SAFSP

SAFSP PLANNING FOR THE STS

SECRET/10116

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SYSTEM ONLY

Approved for Release: 2017/02/08 C05094778

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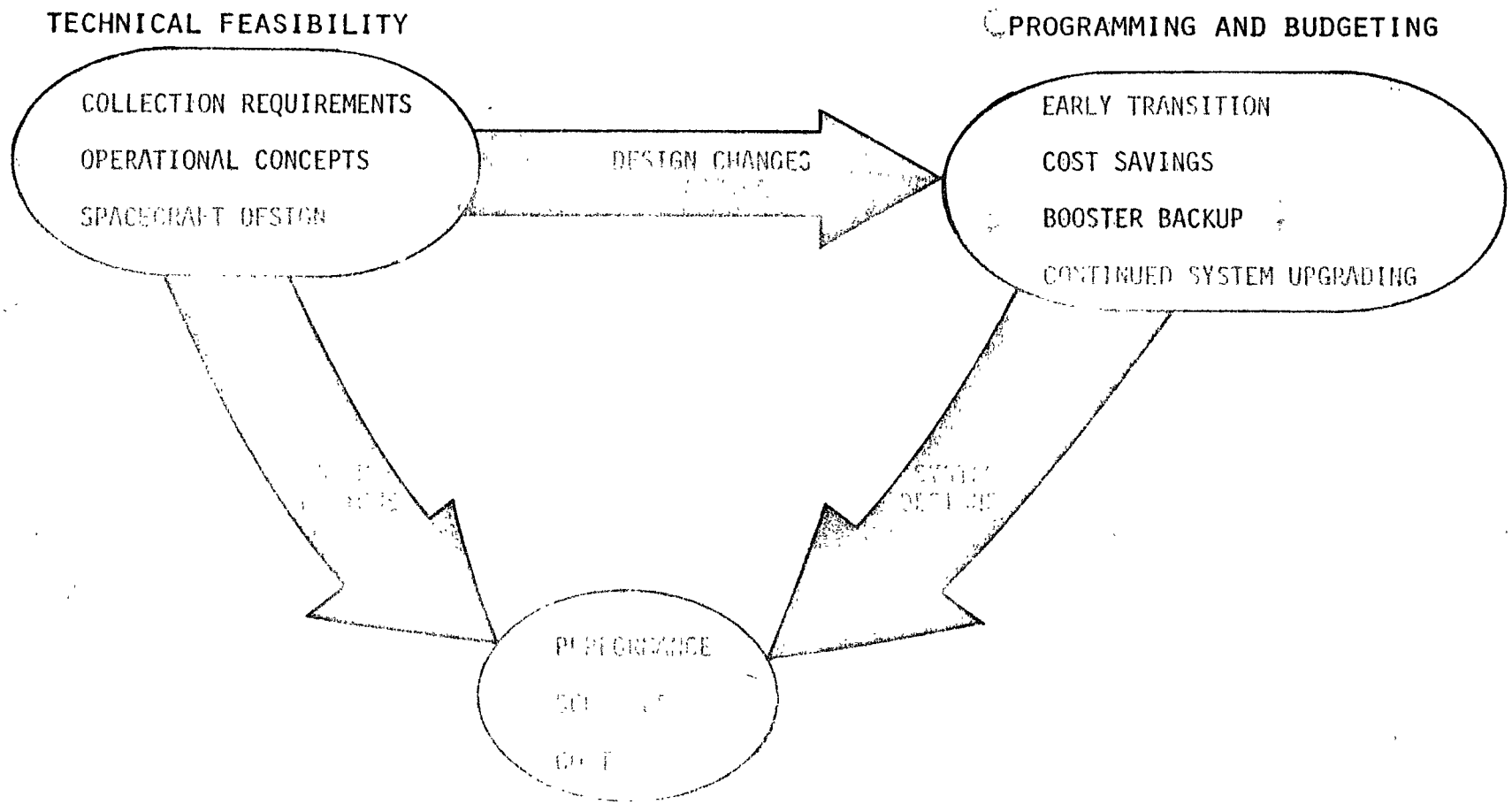
SAFSP/STS TRANSITION PLANNING OBJECTIVES



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SAFSP/STS PRE-TRANSITION EFFORTS

	FY 72	FY 73	FY 74	FY 75	FY 76	FY 77	FY 78
NASA	COST BENEFITS		PAYLOAD ACCOMMODATIONS		STS DEVELOPMENT		
	ORBITER DESIGN		STS/ORBITER DEVELOPMENT				
DOD	COST BENEFITS PAYLOAD DESIGN ORBITER REQUIREMENTS		DOD STS REQUIREMENTS INTERIM UPPER STAGE DESIGN		UPPER STAGE DEVELOPMENT		
PHOTO SYSTEMS							
HEXAGON	SYSTEMS MODIFICATION DESIGN/COST	OPTIMIZED FOR STS DESIGN/ COST	INTERFACE REQUIREMENTS UPDATE	PRELIMINARY DESIGN/COST		SYSTEM ACQUISITION	
GAMBIT		OPTIMIZED FOLLOW-ON DESIGNS		PRELIMINARY DESIGN/COST		SYSTEM ACQUISITION	
TRANSITION COST STUDIES	SS	SP/SS FOR GAO	76-86 SP	80-91 SP			

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PLANNING OBJECTIVES

- DETERMINE PERFORMANCE IMPLICATIONS OF USING STS
  - COLLECTION REQUIREMENTS
  - OPERATIONAL CONCEPTS
  - SPACECRAFT DESIGN
  - INTERFACE REQUIREMENTS
- ESTIMATE SAFSP TRANSITION COSTS
  - DESIGN-DERIVED COST FACTORS
  - EARLY TRANSITION
  - BOOSTER BACKUP DURING TRANSITION
  - CONTINUED SYSTEM PERFORMANCE UPGRADING
- ORDERLY TRANSITION PLANNING
  - PERFORMANCE
  - SCHEDULE
  - COST

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SAFSP STS STUDIES

- CONTRACTOR DESIGN STUDIES
  - HEXAGON - MINIMUM MODIFICATION — JAN 1972
  - HEXAGON - OPTIMIZED — AUG 1973
  - GAMBIT FOLLOW-ON — SEP 1973
- TRANSITION COST STUDIES
  - 1976 TO 1986 — NOV 1973
  - 1980 TO 1991 — JAN 1974

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CONTRACTOR STUDIES

HEXAGON - MINIMUM MODIFICATION DESIGN

- o BOOSTER SUBSTITUTION
- o RETRIEVAL AND REFURBISHMENT
- o STS INTERFACE

HEXAGON - OPTIMIZED FOR STS USE

- o EMPHASIS ON DESIGN
- o RETRIEVAL AND REFURBISHMENT
- o ON-ORBIT REPAIR AND RESUPPLY
- o STS INTERFACE

ULTRA HIGH RESOLUTION SYSTEM

- o CONCEPTUAL DESIGNS
- o RETRIEVAL AND REFURBISHMENT
- o ON-ORBIT REPAIR AND RESUPPLY

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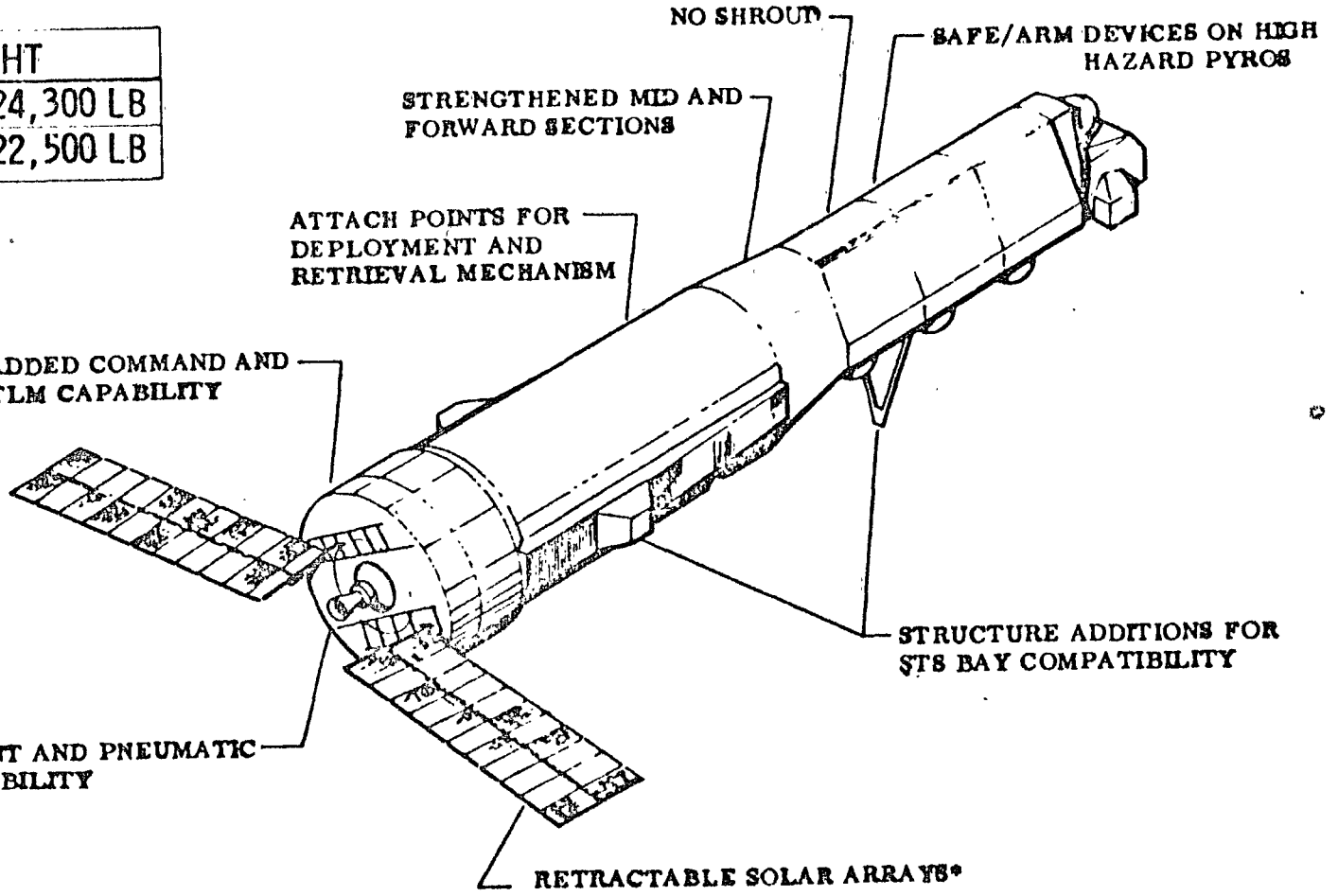
SV MODIFICATIONS FOR STS OPERATIONS

SV WEIGHT	
FOR STS	24,300 LB
SV 7-12	22,500 LB



*REQUIRED FOR ONLY RETRIEVAL AND REFURBISHMENT

- MODEST DESIGN CHANGES FOR REFURBISHMENT*
- LIFE TESTS TO EXTEND CALENDAR/OPERATING LIFE OF SELECTED ITEMS*

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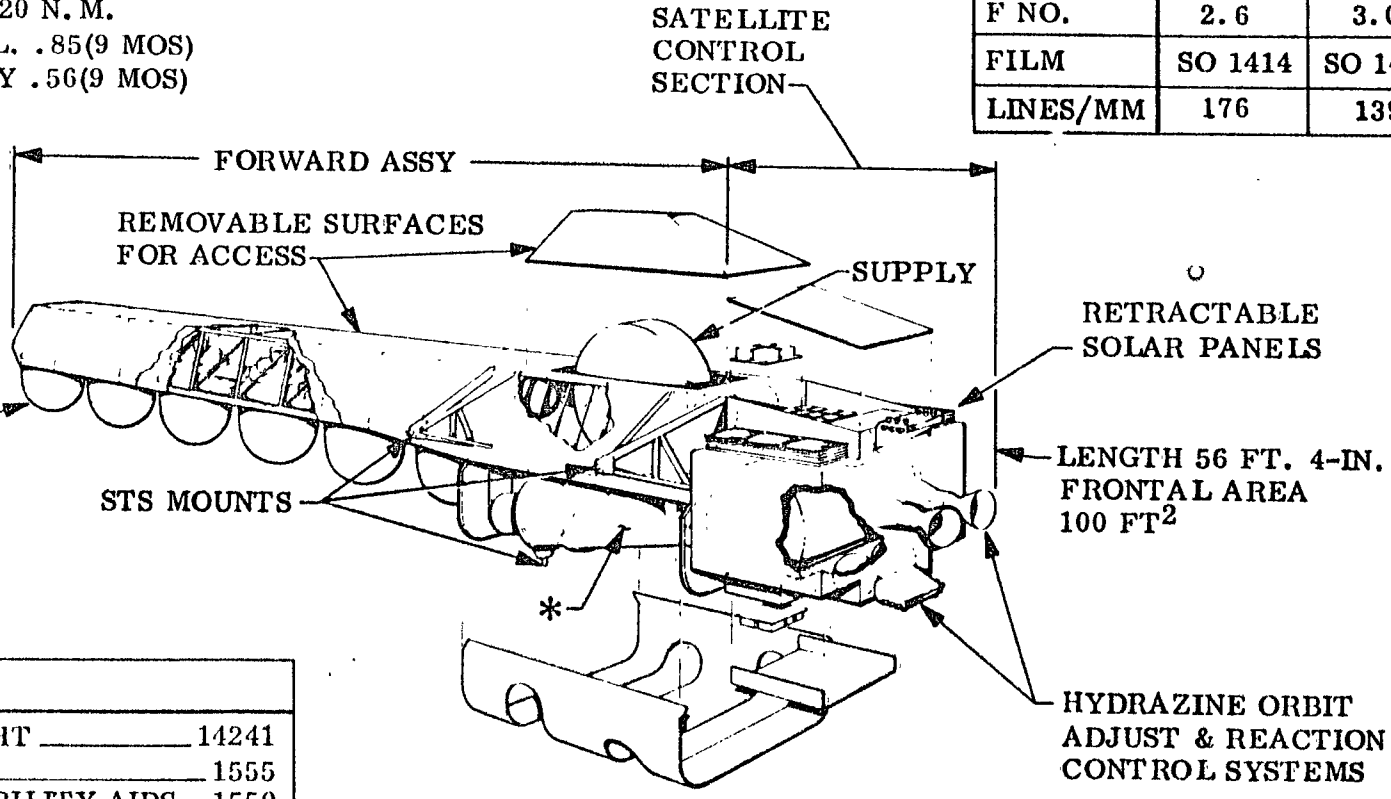
SATELLITE VEHICLE - GENERAL

PERFORMANCE

ORBITAL LIFE 9 MOS.
COVERAGE 36.0 M SQ N. M.
RESOLUTION 2.27 FT (NADIR)
PERIGEE RANGE 110-120 N. M.
LMSC EQUIPMENT REL. .85(9 MOS)
TOTAL SV RELIABILITY .56(9 MOS)

* OPTICAL BARS

	SV/STS	BLK III
FOCAL L.	72 IN.	60 IN.
F NO.	2.6	3.0
FILM	SO 1414	SO 1414
LINES/MM	176	139



WEIGHTS (LB)	
SV & STS FIXED WEIGHT	14241
CONTINGENCY	1555
SUB SATS & SURVIVABILITY AIDS	1550
RVs & TAKEUPS	6240
FILM	2700
PROPELLANTS & GASES	7064
TOTAL	33,350

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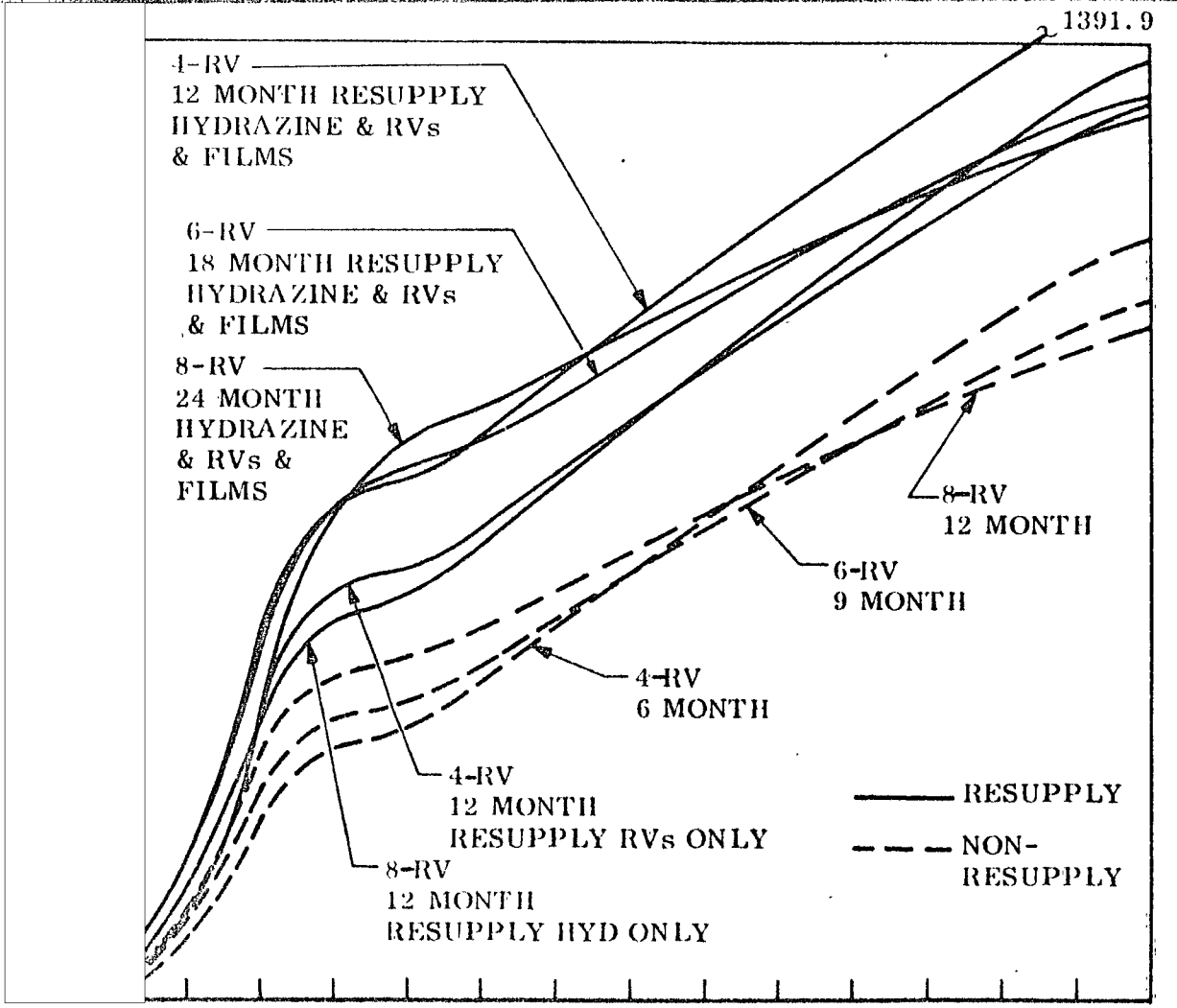
OPERATIONAL CONCEPTS COST SUMMARY



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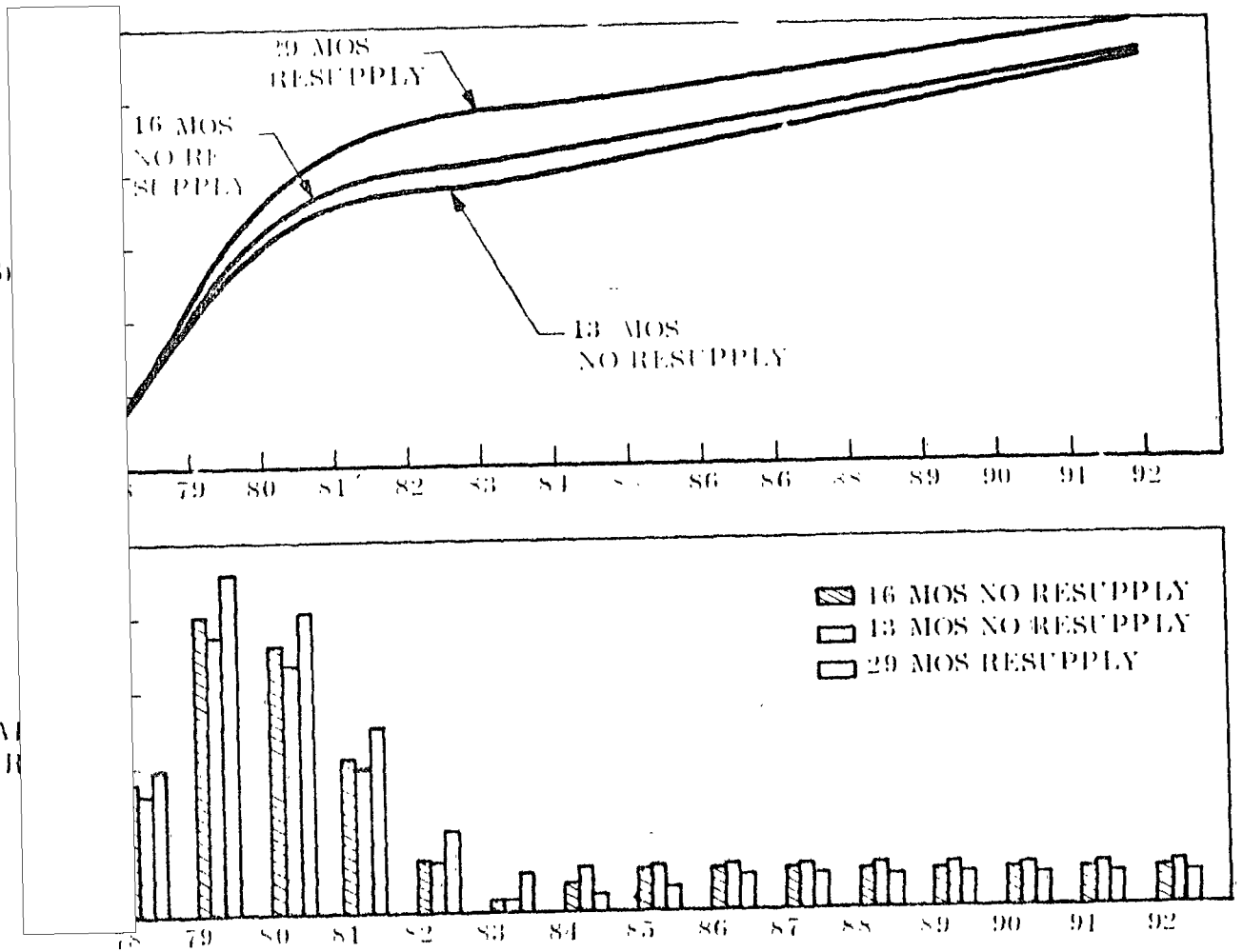
OPERATIONAL CONCEPTS COST SUMMARY



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TECHNICAL CONCLUSIONS

- NO APPARENT OPERATIONAL OR PERFORMANCE IMPACT
- MODIFICATION OF SAFSP PHOTO [redacted] SYSTEMS IS TECHNICALLY FEASIBLE
- RETRIEVAL AND REFURBISHMENT OF PHOTO SYSTEMS IS POSSIBLE
- ON-ORBIT REPAIR AND RE-SUPPLY COMPLICATES DESIGN AND IS LESS COST EFFECTIVE THAN RETRIEVAL AND REFURBISHMENT

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SAFSP/STS TRANSITION - PHOTO SYSTEMS

74 75 75 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91

STS

VAFB

HEXAGON — H^2 2/YR H^2 12; H^3 2/YR H^3 18; H^4 19; 2/YR H^4 24; H^4 25; H^4 26

MIN/MOD — T III-D H^{4-M} H^{4-M}

BLOCK CHANGE — H^5

GAMBIT — 3/YR G^3 54; G^3 55; 3/YR - 2 MO LIFE G^3 69

UPRATE AND STS — T III-D G^4 70; 2/YR - 6 MO LIFE G^4

BLOCK CHANGE — G^5 1/YR 12 MO

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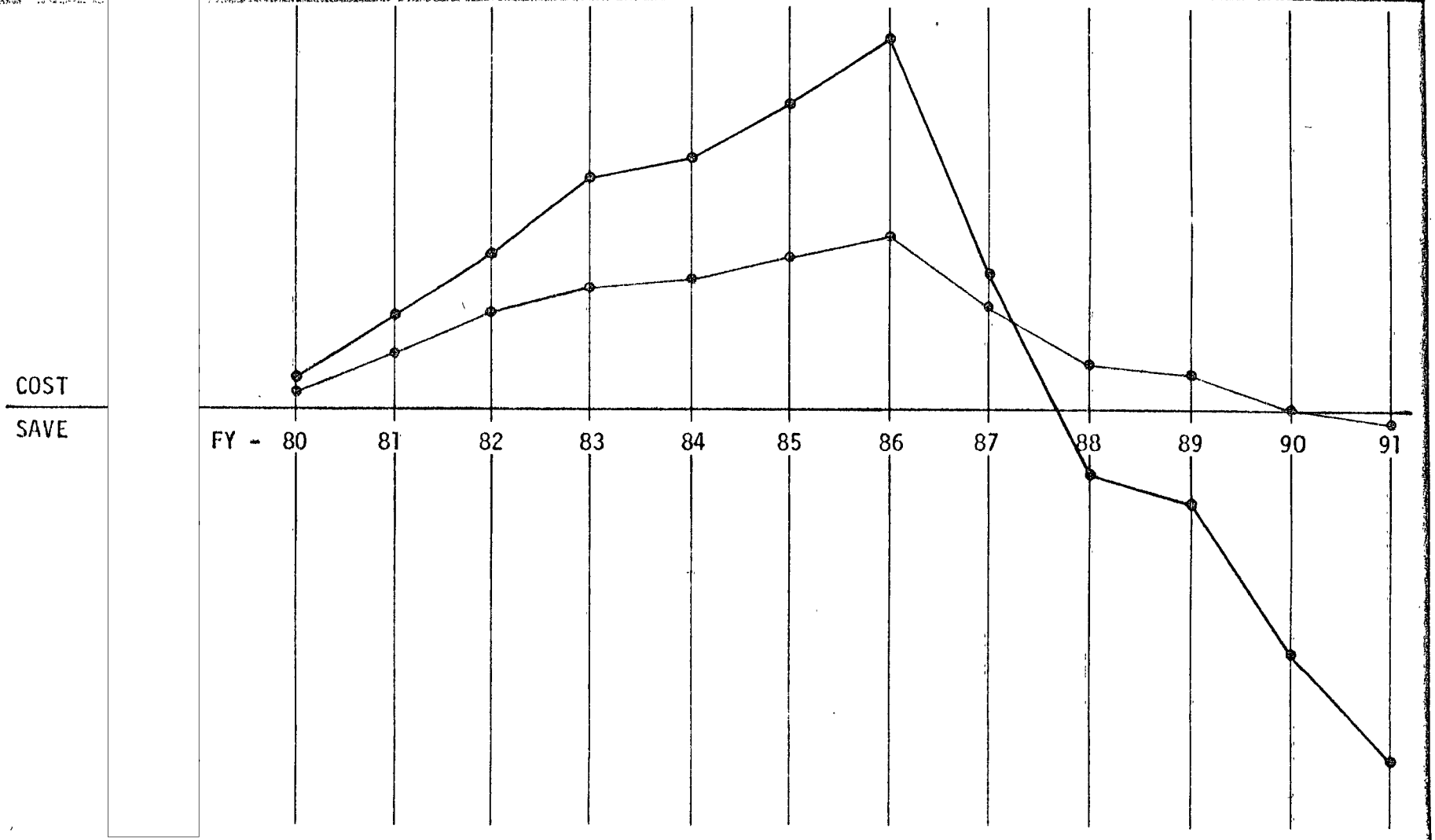
SAFSP/STS TRANSITION PROGRAM WTR 85 - 50% REFURBISHMENT SAVINGS

GAMBIT UPRATE #70 IN 83



—— TOTAL COST —— PRESENT VALUE

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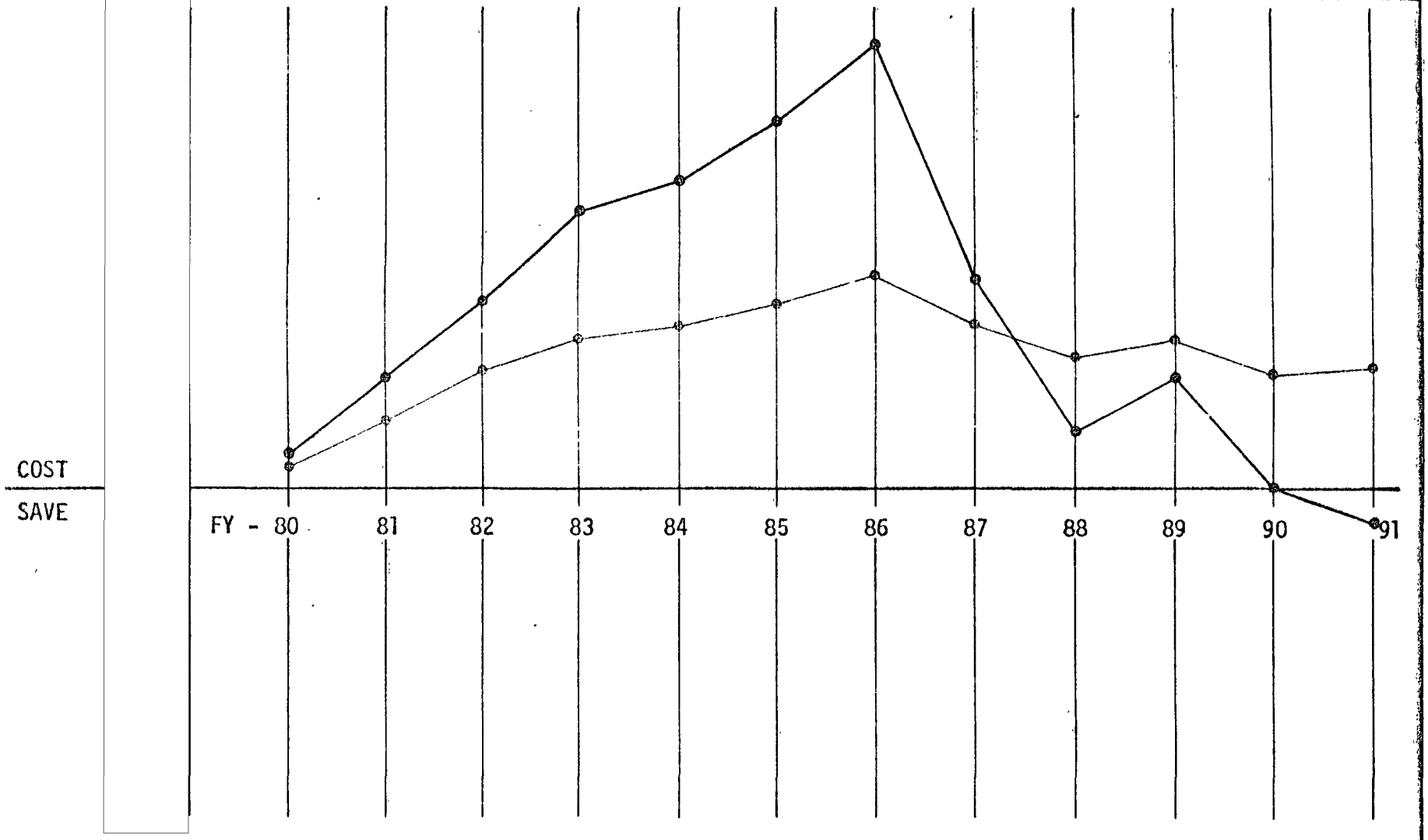
SAFSP/STS TRANSITION PROGRAM WTR 85 - 30% REFURBISHMENT SAVINGS

GAMBIT UPRATE #70 IN 83



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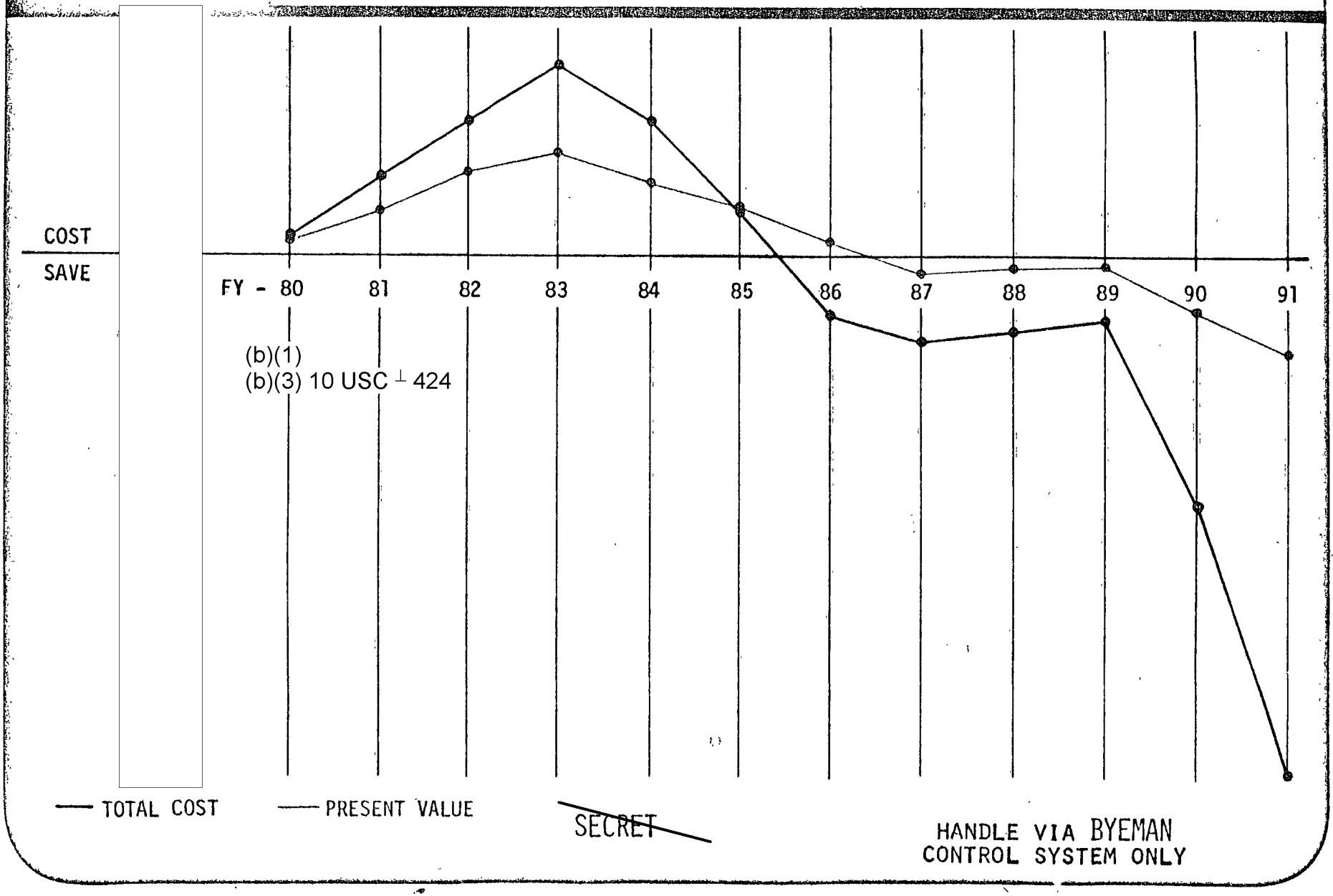
ETR 80 WTR 82 - 50% REFURBISHMENT SAVINGS



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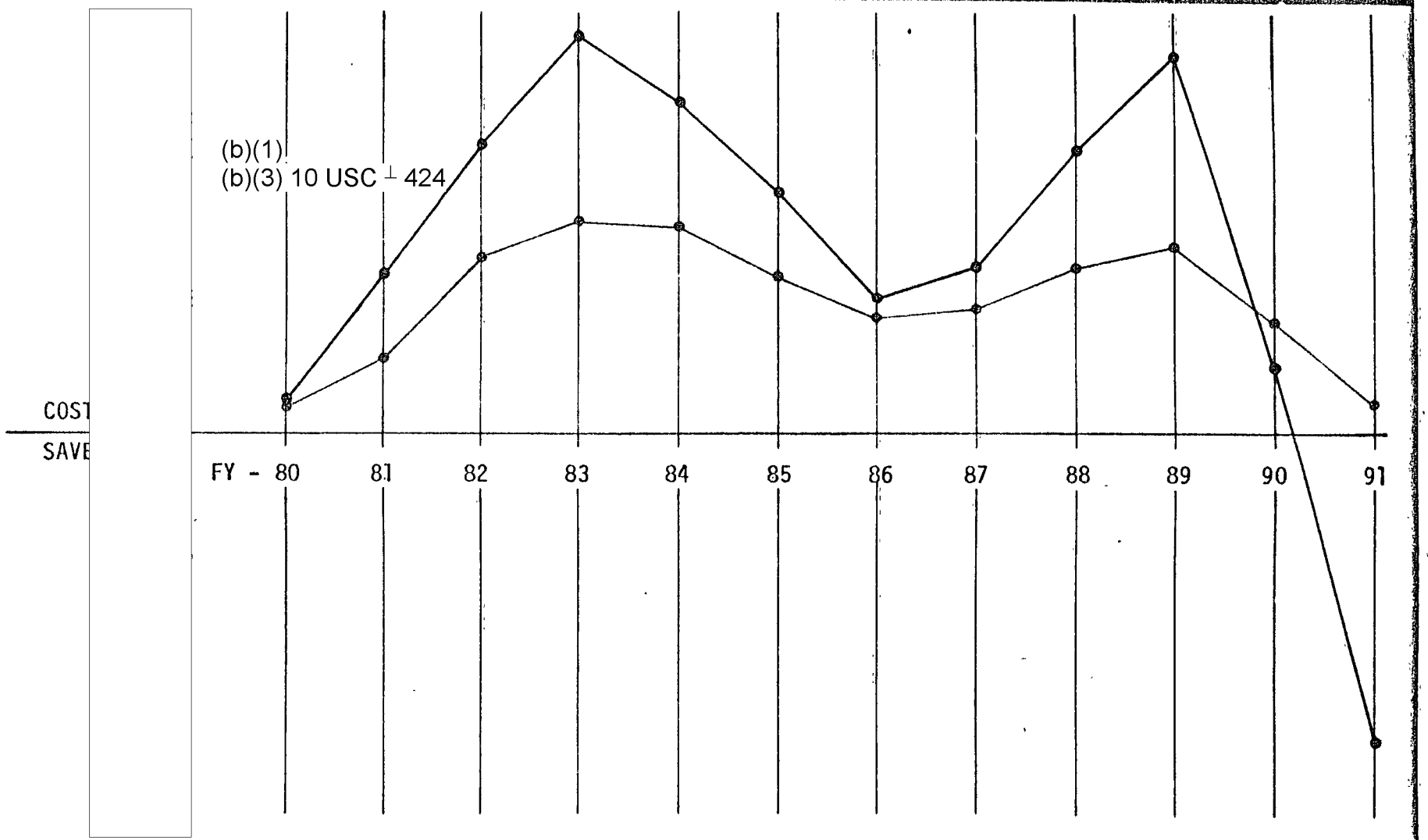
ETR 80 WTR 82 - 30% REFURBISHMENT SAVINGS



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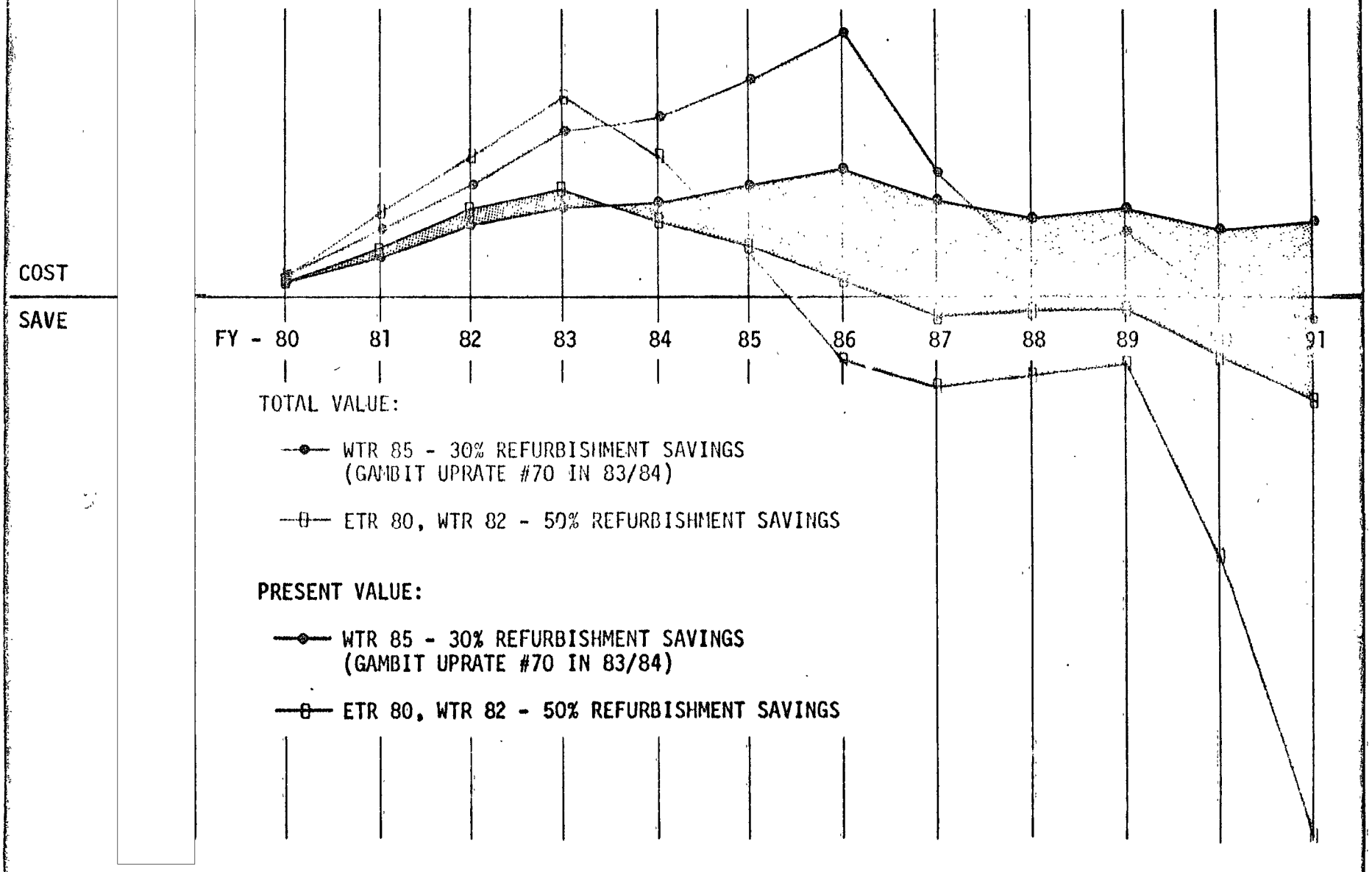
SAFSP/STS TRANSITION PROGRAM - FY 1980 THRU FY 1991



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COST STUDY CONCLUSIONS

- HIGH FRONT LOADING COSTS
- MODEST POTENTIAL SAVINGS BEGINNING IN LATE 80'S
- SAVINGS SENSITIVE TO REFURBISHMENT FACTOR

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CONCLUSIONS

- SAFSP SYSTEMS CAN BE MADE COMPATIBLE WITH STS OPERATIONS WITH NO APPARENT TECHNICAL OR OPERATIONAL IMPACT
- ONLY PHOTO SYSTEMS SUBJECT TO RETRIEVAL AND REFURBISHMENT
- ON-ORBIT REPAIR/RESUPPLY COMPLICATES DESIGN AND IS NOT COST EFFECTIVE
- COST SAVINGS MODEST AND SENSITIVE TO REFURBISHMENT FACTOR
- FRONT-LOADING COSTS AND MODEST POTENTIAL SAVINGS ECONOMICALLY UNATTRACTIVE TO SAFSP

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