COMPETITION SENSITIVE

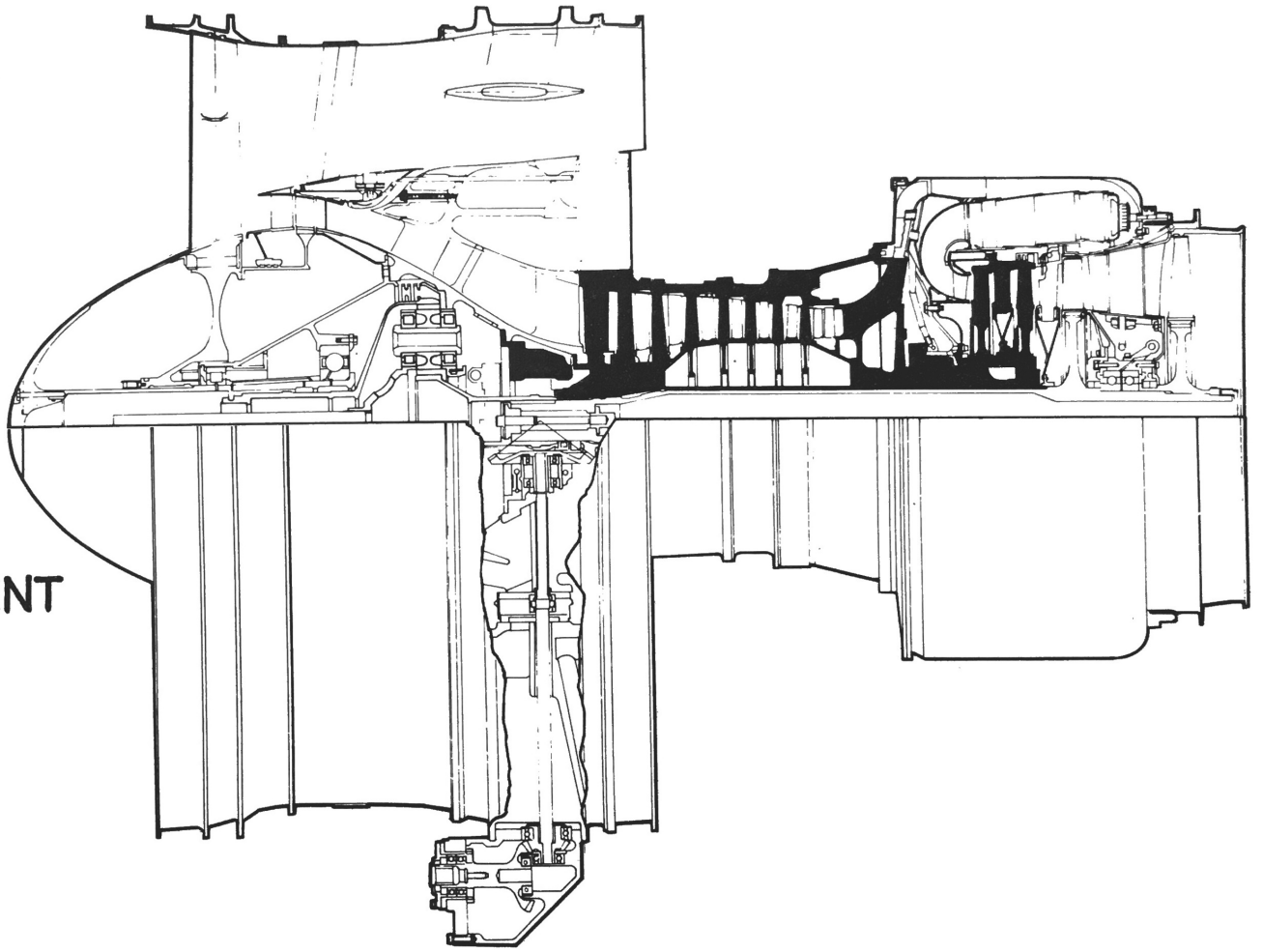
NB 72-325
20 DECEMBER 1972

A-9
SOURCE SELECTION ADVISORY COUNCIL BRIEFING
20 DECEMBER 1972

COMPETITION SENSITIVE

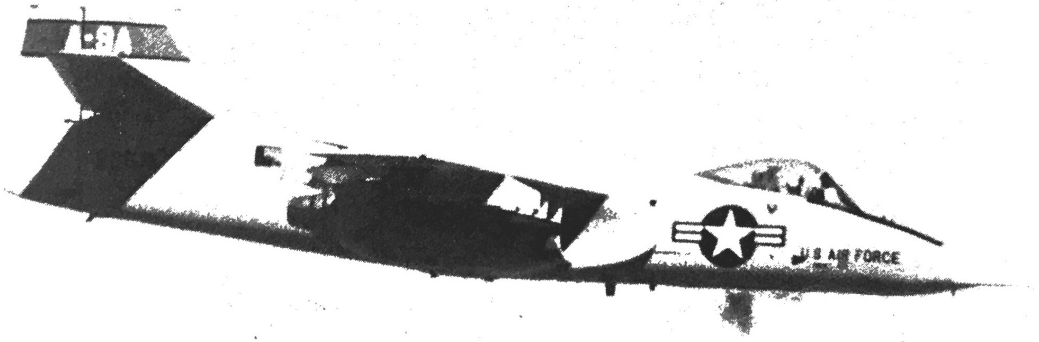
YF102 ENGINE

- DEVELOPED FROM T-55
- GEAR FAN MODULE ADDED
- LOW DEVELOPMENT COST



51939A

A-9 GUN GAS DEFLECTOR

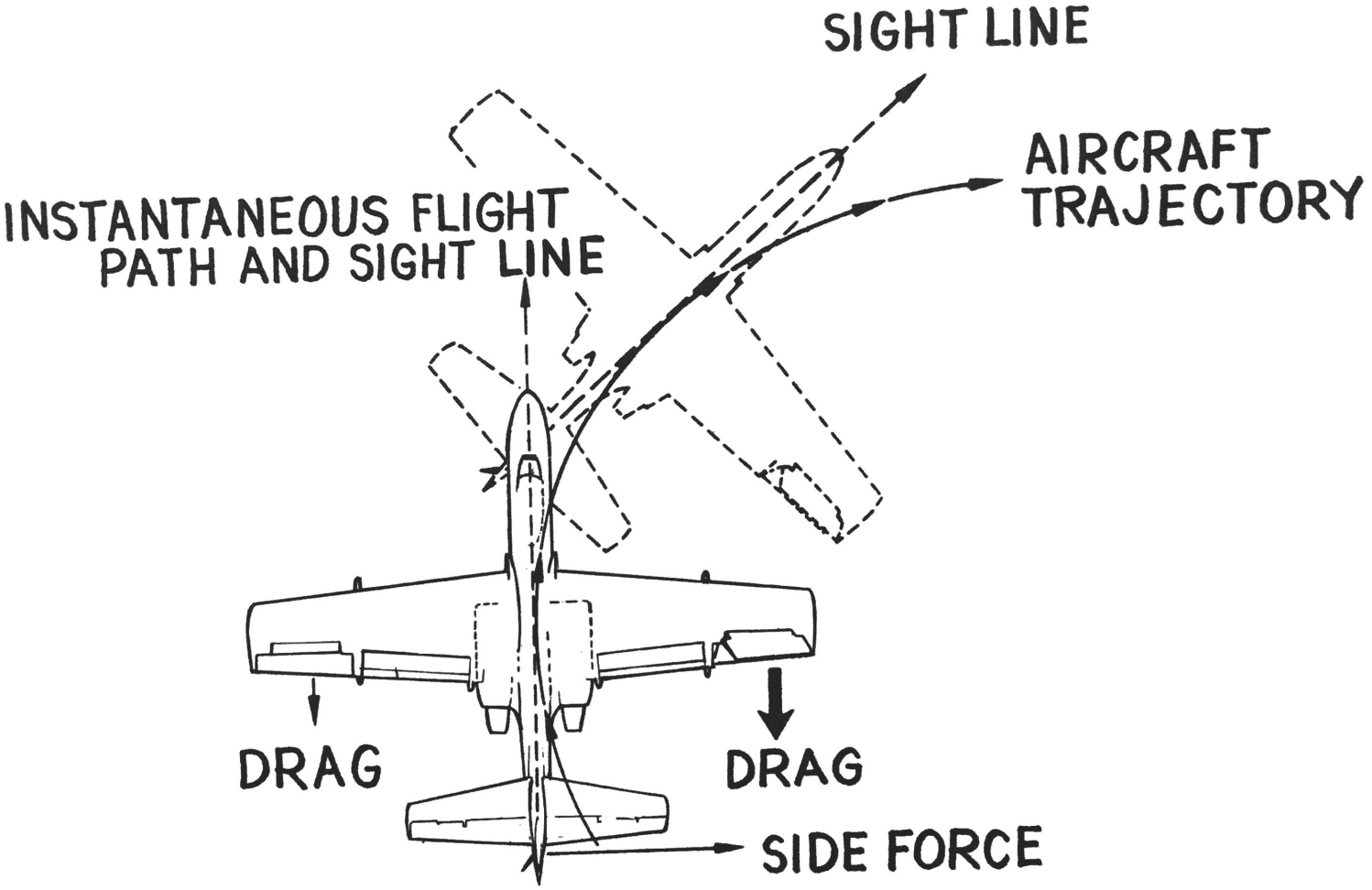


NO PITCH UPSET
NO INGESTION OF GUN GAS OR DEBRIS
MINIMUM FLASH

DESIGN VERIFIED

51943A

SIDE FORCE CONTROL



51946

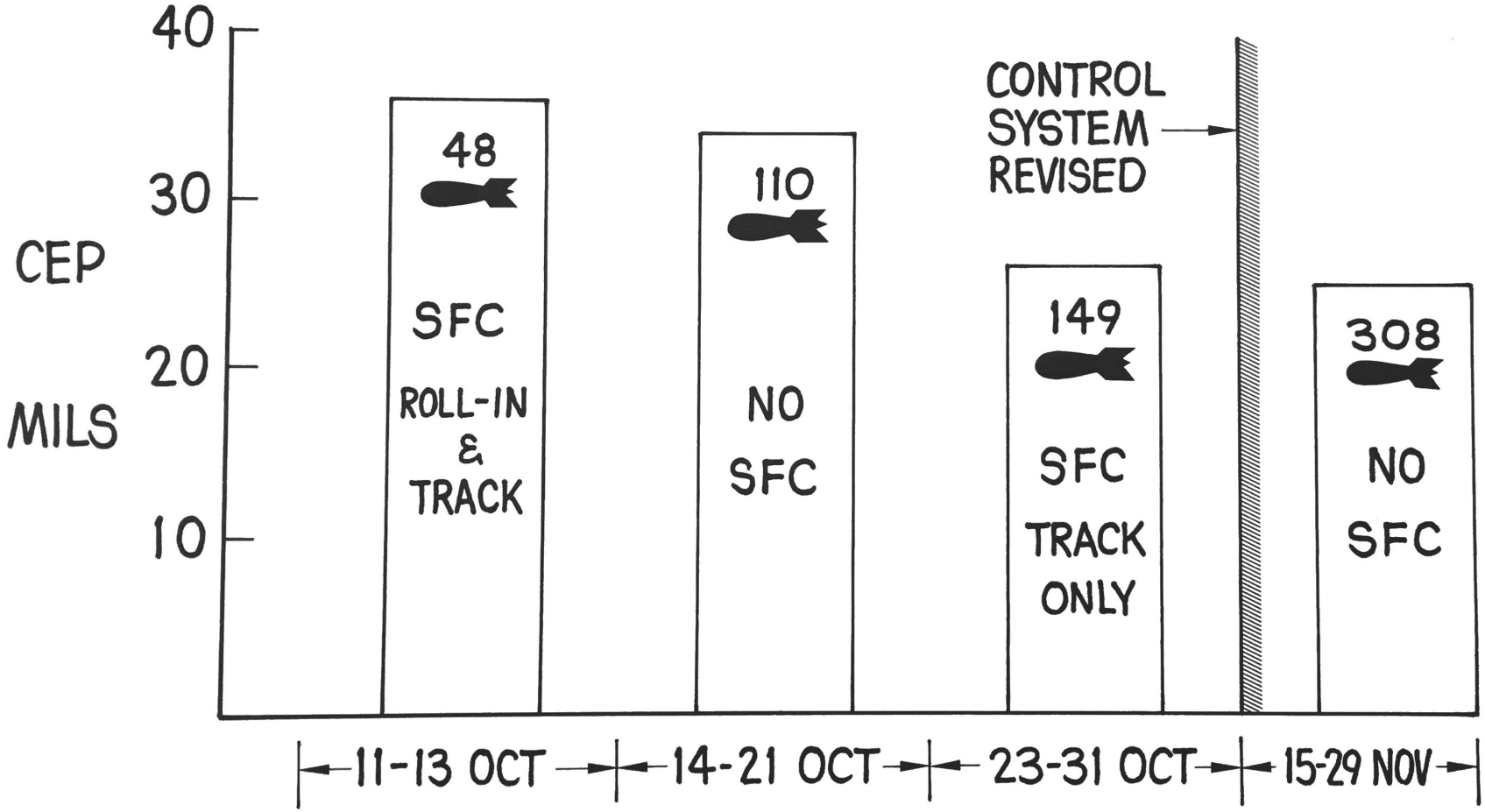
SIDE FORCE CONTROL

- MECHANIZATION NON-OPTIMUM
  - PITCH & ROLL UPSETS
  - PITCH DAMPER & INTERCONNECTS NOT OPERATIONAL
- ACCELEROMETER YAW SAS PREFERRED
  - GRAVITY TERM (q cos θ sin ϕ) NOT INCORPORATED
  - ADVERSE YAW IN TURNS
  - WASHOUT CIRCUIT DEGRADED DAMPING
- POTENTIAL PAYOFF STILL VALID

51947A

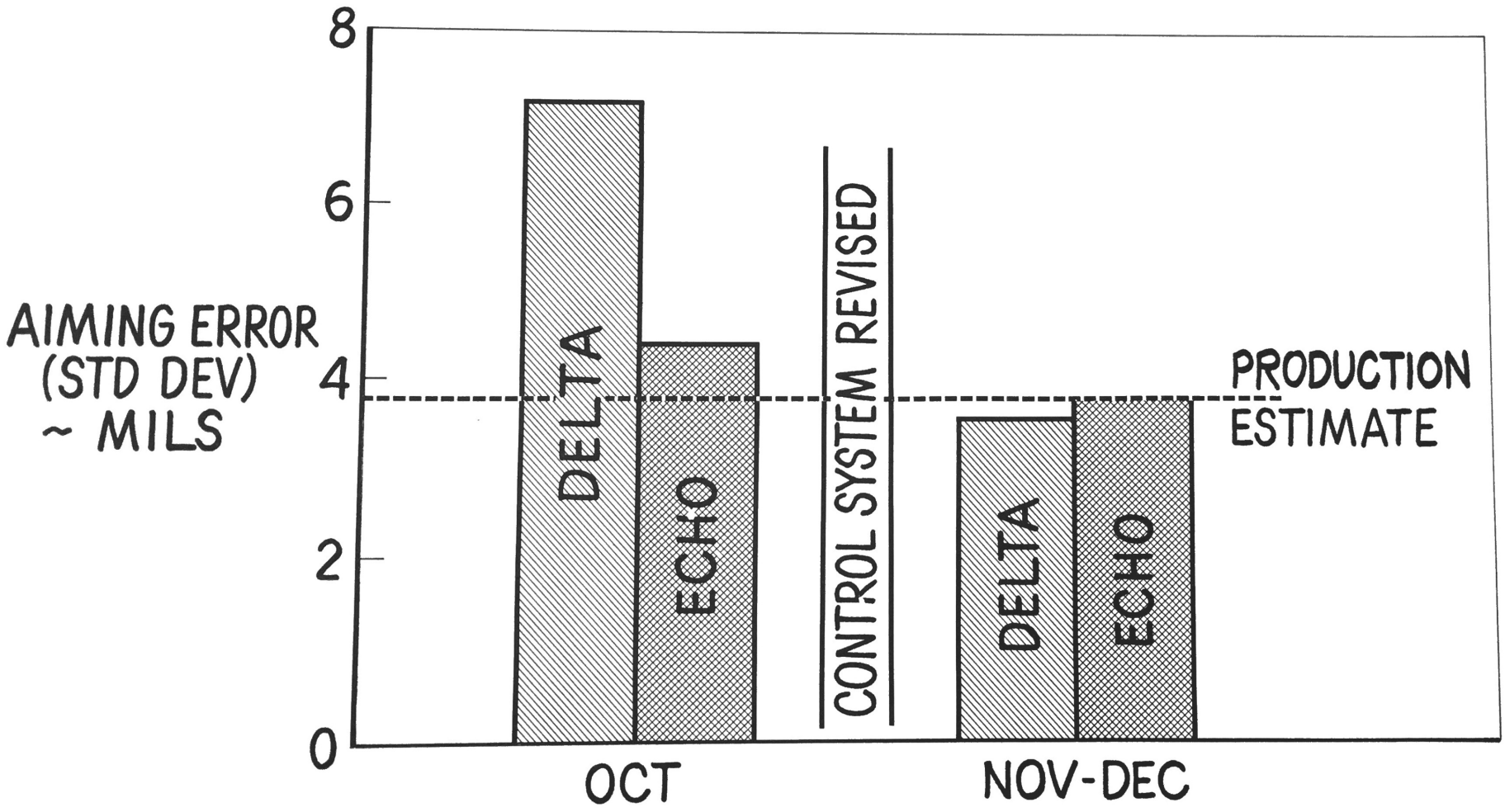
A-9 BOMBING ACCURACY

ALL PROFILES



51948

A-9 STRAFING ACCURACY



51972A

A-9 ACCURACY DEMONSTRATED

BOMBING > MET PROTOTYPE ESTIMATE

FLYOFF	20-22 MILS
WILDCARD	13-14 MILS

STRAFING > MET PRODUCTION ESTIMATE

FLYOFF	3.5 - 4.0 MILS

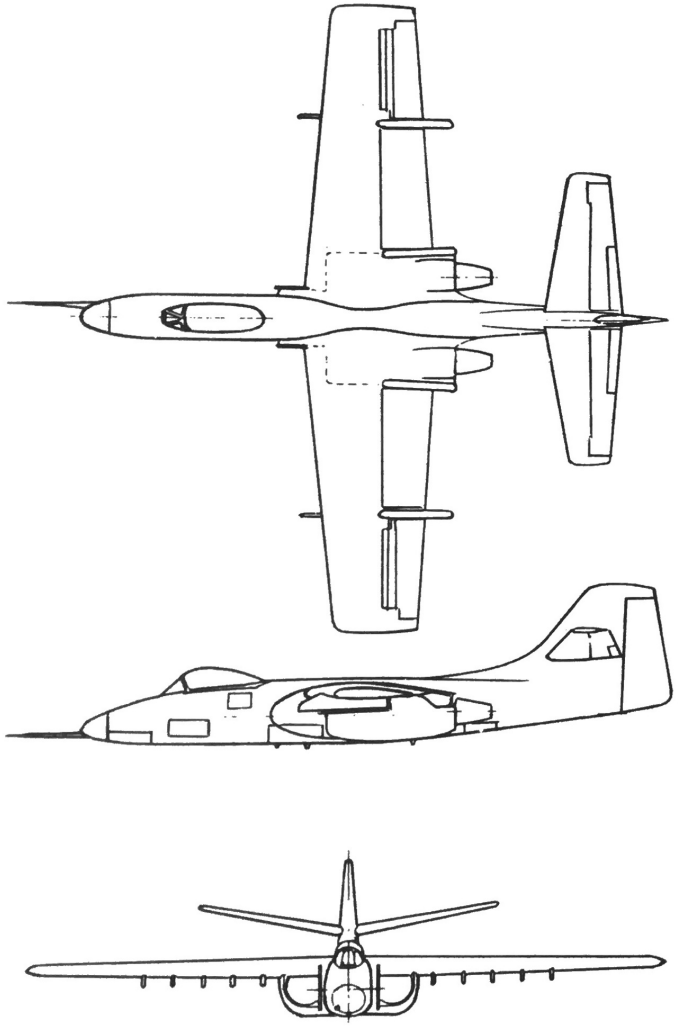
52066

FDL S/V TEST SUMMARY

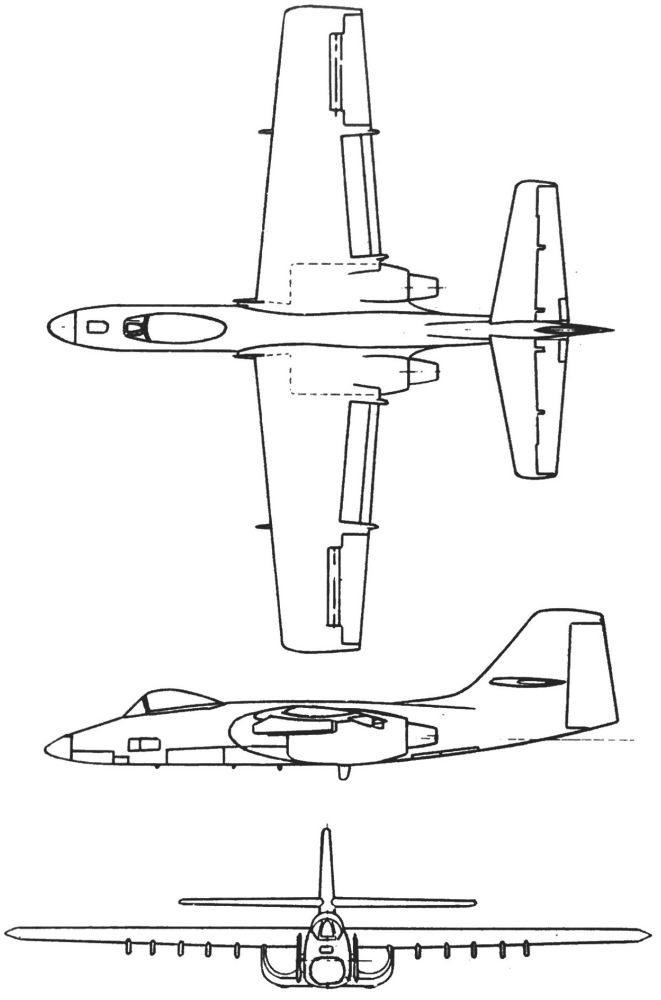
- SHOTS INTO FUEL 20 — NO FIRES
- SHOTS INTO DRY BAYS 13 — HAZARD ZONE SMALLER THAN PREDICTED
- FIRES 4 (EXPECTED 5)
- A_V BETTER THAN USAF ESTIMATES (MAY 1971)

51950A

SIMILARITY OF PROTOTYPE & PRODUCTION CONFIGURATIONS



PROTOTYPE

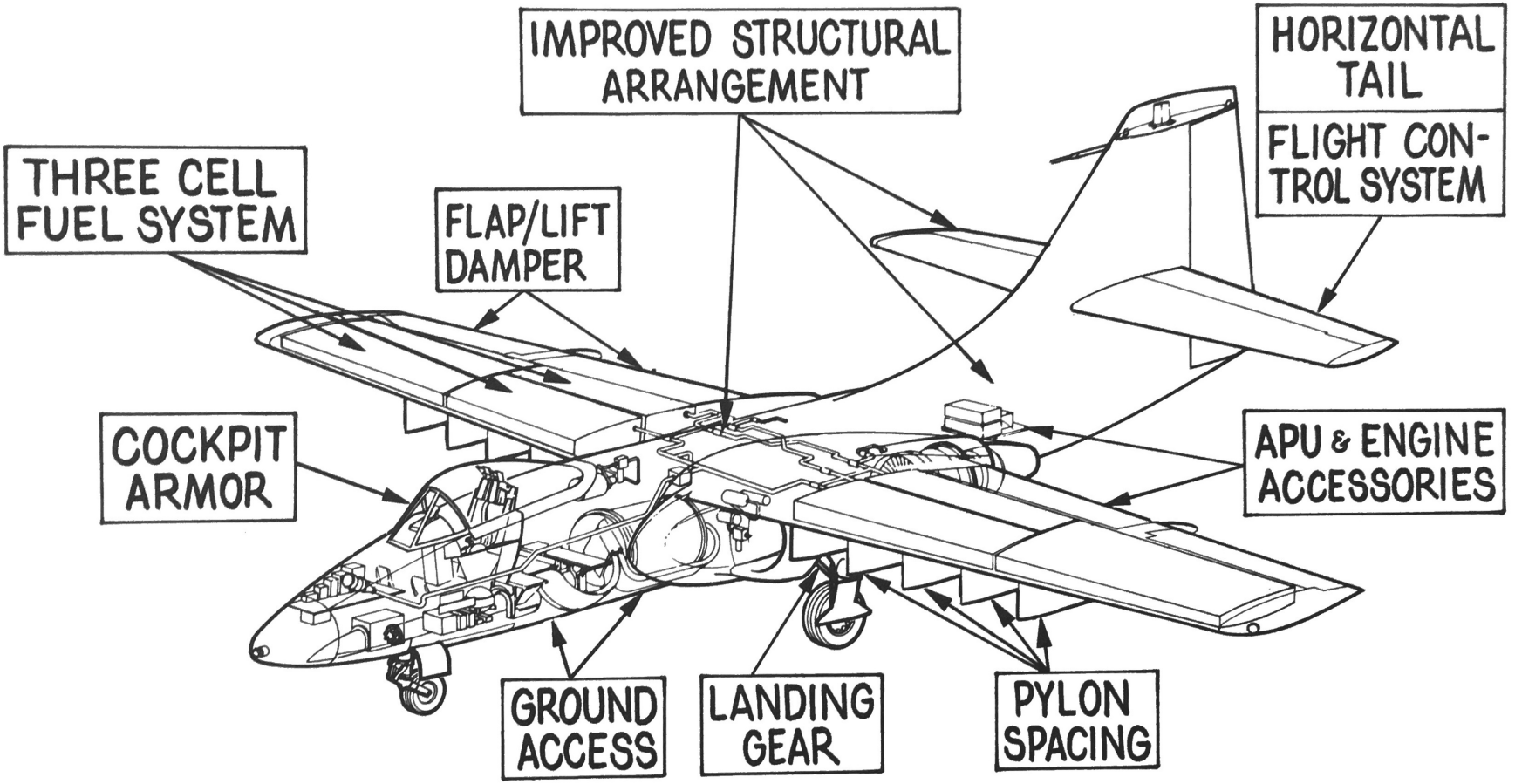


PRODUCTION

1956A

COMPETITION SENSITIVE

A-9 PRODUCTION IMPROVEMENTS RESULTING FROM CPP

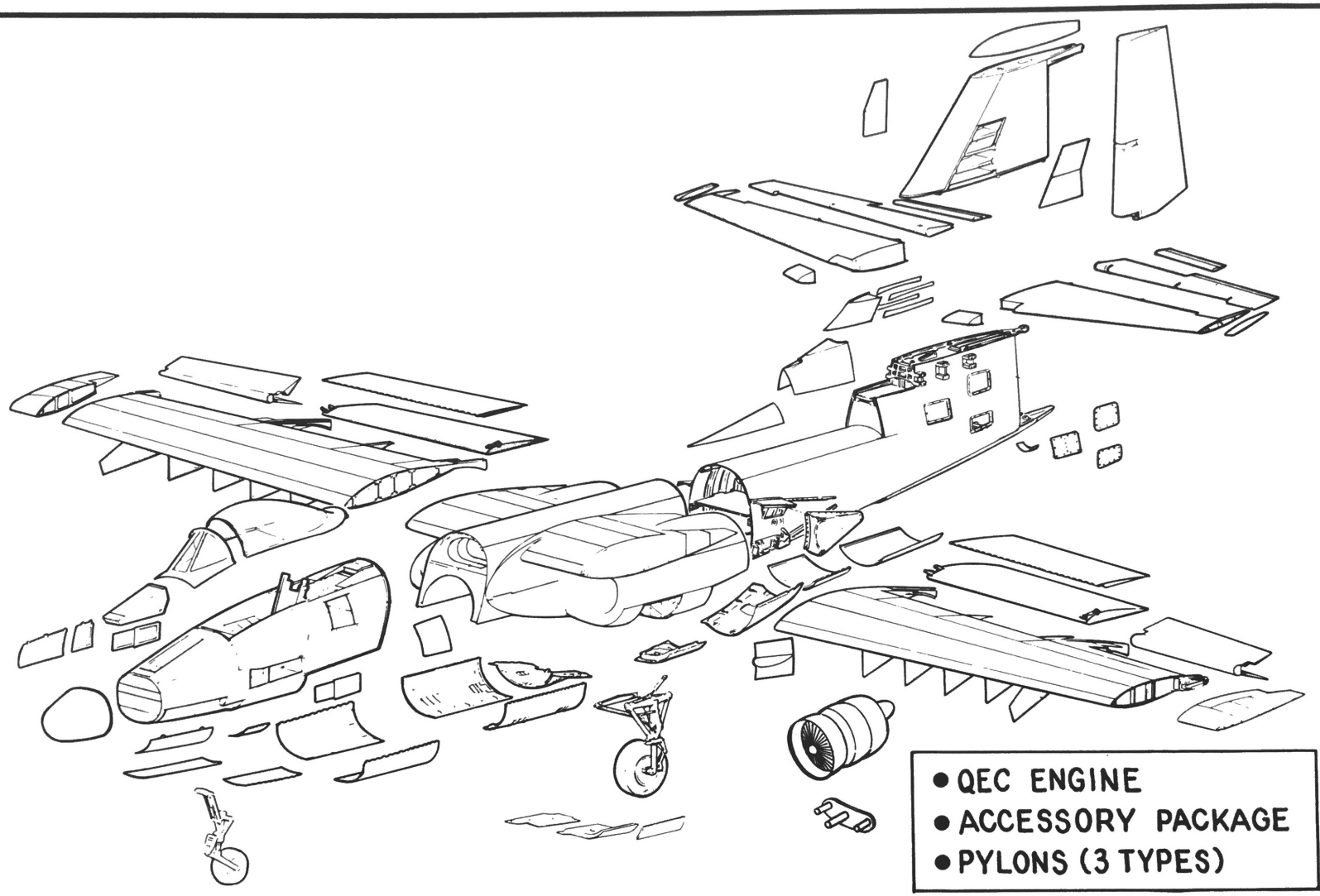


COST-PERFORMANCE-EFFECTIVENESS

COMPETITION SENSITIVE

52058

A-9 PRODUCTION BREAKDOWN



51960A

A-9 COMBAT PERFORMANCE
(TROPICAL DAY)

	A-X GOAL	A-9 PROTOTYPE	A-9 PROD
MANEUVERABILITY (5000 FT)			
– INSTANT. G 300 KTAS	5.0	6.3	6.3
– SUSTAINED G 275 KTAS	3.5	3.7	4.0
RATE OF CLIMB, FT/MIN	NOT SPECIFIED	4,500	5,150
MAX SPEED			
– CLEAN (SL) KTAS	400	390	410

51963B

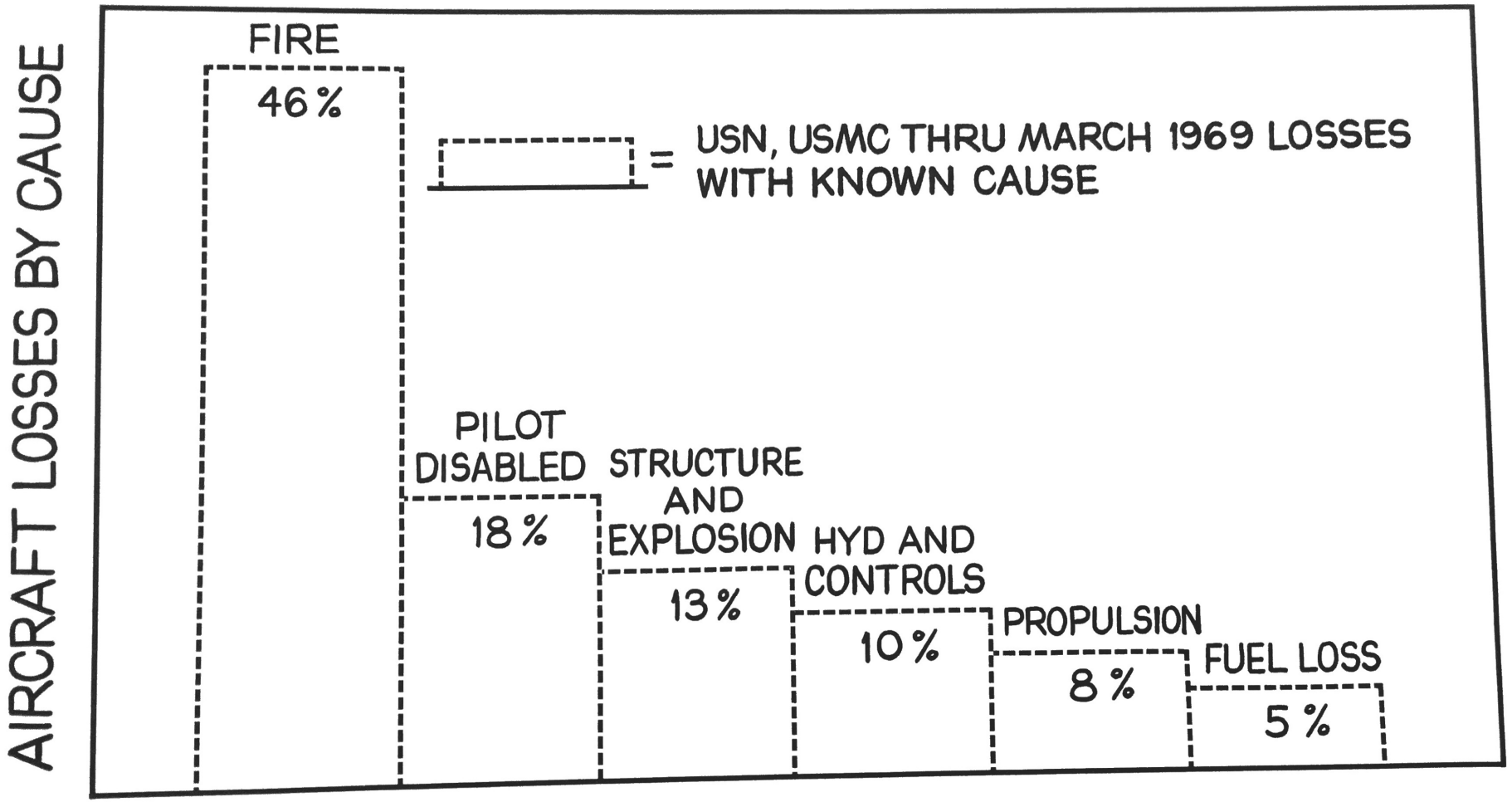
A-9 AIRFIELD PERFORMANCE

(TROPICAL DAY)

		A-X GOAL	A-9 PROTO	A-9 PROD
FORWARD AIRSTRIP (CPP RULES)	SL			
— TAKEOFF	FT	1000	750	780
— LANDING	FT	1000	950	1000
MAX TAKEOFF-WEIGHT	SL			
— TAKEOFF	FT	4000	3900	2900
— LANDING	FT	4000	2100	1800
— SINGLE ENGINE CLIMB GRADIENT	%	1.0	0.6	1.0

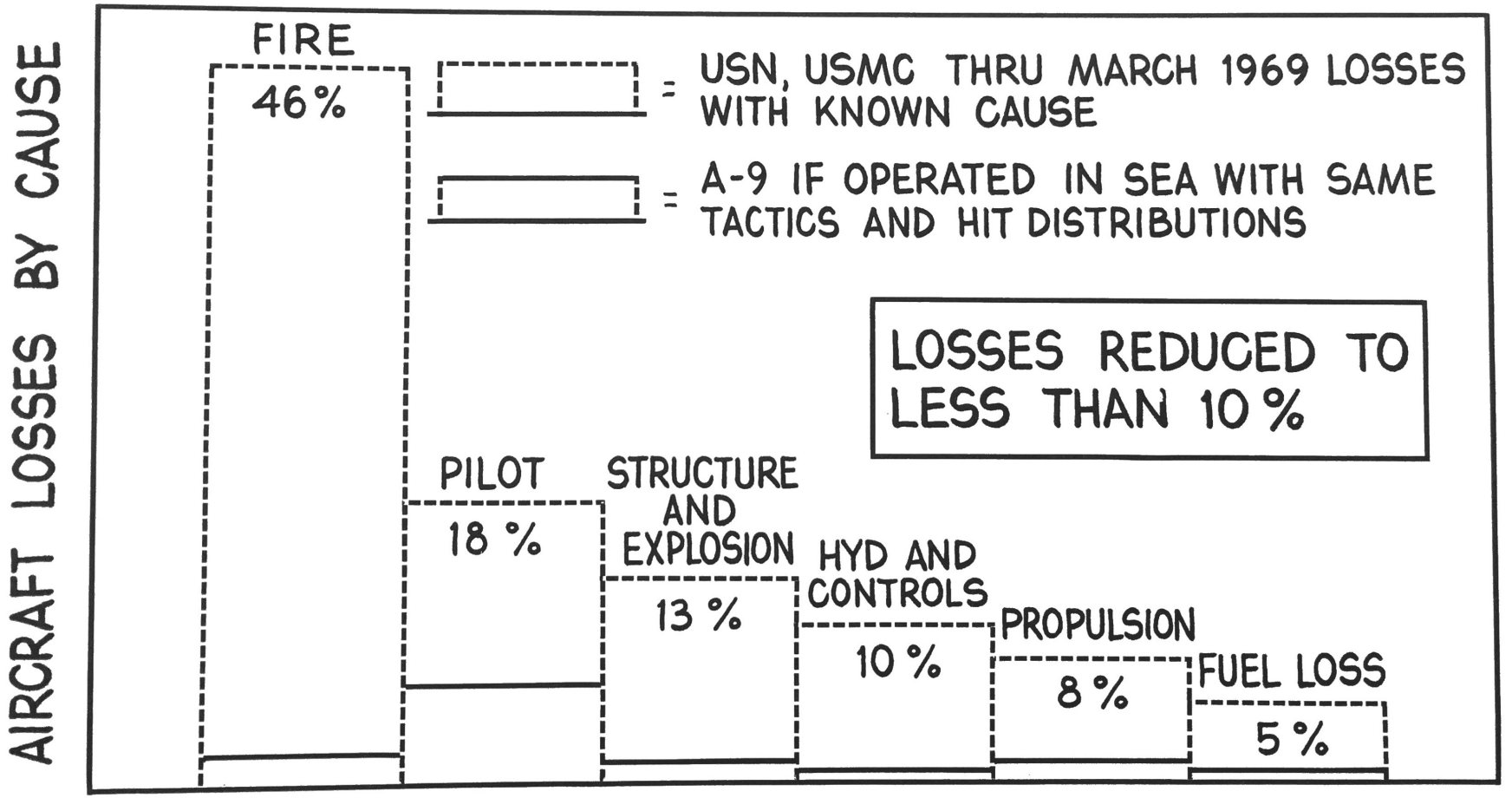
51964C

AIRCRAFT LOSSES BY CAUSE



52081

EFFECT OF A-9 PROTECTION MEASURES



D-50263A

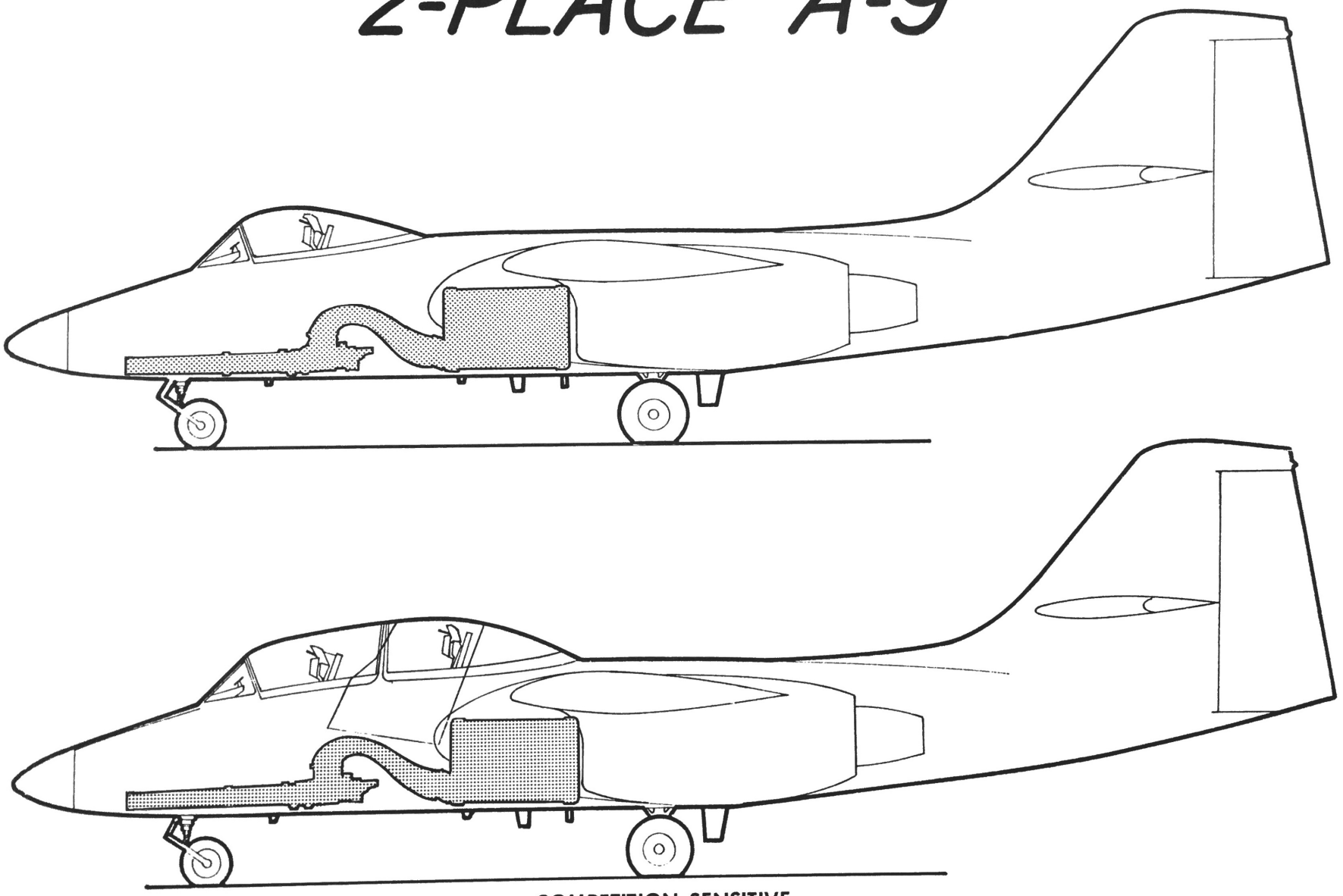
COMBAT PERFORMANCE
(TROPICAL DAY)

		A-9 PROD	F-102 GROWTH
BASIC DESIGN WT	LB	25,950	26,070
MANEUVERABILITY (5000 FT)			
– INSTANT. G 300 KTAS		6.3	6.3
– SUSTAINED G 275 KTAS		4.0	4.2
RATE OF CLIMB, FT/MIN		5,150	6,000
MAX SPEED			
– CLEAN (SL)	KTAS	410	420
– 6 MK-82's, 5000 FT	KTAS	400	410

51963B-1

COMPETITION SENSITIVE

2-PLACE A-9



COMPETITION SENSITIVE

52079A

TEN-YEAR O&S COST COMPARISON

COST ELEMENT	COST ~ MILLIONS OF 1970 $		
	A-9	A-7(1)	F-4(2)
SPARE ENGINES & LRU's	106.9	190.3	144.2
ON & OFF EQUIP. MAINTENANCE	574.4	1059.0	1303.9
POL	84.8	176.9	398.7
PECULIAR SUPPORT	47.1	540.0	248.9
NEW ITEM MANAGEMENT	7.8	14.4	25.8
TOTAL O&S COST	821.0	1980.6	2121.5

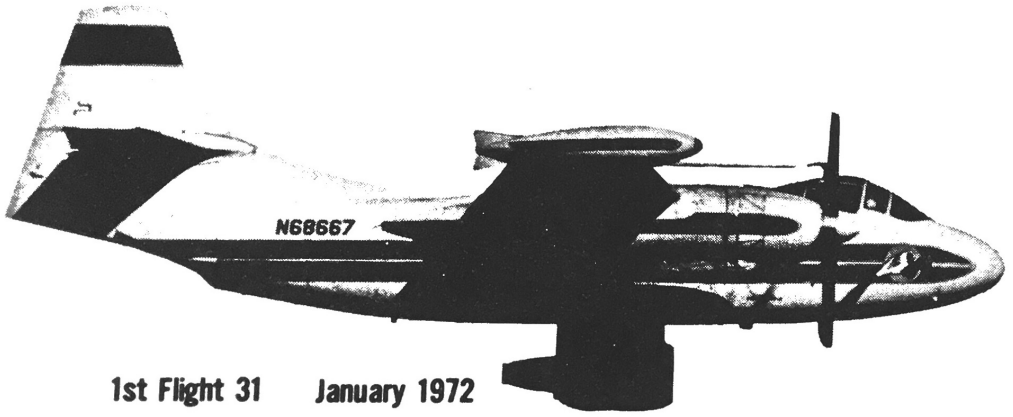
(1) ESTIMATE BASED ON AFM 172-3

(2) REF: 1. USAF F-4 O&S COST
2. AFM 172-3 USAF COST AND PLANNING FACTORS
3. AFLC DO24F102-N3 AIRCRAFT ENGINE EXPOSURE

52009B

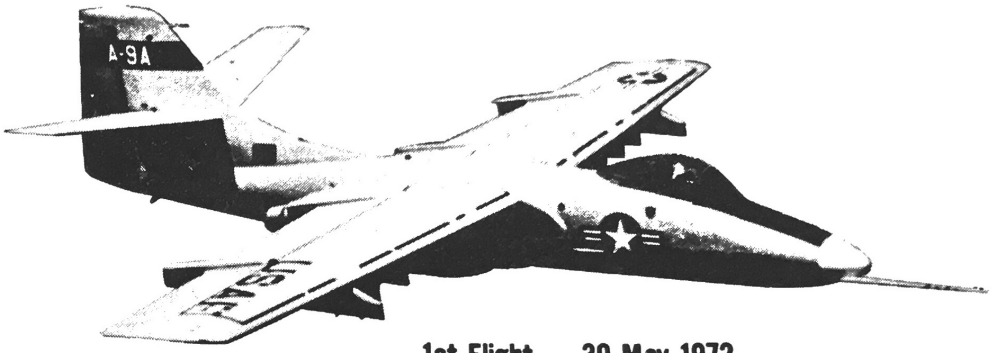
YF102 ENGINE FLIGHT EXPERIENCE

AJ-2 FLIGHT TEST A/C



1st Flight 31 January 1972

NORTHROP A-9

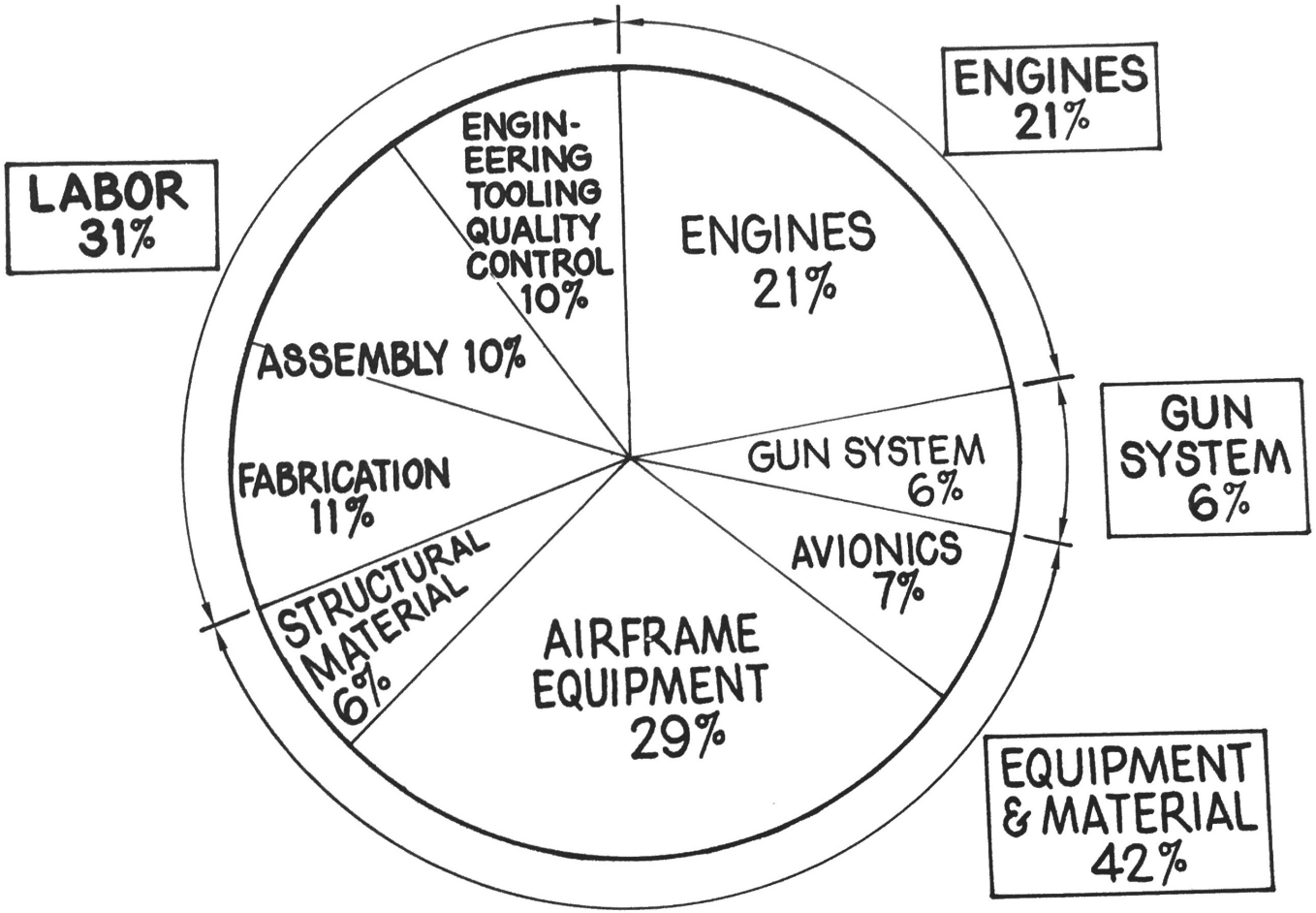


1st Flight 30 May 1972

ENGINE NO.	TIME
YF01	199
YF02	180
YF03	136
YF04	150
YF05	143
YF06	121
Total	**929 Hours**

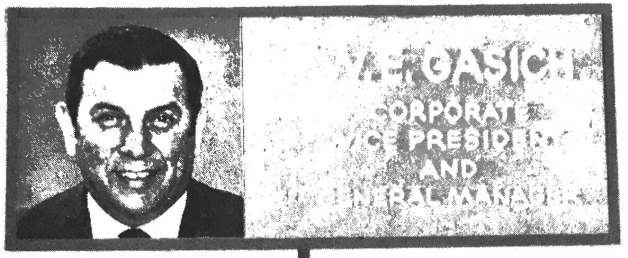
PROBLEM AREAS	SOLUTIONS
POWER TURBINE BLADE CRACKS (2)	NEW MATERIAL/CONFIGURATION ON TEST FOR QT
GEAR SUPPORT RING FAILURE (1)	HIGH STRESS CONDITION ELIMINATED - ALL ENGINES RETROFITTED
LUBE SYSTEM	IMPROVED SEPARATOR AND TRANSFER TUBE RETROFITTED. QT HOSE CLAMP IMPROVED.

A-9 FLYAWAY COST ELEMENTS



51997A

AIRCRAFT DIVISION MANAGEMENT



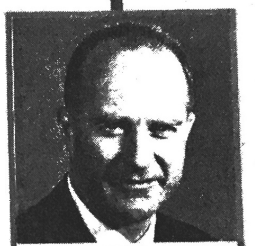
V. T. GASICH
CORPORATE VICE PRESIDENT AND GENERAL MANAGER

R. H. EDDINGTON
DIVISION GENERAL COUNSEL

PROGRAM ORGANIZATION

J. L. McCOY
VICE PRESIDENT
F-5 & COMM PROGRAMS

D. J. DEERING
MANAGER
A-9 PROGRAM



W. E. FELLERS
MANAGER
LWF PROGRAM

B. F. COLLINS, JR.
MANAGER
SAUDI ARABIA OPERATIONS

M. KUSKA
VICE PRESIDENT
CUSTOMER REQM'TS & SUPPORT

J. MANNION
VICE PRESIDENT
ADMINISTRATION

D. D. WARNER
VICE PRESIDENT
ENGINEERING

R. M. McNAMARA
VICE PRESIDENT
& MANAGER
FINANCE

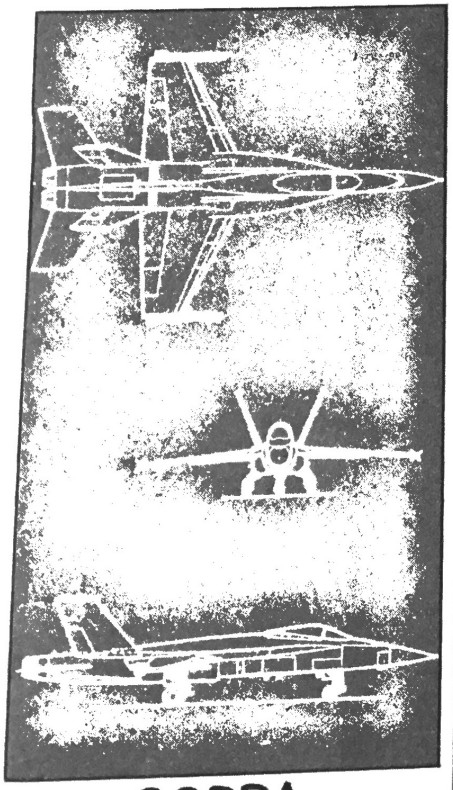
M. G. GONZALEZ
VICE PRESIDENT
CONTRACTS, PRICING
& SERVICE

P. A. JACOBS
VICE PRESIDENT
MANUFACTURING,
MATERIEL

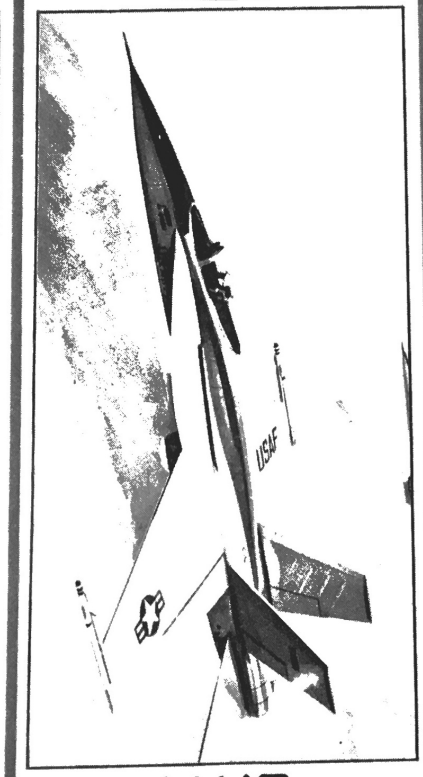
X-127C-1B-1

FUNCTIONAL ORGANIZATION

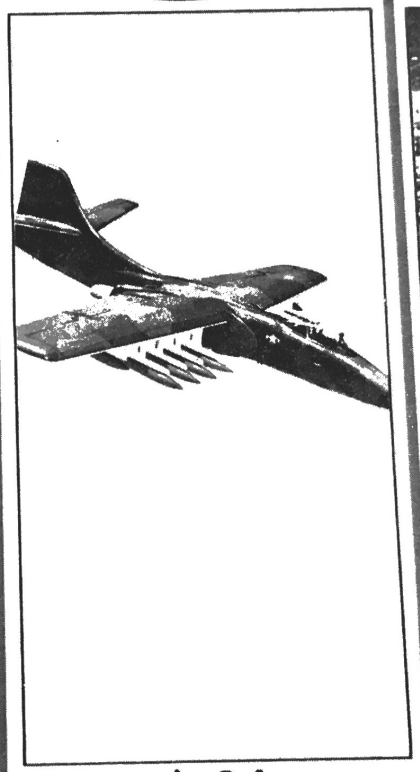
PROJECT PHASES



COBRA



LWF



A-9A

F-5

WG-10904 B