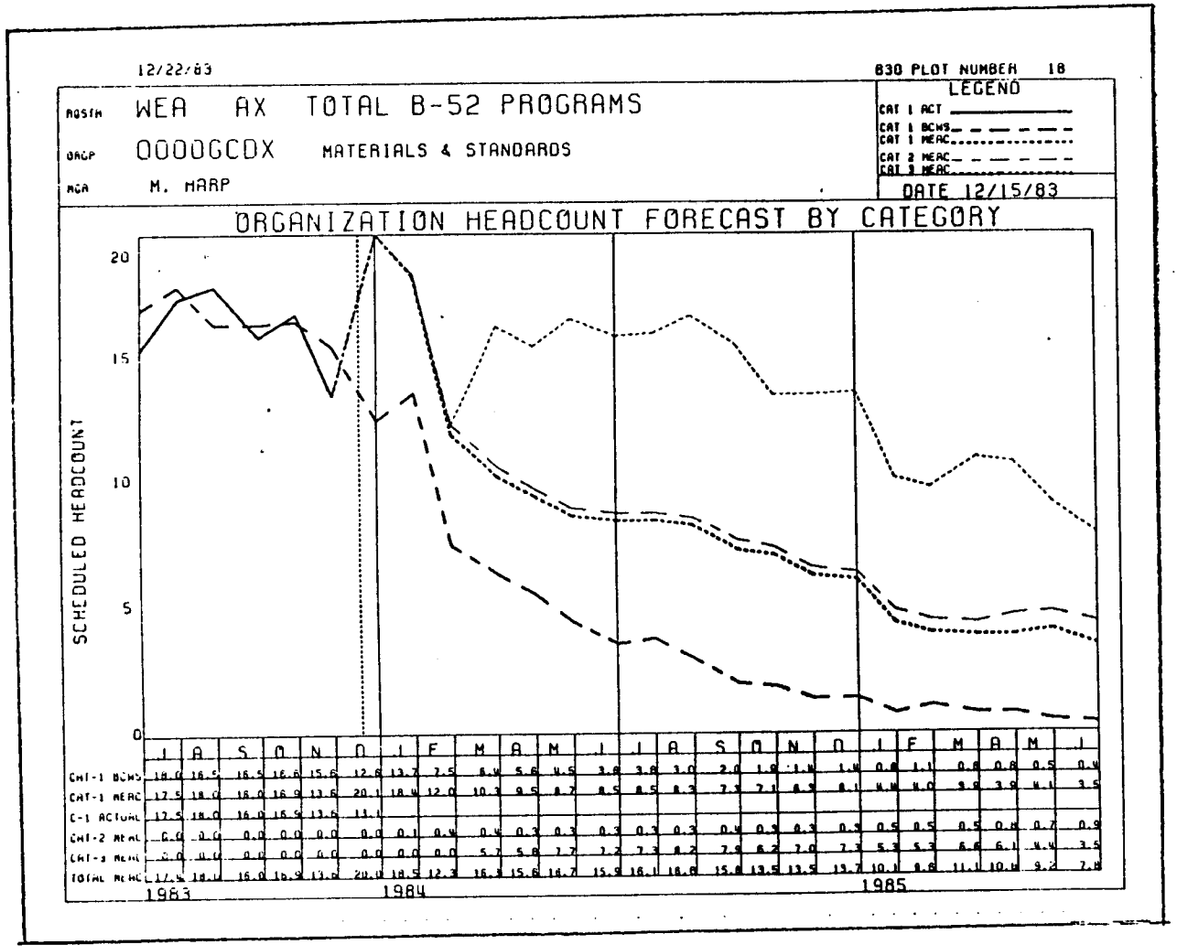


	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
SCH	0	0	12	12	13	14	23	48	57	72	83	91	104	116	119	122	123	125	125	139				
ACT	1	12	12	12	37	39	48	51	63	79														
EXP										79	90	99	110	116	119	122	123	125	125	139				

1981 1982 1983

05/06/82

FIGURE 44


12/22/83
830 PLOT NUMBER 18
AGSTR WEA AX TOTAL B-52 PROGRAMS
ORGP 00000CDX MATERIALS & STANDARDS
AGA M. MARP
LEGEND
CAT 1 ACT
CAT 1 BCWS
CAT 1 MEAC
CAT 2 MEAC
CAT 3 MEAC
DATE 12/15/83
ORGANIZATION HEADCOUNT FORECAST BY CATEGORY
SCHEDULED HEADCOUNT
20
15
10
5
0
J A S O N D J F M A M J J A S O N D J F M A M J
CAT-1 BCWS 18.0 16.5 16.5 16.5 15.5 12.5 13.7 7.5 6.4 5.6 4.5 3.8 3.8 3.0 2.0 1.0 -1.4 1.4 0.8 1.1 0.8 0.8 0.5 0.4
CAT-1 MEAC 17.5 18.0 18.0 16.9 13.8 20.1 18.4 12.0 10.3 9.5 8.7 8.5 8.5 8.3 7.3 7.1 6.3 8.1 4.4 4.0 3.9 3.9 4.1 3.5
C-1 ACTUAL 17.5 18.0 16.0 16.9 13.8 11.1
CAT-2 MEAC 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.4 0.4 0.3 0.3 0.3 0.3 0.3 0.4 0.9 0.3 0.5 0.5 0.5 0.5 0.6 0.7 0.9
CAT-3 MEAC 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5.7 5.8 7.7 7.2 7.3 8.2 7.9 8.2 7.0 7.3 5.3 5.3 6.6 6.1 4.4 3.5
TOTAL MEAC 17.5 18.0 16.0 16.9 13.8 20.1 18.5 12.3 16.3 15.6 16.7 15.5 16.1 16.8 15.8 13.5 13.5 15.7 10.1 9.8 11.1 10.4 9.2 7.8
1983
1984
1985

- ADDITIONAL INFORMATION CONCERNING AEMIS REPORTS IS CONTAINED IN OPERATING PROCEDURE BMAC-187