

4

21078207

HEXAGON RETRIEVAL VIA THE STS

~~TOP SECRET/H~~

HANDLE VIA **BYEMAN** CONTROL SYSTEM ONLY

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AGENDA

BASELINE PROGRAM

PROPOSED CONCEPT

BENEFIT

PROGRAM REQUIREMENTS

FUNDING REQUIREMENTS

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**HEXAGON 20 RETRIEVAL
FUNDING REQUIREMENTS (\$M)***

<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>
24	38	35	13	0	0

***DELTA OVER BASELINE PROGRAM
STS RIDE COST IN SEPARATE LINE**

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QUESTION: WHAT ARE THE REQUIREMENTS FOR HEXAGON IN 1985? WHAT REQUIREMENTS EXIST FOR SUPPLEMENTARY IMAGERY COVERAGE FROM A REFURBISHED HEXAGON BEYOND 1985?

- 1985
 - 70% INTELLIGENCE
BROAD AREA SEARCH, AD HOCS, CLUSTERED SURVEILLANCE TARGETS
 - 30% MAPPING, CHARTING, AND GEODESY
 - UNCERTAINTY DERIVES FROM IMAGING MIX TRANSITION
- BEYOND 1985
 - BASELINE IMAGING MIX WILL NOT MEET ALL COLLECTION REQUIREMENTS
 - CRITICAL SHORTFALLS IN MC&G AND HRI
 - REFURBISHED HEX COULD RELIEVE BURDEN ON

(b)(1)

(b)(3)

10 USC + 424

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QUESTION: WHAT ACTIVITIES ARE INCLUDED IN THE FUNDING PROFILE GIVEN? PROVIDE COST DETAIL AND SCHEDULE BY YEAR FOR EACH (E.G. HEXAGON 20 MOD, ELECTRICAL/PROPULSON MODS, ETC.).

<u>TASK</u>	<u>ESTIMATED COST</u>			
	<u>83</u>	<u>84</u>	<u>85</u>	
o RETRIEVAL MODS				
CRADLE				10
TRUNNIONS (FWD, FWD)				
GRAPPLE FITTING				
JETTISONABLE S/A, GPS ANT				
RELOCATED DBS ANT				
3RD PROP VALUE				10
INTEGRATION/ANAL				10
QUAL TESTING				4
AGE AND RET MODS				12
	18	20	8	46

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(CONT'D)

<u>TASK</u>	<u>ESTIMATED COSTS</u>
o STS CHARGES	
- NON - RECURRING	
-- INTEGRATION	27
-- ANALYSIS	4
-- OTHER (EVA, LATCHES, ETC)	7
o RECURRING	
- RMS SOFTWARE	11
- OMS KIT REMOVAL	1
- STS ANALYSIS	5

	55

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QUESTION: WHAT WOULD BE THE ANTICIPATED TIME REQUIRED TO REFURBISH HEXAGON IF RETRIEVED? WHAT MODIFICATIONS WOULD BE REQUIRED TO PROVIDE A CAPABILITY TO RELAUNCH HEXAGON? WHAT WOULD BE THE AVAILABILITY DATE FOR RELAUNCH? WHAT WOULD BE THE ESTIMATED COST TO REFURBISH AND RELAUNCH HEXAGON?

- o 16 MONTH REFURBISHMENT TIME
- o RELAUNCH AVAILABILITY EARLY TO MID 1987
 - DEPENDS ON EXACT RETRIEVAL DATE
- o REQUIRED RELAUNCH MODIFICATION
 - REQUAL OF ASE FOR LAUNCH CONDITIONS
- o PREFERRABLE REUSE/REFURB TASKS
 - SEAL/PRESSURIZE FILM PATH
 - CAGE SUPPLY REEL
 - BUY EXPENDABLE SPARES (SOLAR ARRAYS, BATTERIES, ETC.)
 - METRIC IMPROVEMENTS
- o COSTS

	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>87</u>
REUSE	8	5	7		
REFURB	12	36	44	14	4

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*170 JPL
Total Program
1-11-74 M*

*170 JPL
Total Cost
1-11-74 M*

*170 JPL
Total Cost
1-11-74 M*

*170 JPL
Total Cost
1-11-74 M*

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QUESTION: ARE THERE ANY RELATED ACTIVITIES ASSOCIATED WITH THIS INITIATIVE FUNDED ELSEWHERE IN THE FYDP? IF SO, PROVIDE DETAIL.

- **FIRST STS OPERATIONAL FLIGHT TEST AT VANDENBERG**

QUESTION: WHAT IMPACT WOULD THIS INITIATIVE HAVE ON HEXAGON 20 MISSION DURATION? ON OTHER PAYLOADS? DISCUSS.

- **NONE**

QUESTION: WHAT IS THE CURRENT IOC OF THE VANDENBERG SHUTTLE LAUNCH FACILITY?

- **OCTOBER 1985**

QUESTION: IF THIS ALTERNATIVE IS FUNDED, WHAT IS THE IMPACT ON PLANS TO PHASE OUT EASTMAN KODAK/OTHER CONTRACTOR ACTIVITIES? DISCUSS.

- **NONE**

QUESTION: WHAT IS THE PROPOSED SOURCE OF 1983 FUNDING FOR THIS INITIATIVE?

- **TO BE DETERMINED**

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(b)(1)
(b)(3)
10 USC + 424

QUESTION: GIVEN THE AVAILABILITY OF

[Redacted]

WHAT IS

THE URGENCY OF A 1985 LAUNCH OF HEXAGON?

[Redacted]

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**QUESTION: GIVEN BASELINE PLANS TO PHASE OUT HEXAGON, WHY DO
HEXAGON 1984 COST EXCEED 1983 COST?**

- **LEVEL OF EFFORT SIMILAR IN 1983 AND 1984**
- | <u>FY 83</u> | <u>FY 83 INFLATED</u> | <u>FY 84 BUDGET</u> |
|--------------|-----------------------|---------------------|
| \$133.7M | \$145.8M | \$140.0M |
- **CAS 418 \$4.9M**

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**QUESTION: WHAT WOULD BE THE RISKS, PENALTIES, OR BENEFITS OF DELAYING
H-20 TO 1986? WHAT WOULD BE THE EXACT, RISKS, ETC. ON OTHER
PAYLOADS? DISCUSS.**

- o **H-20 STRECH COSTS \$100M + OVER SEPTEMBER 1982 PMRP, DOES NOT INCLUDE:**
 - **MISSION SUPPORT, PHOTO PROCESSING** (b)(1)
(b)(3)
10 USC ± 424
- o **REQUIRES REMANIFESTING AND SCHEDULE ADJUSTMENTS**
- o **COMIREX CONCURRENCE**
- o **RETAINS RESOURCES**

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*Base Form
Lauris
NVA
Address
TO*

91078907

PURPOSE - HEXAGON RETRIEVAL

- **VALIDATE OTHER NRO PROGRAMS**
 - **RETRIEVAL CONCEPTS**
 - **REFURBISHMENT CONCEPTS**

- **DEMONSTRATE FULL STS CAPABILITIES**
 - **LARGE SPACECRAFT RECOVERY**
 - **MANNED INTERFACE FLEXIBILITY**

- **MAXIMIZE SYNOPTIC OPTIONS**

S|A|F|S|

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GROUND RULES

- **MAINTAIN HEXAGON MISSION INTEGRITY**
 - **MINIMUM MODIFICATIONS**
 - **DEBOOST CAPABILITY**

- **PRESENT NO UNREASONABLE HAZARD**
- **EARLY RETRIEVAL (MISSION 1218/EARLY '84)**
- **JOINT AF/NASA CREW (1-2 MSE's)**
- **INTERFACE AT ASE-TO-ORBITER**
 - **SAPOP RESPONSIBLE FOR SPACECRAFT MISSION AND ASE**
 - **NASA RESPONSIBLE FOR ORBITER MISSION**

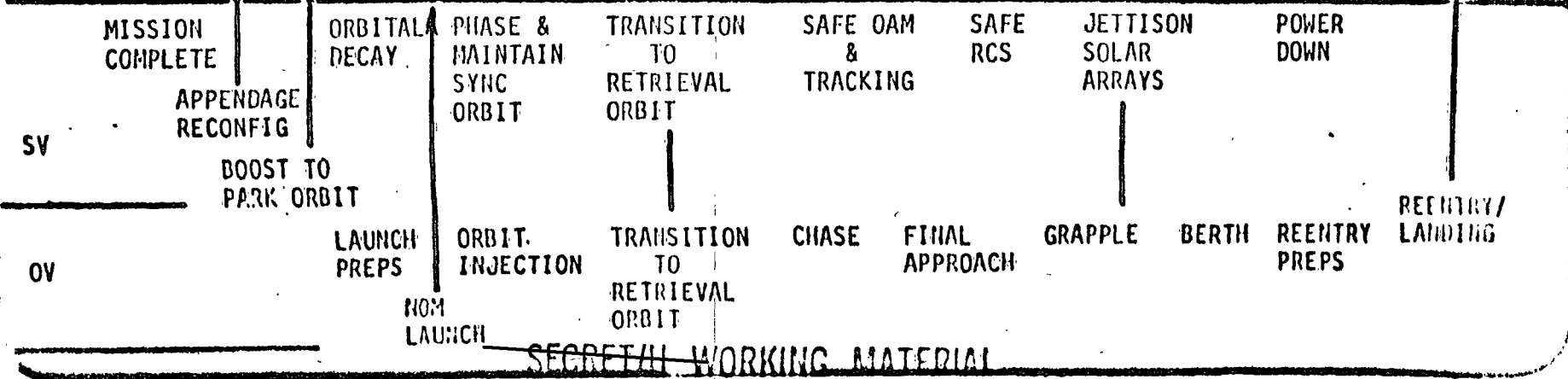
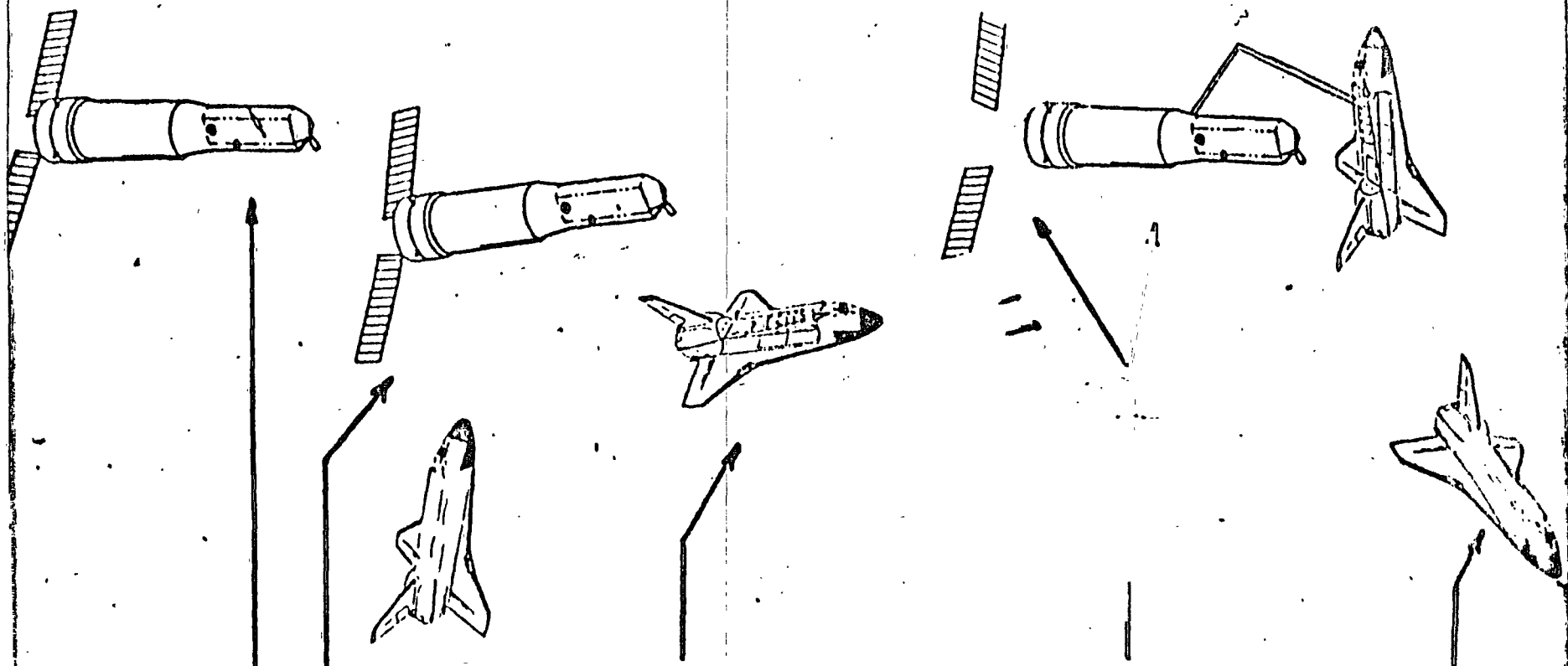
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ALLEN BYEMAN

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~~SECRET//H~~ WORKING MATERIAL

RETRIEVAL SCENARIO



~~SECRET//H~~ WORKING MATERIAL

SECRET

ASCENT PERFORMANCE

ASSUMPTIONS

- OV-033
- 100/100% SSME'S
- LT WT ET
- STND SRB
- 5 MEN/5 DAYS
- 14° LAUNCH AZIMUTH
- 93.4° INCLINATION
- NOMINAL SHATING

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FIGURE 12

S|A|F|S|P

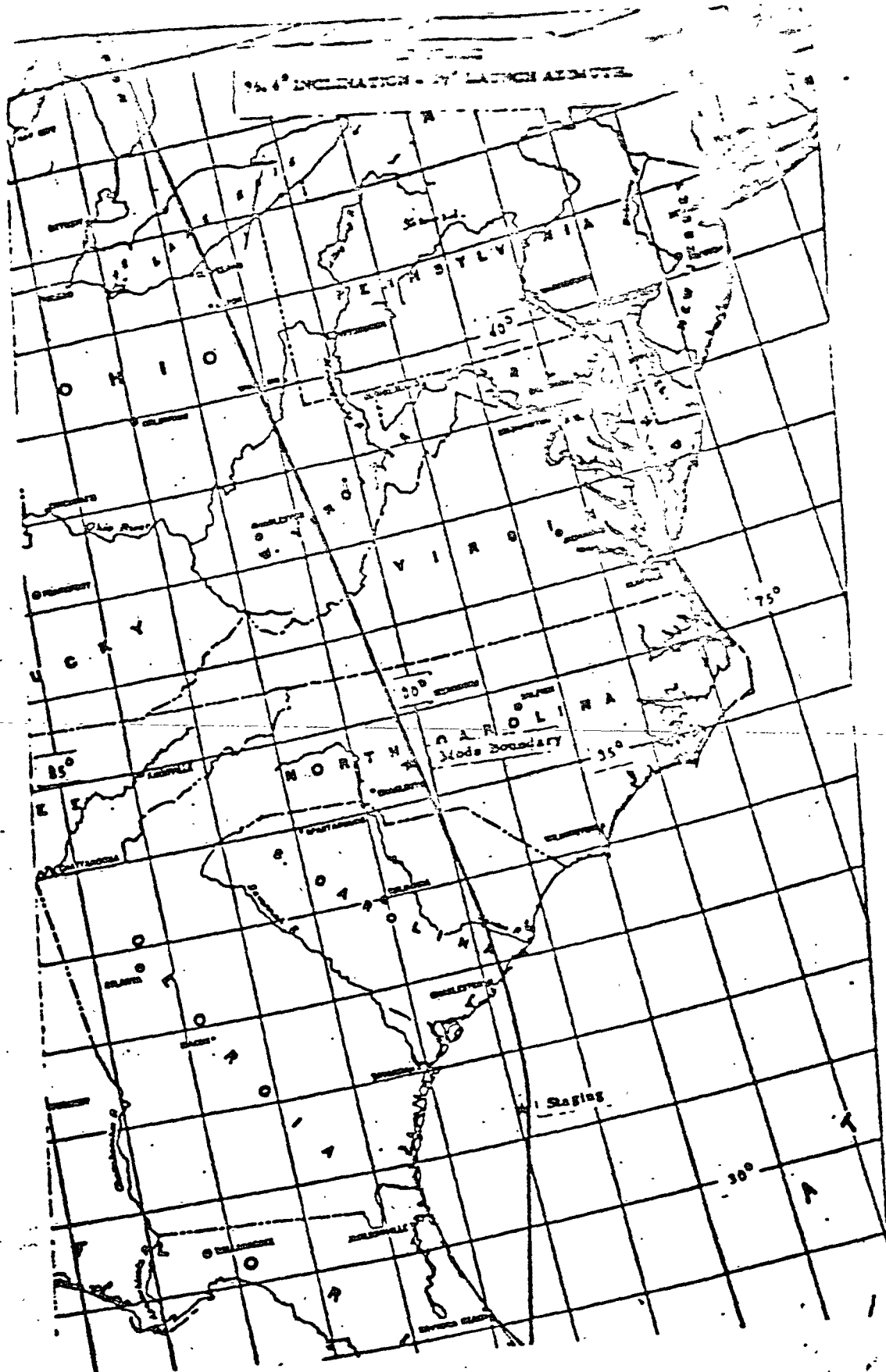
ASCENT PERFORMANCE

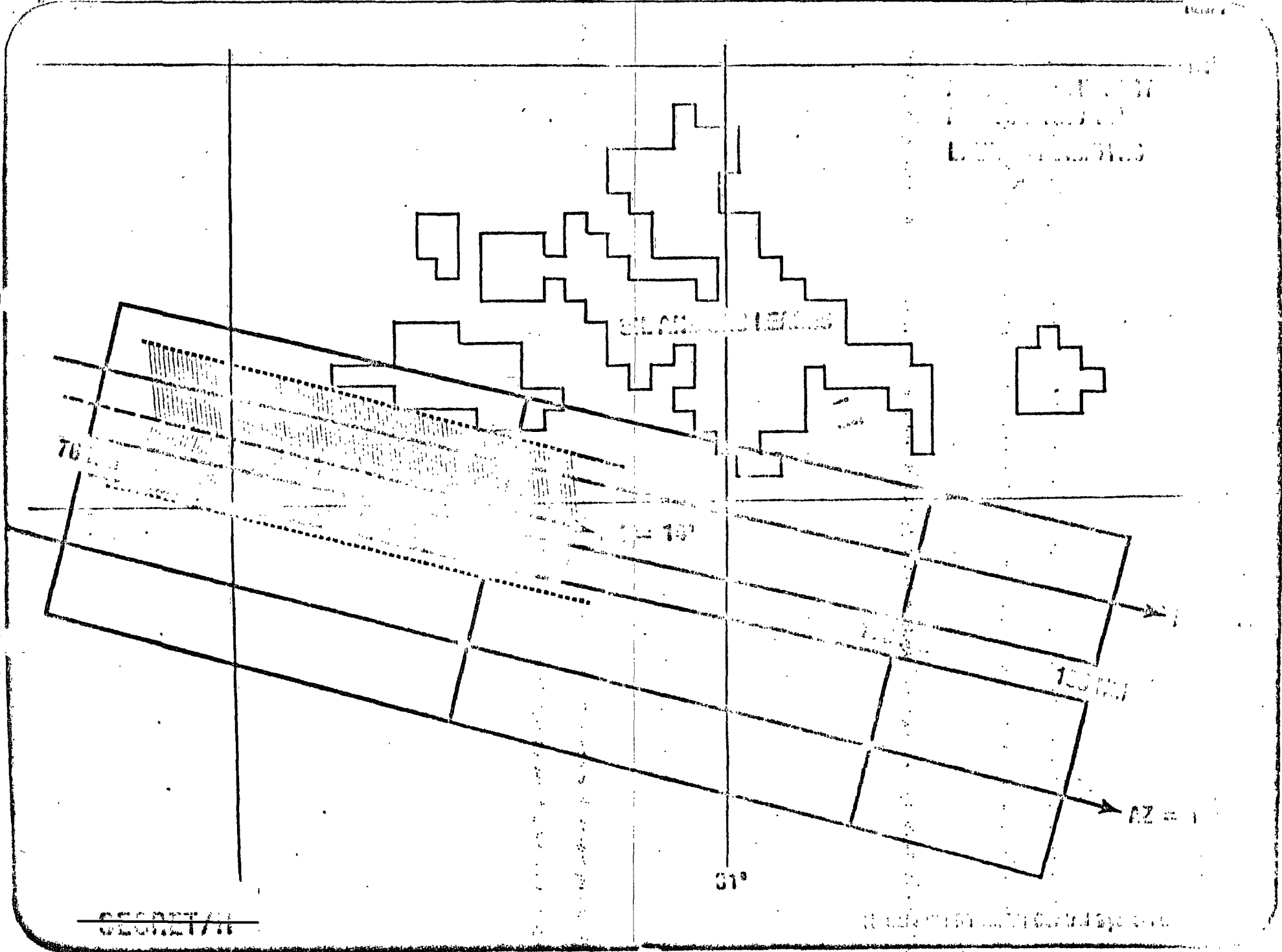
WEIGHT STATEMENT

	<u>WT, LBS</u>
• ORBITER	150,975
• SSME X 3	20,859
• RCS PROP (FULL)	7,503
• NPC (2 EPS + ATO H ₂ O)	4,707
• PERSONNEL	4,100
• STS WT/OPERATOR	1,600
• ET	69,092
• ET PRESSURANT	423
• MPS (30, UNUSABLE)	13,901
• OMS PROP	15,900
• OPS MGRS RESERVE	3,000
	<hr/>
	291,465
• <u>NOMINAL CAPABILITY</u>	<u>298,536</u>
PAYLOAD	<u>+7,071</u>

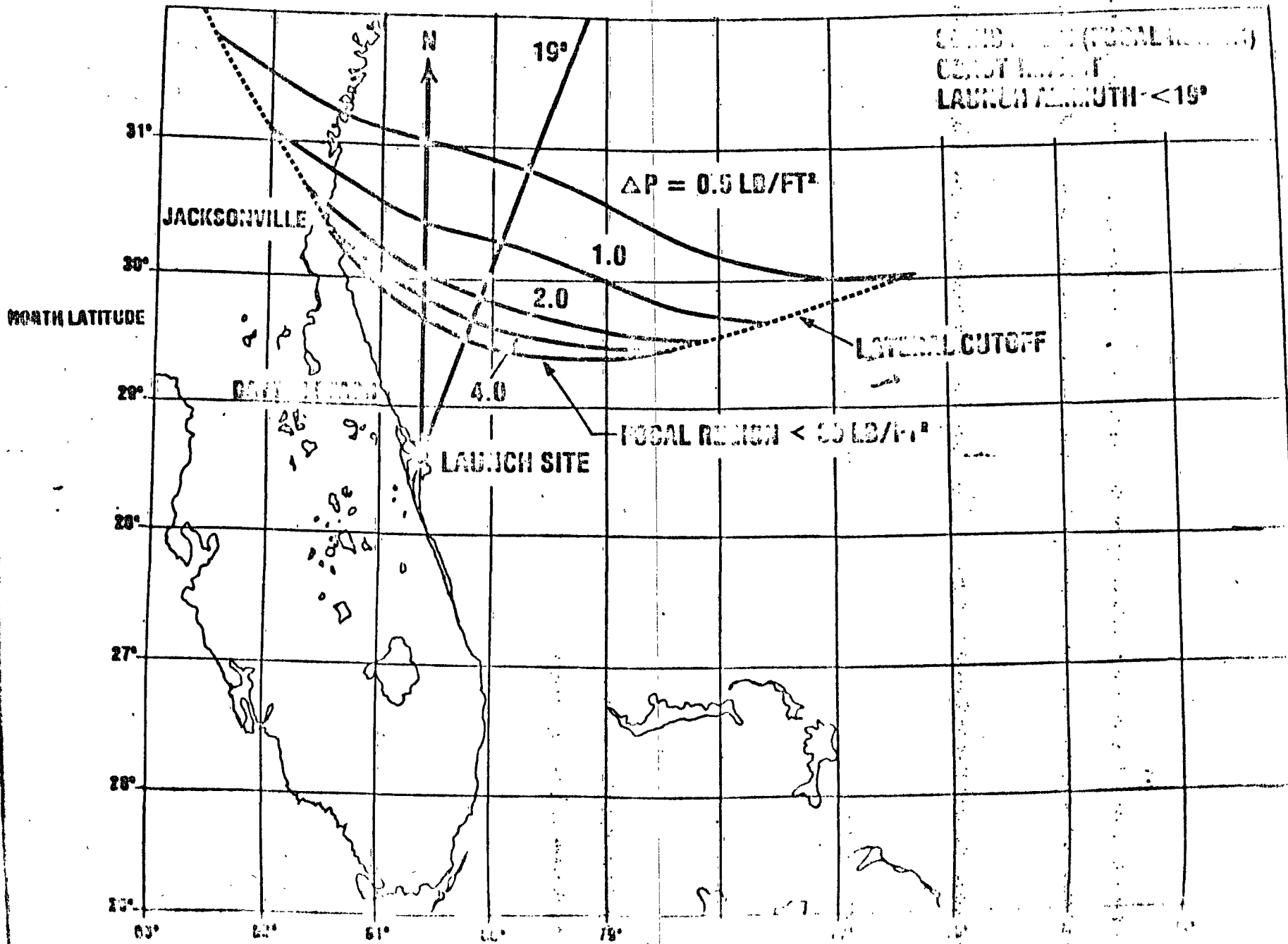
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CONST. AZ. (FOCAL REGION)
CONST. AZ. OF
LAUNCH AZIMUTH $< 19^\circ$

$\Delta P = 0.5 \text{ LB/FT}^2$

1.0

2.0

4.0

FOCAL REGION $< 55 \text{ LB/FT}^2$

LATERAL CUTOFF

LAUNCH SITE

JACKSONVILLE

TALLAHASSEE

NORTH LATITUDE

31°

30°

29°

28°

27°

26°

83°

82°

81°

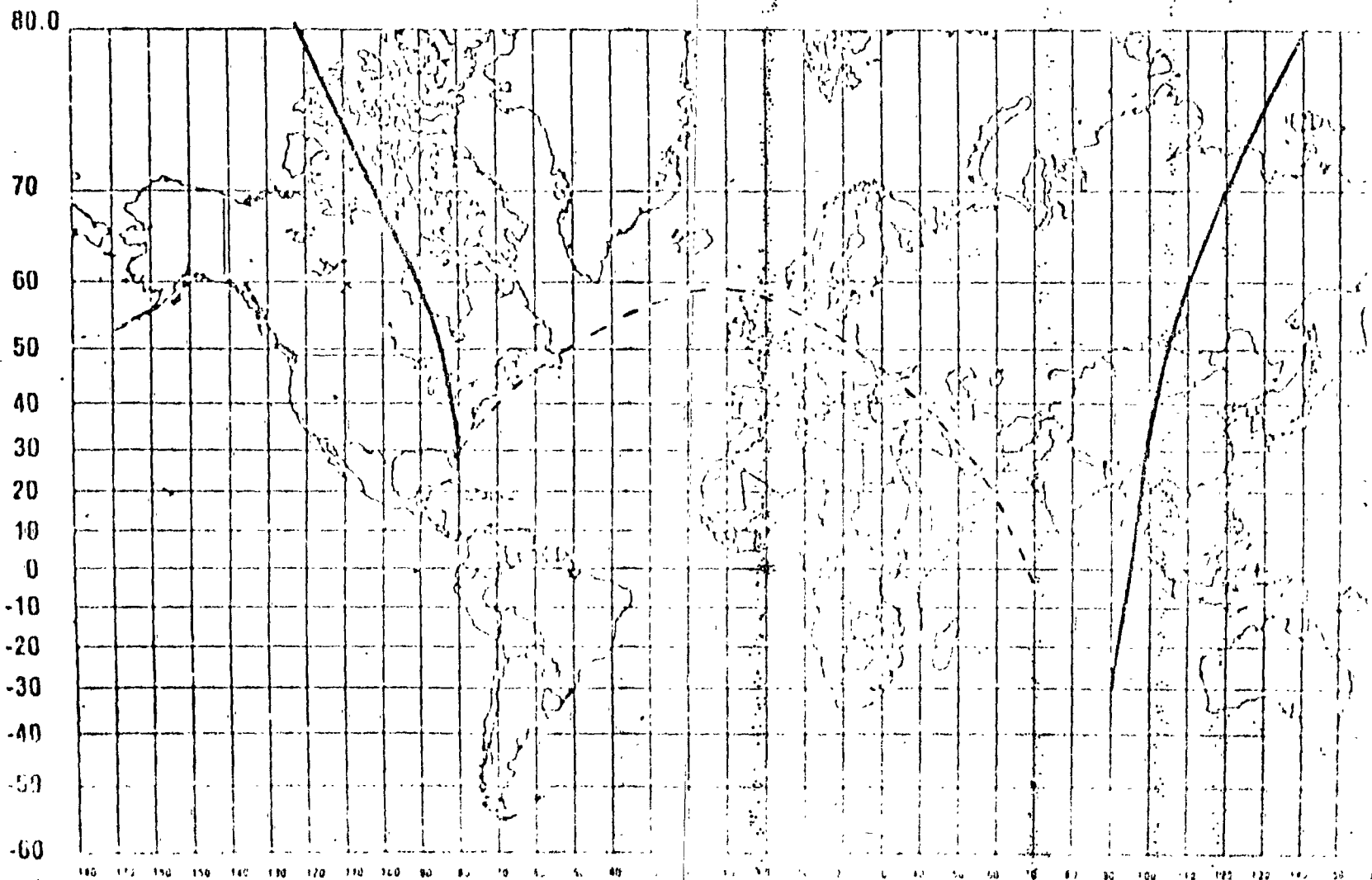
80°

79°

1ST REV OVER... 1961

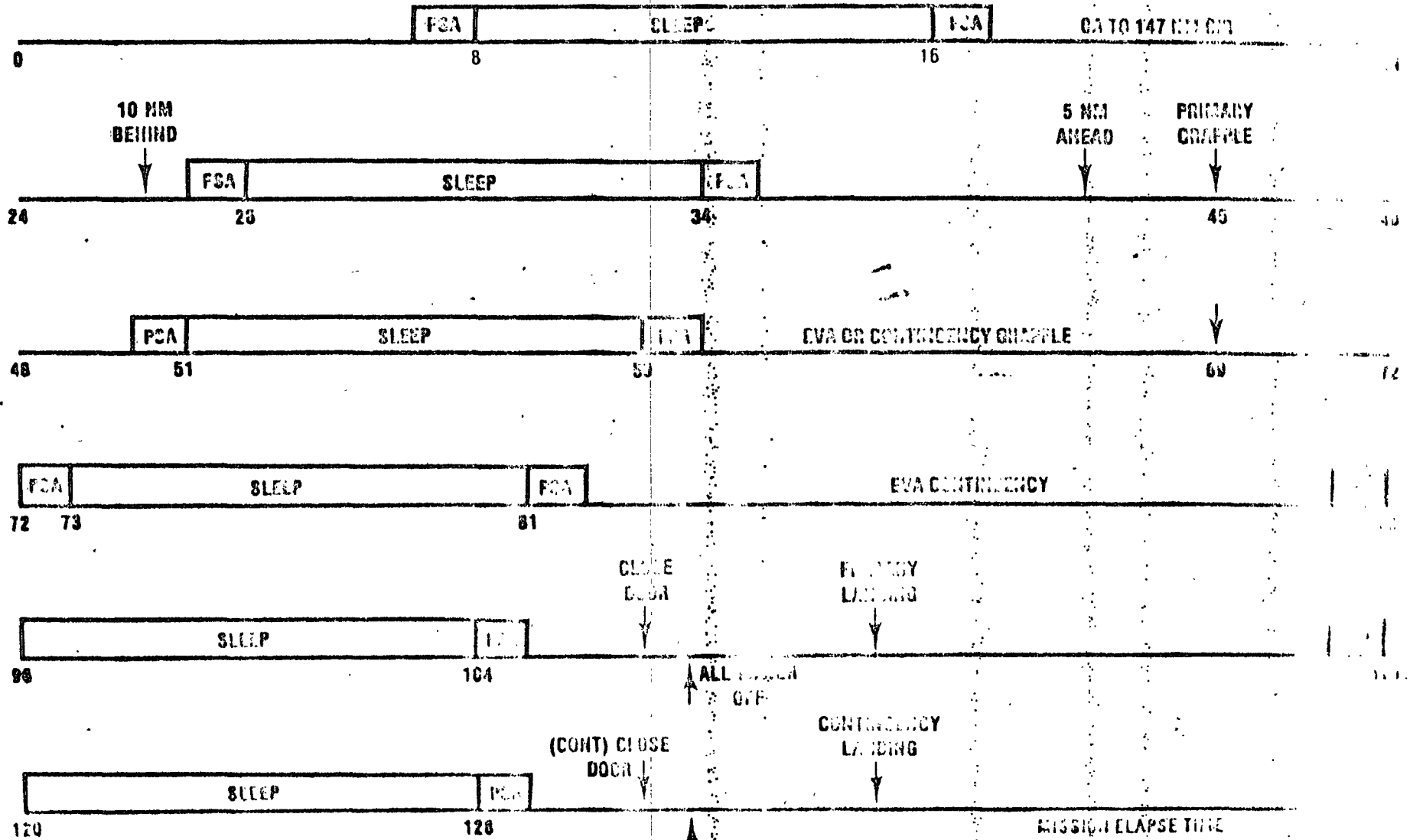
U.S. AIR FORCE

57 D... INCLINATION



S|A|F|S|P

RETRIVAL TIME LINE

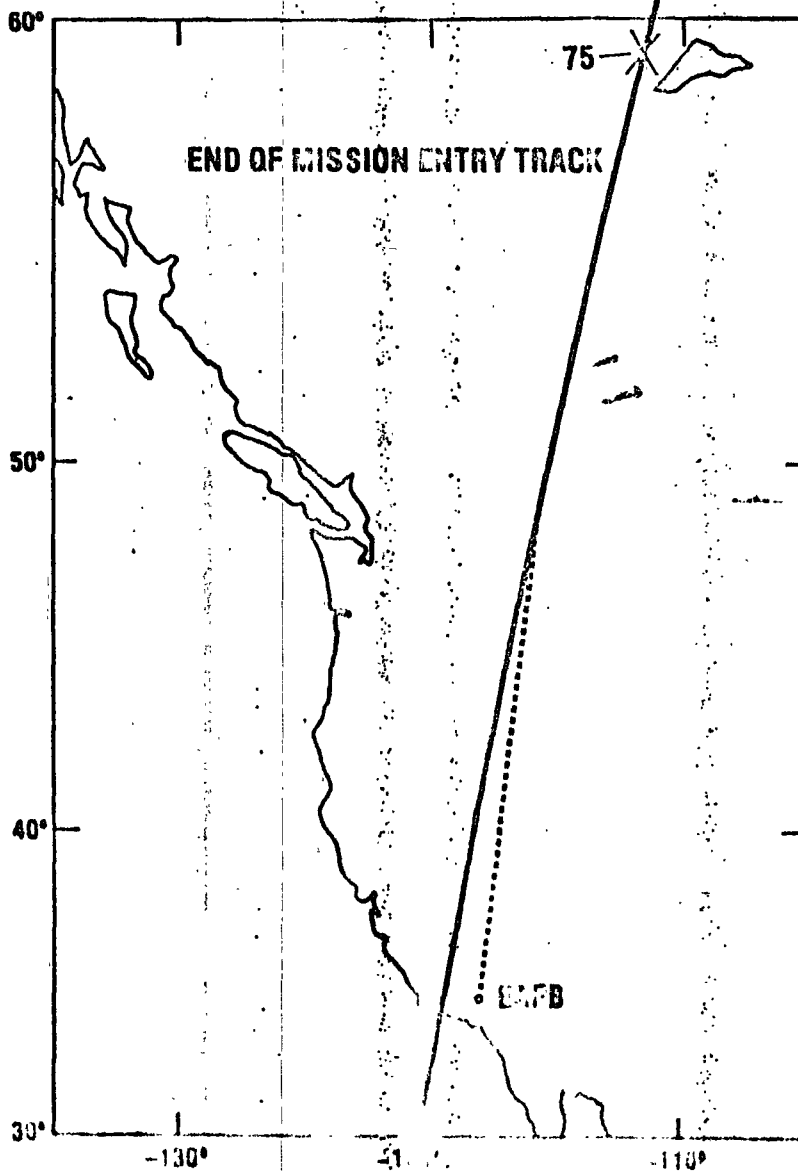


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PROCESSOR TRACK

DATE

TIME

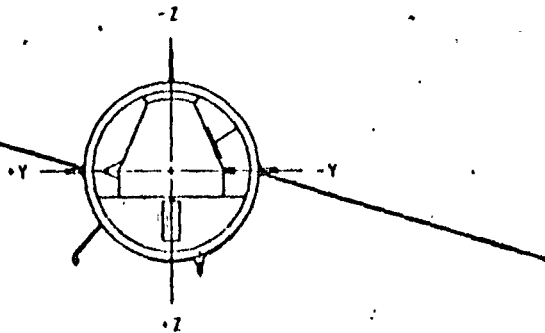


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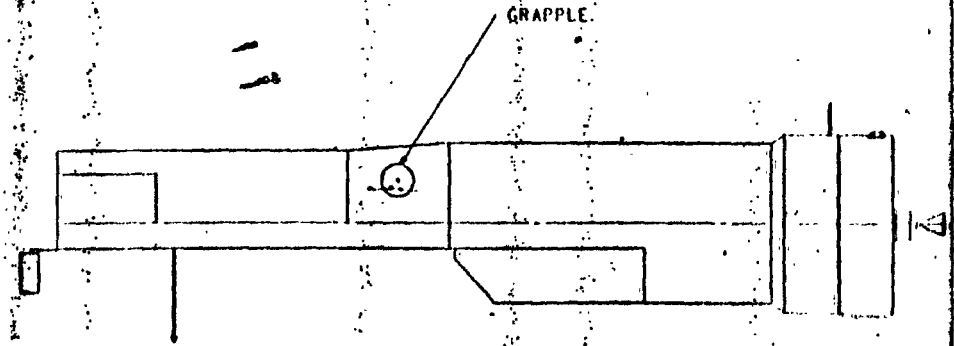
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WORKING MATERIAL



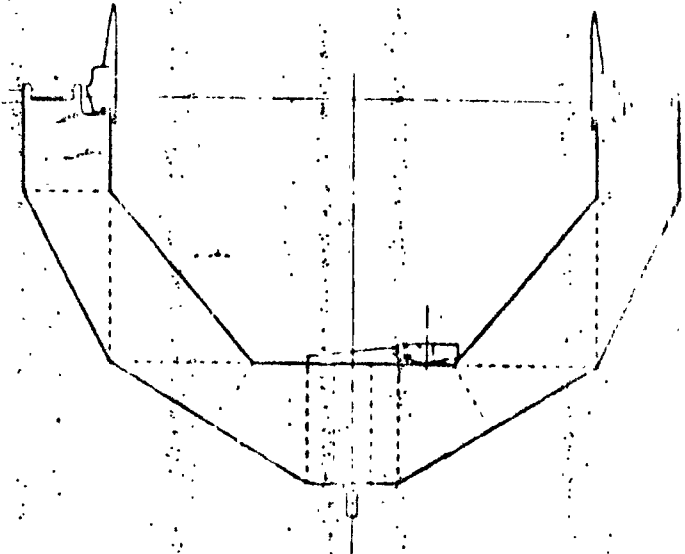
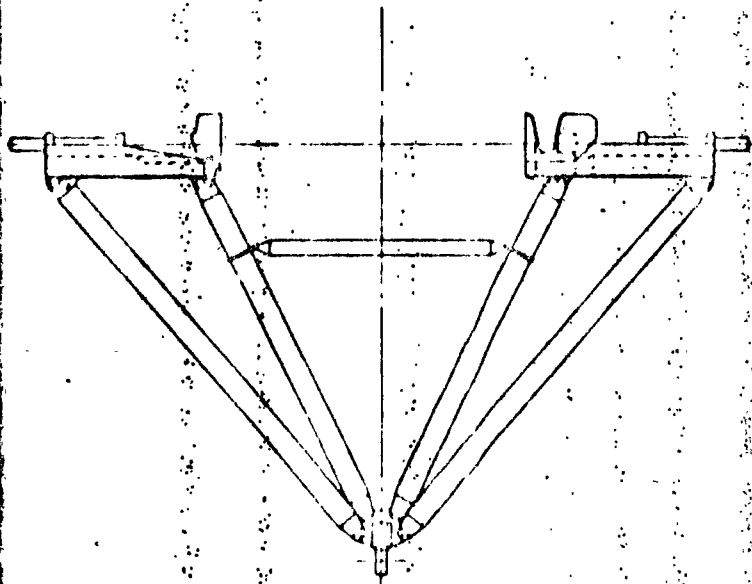
~~SECRET~~

WORKING MATERIAL



GRAPPLE INSULATION FORWARD SECTION

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2167304

1213 RETRIEVAL /

• TECHNICAL

1213 RETRIEVAL TECH CA LY EASIBLE

SV MODIFICATION LO RI X

MANUAL RESIGN DS AL THORSE

STS AVAILABLE AN DG AL E

• SCHEDULE

SV MODIFICATIONS DO 01 SU 31ST FEB '83 LAUNCH

• POLITICAL

OVERSIGHT C .TTMIC IOI U ME

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H IDLE CONTROL SYSTEM ONLY

HEXAGON RETRIEVAL RECOMMENDATION

CONTINUE RETRIEVAL STUDIES

- CY 1984 LAUNCH/RY 85 RETRIEVAL FOCUS
- REFINE:
 - MISSILE SCENARIO
 - SPACE IAF MODIFICATIONS
 - EVALUATE CELESTIAL/DESIRABILITY

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11/13/19

ALTERNATIVE STUDY TO

SECRET

• CY 19 3 LAUNCH/CY 19 4 RETR VA IN UNAVAILABLE WITH
AVAILABLE LEAD TIME

- SUCCESS ORIENTED MODIFIC. FOR SCHEDULE

- URGENT OVERSIGHT CERTIFIC. TO SCHEDULE

• CY 19 4 LAUNCH/CY 19 5 RETR VA IS ATTAINABLE

- MODIFICATION SCHEDULE COORDINATED WITH AVAILABLE LEAD TIME

- OVERSIGHT CERTIFIC. TO REFERENCE

- VEHICLE IDENTIFICATION IS NOT BEING

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