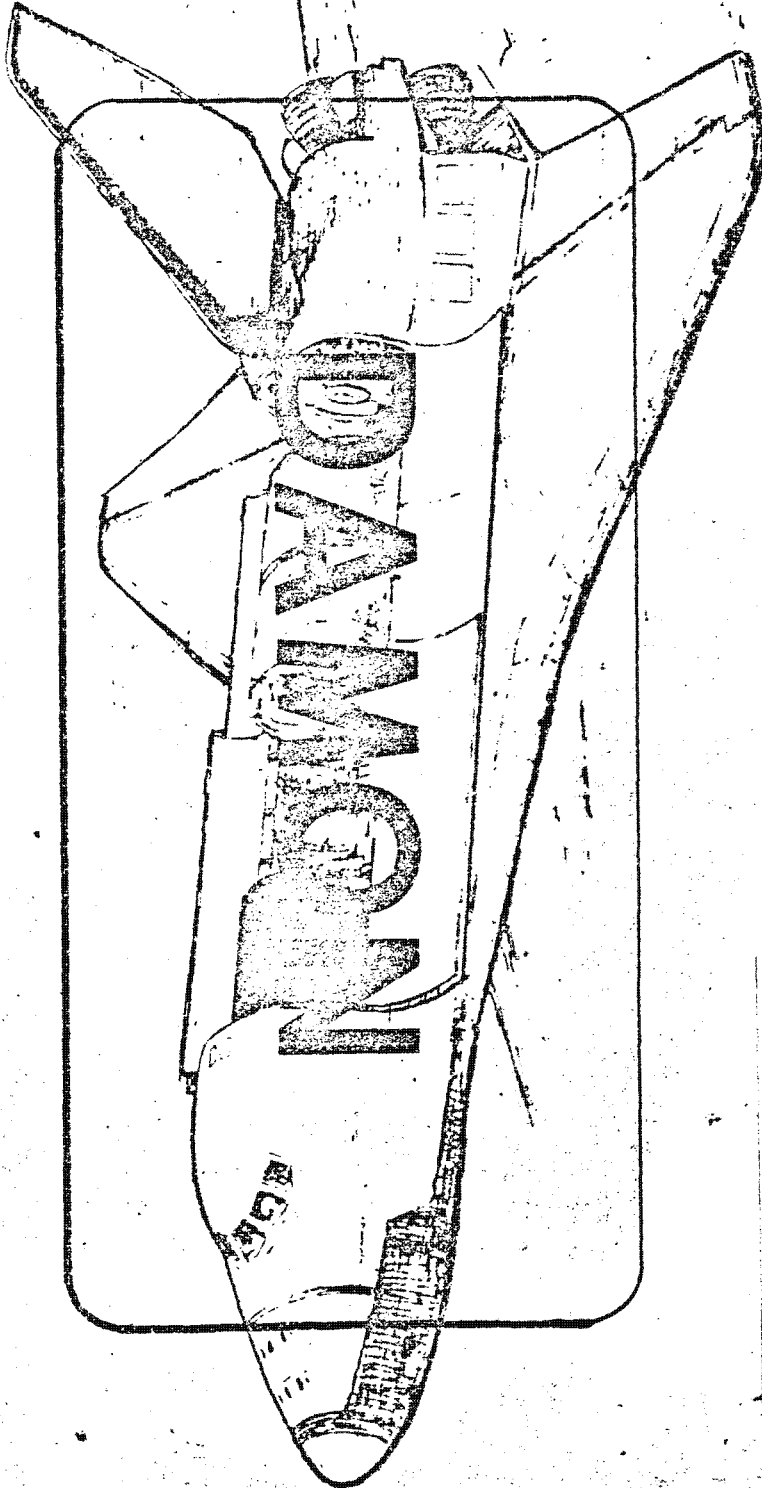


CLASSIFIED BY: BYE-1  
REVIEW ON 5 March 2000



~~TOP SECRET/DA~~

Tab A

BYE-1674-80

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~~TOP SECRET/DA~~

HANDLE VIA BYEMAN  
CONTROL SYSTEM ONLY

BEST COPY  
AVAILABLE

# PURPOSE

- INTRODUCTION TO THE DAMON EXPERIMENT TO THE COMMUNITY
  - CAPABILITIES
  - TRADE OFFS
  
- OBTAIN COMMUNITY INVOLVEMENT
  - REQUIREMENTS DEVELOPMENT
  - MISSION PLANNING
  - TASKING
  - EXPLOITATION

Approved for Release: 2019/06/18 C05124090

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## BRIEFING OUTLINE

- PROGRAM DEFINITION
- STS/PAYLOAD DESCRIPTION
- SYSTEM CHARACTERISTICS
- UTILITY
- COVERAGE CASE STUDY
- OPERATIONS CONCEPT
- SUMMARY

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~~TOP SECRET/D/H~~

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# PROGRAM DEFINITION

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Tab A

UNCLASSIFIED

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UNCLASSIFIED

COMIREX-M-358  
BYE-1674-80  
Tab A

## BACKGROUND

- IMPACT OF STS ON NRO/NRP
- CONGRESSIONAL FY-79 DIRECTIVES
- DCI RESPONSE
- SALT II
- PRESIDENT'S FY-80 BUDGET

~~TOP SECRET/D/H~~

A - 6

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## CONGRESSIONAL DIRECTION

- DAMON IS EXPERIMENTAL
- NOT AN OPEATIONAL SYSTEM

A - 7

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# WHAT IS DAMON?

- PALLETIZED PHOTO RECON SYSTEM
- APPROVED SHUTTLE FLIGHTS IN 1982, 1983
- FIRST DOD SHUTTLE FLIGHT
- FIRST NRO SHUTTLE MISSION

COMIREX-M-358  
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Tab A

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# OBJECTIVES

## PRIMARY OBJECTIVES

- ESTABLISH PRECEDENCE OF USE OF STS FOR RECONNAISSANCE OPERATIONS
- DEVELOP TECHNICAL DATA INPUTS AND OPERATIONAL EXPERIENCE REQUIRED FOR FUTURE OPERATIONAL SYSTEMS
- ACQUIRE USEFUL PHOTOGRAPHIC INTELLIGENCE

## COROLLARY OBJECTIVES

- EVALUATE MAN/SYSTEM INTERACTION ROLES IN MISSION ACCOMPLISHMENT
- EVALUATE BENEFITS OF ORBITER SUPPORT SYSTEMS
- DEVELOP DATA SOURCE FOR OTHER SYSTEMS

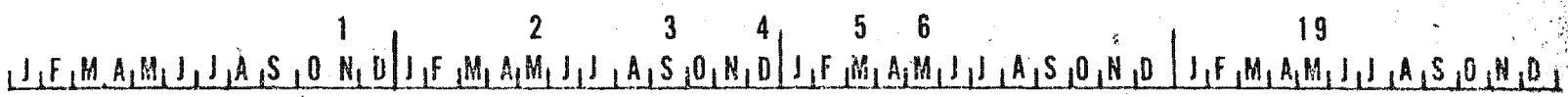
~~TOP SECRET/D/H~~

A - 9

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# PROGRAM SCHEDULE

FLIGHT #

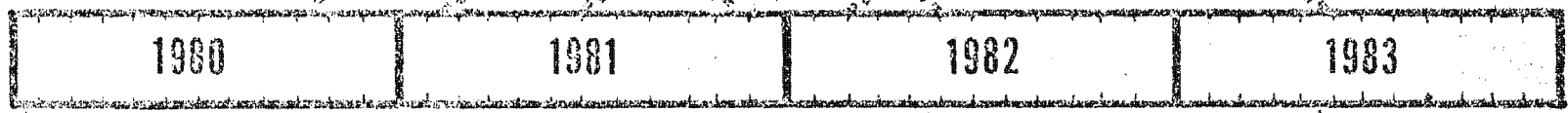
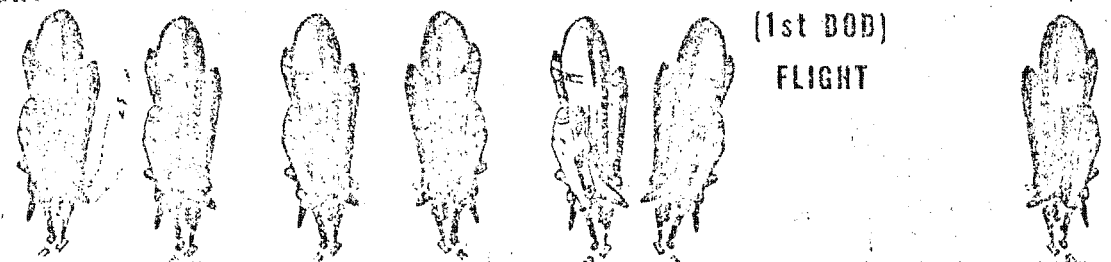


SHUTTLE  
MILESTONES

(1st SHUTTLE)  
FLIGHT

(1st OPERATIONAL)  
FLIGHT

(1st DOD)  
FLIGHT



CONTRACT  
AWARD PDR

↑  
CDR

BEGIN  
ACCEPTANCE  
TESTING

↑  
HARDWARE  
DELIVERY

↑  
1st DAMON

↑  
2nd DAMON

DAMON  
MILESTONES

~~TOP SECRET/D/H~~

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COMIREX-M-358  
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Tab A

# STS/PAYLOAD DESCRIPTION

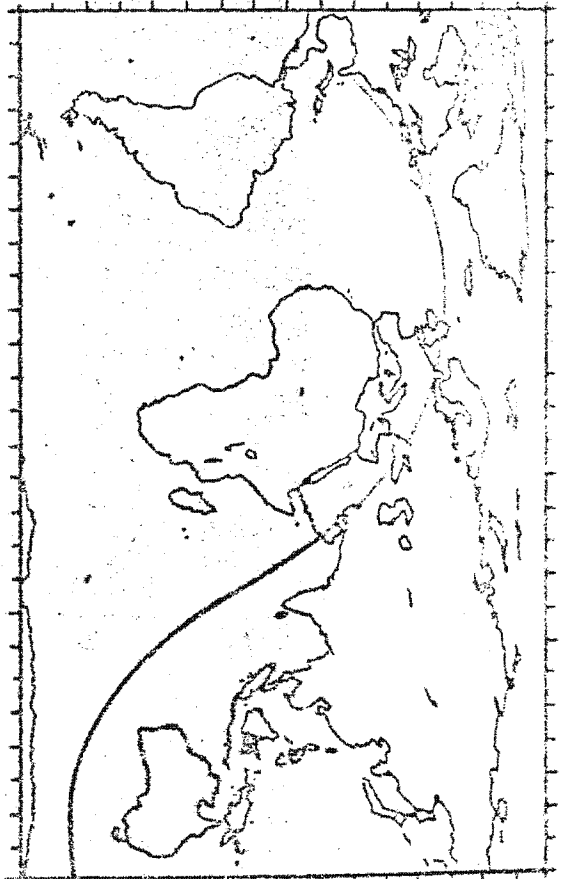
~~TOP SECRET/D/H~~

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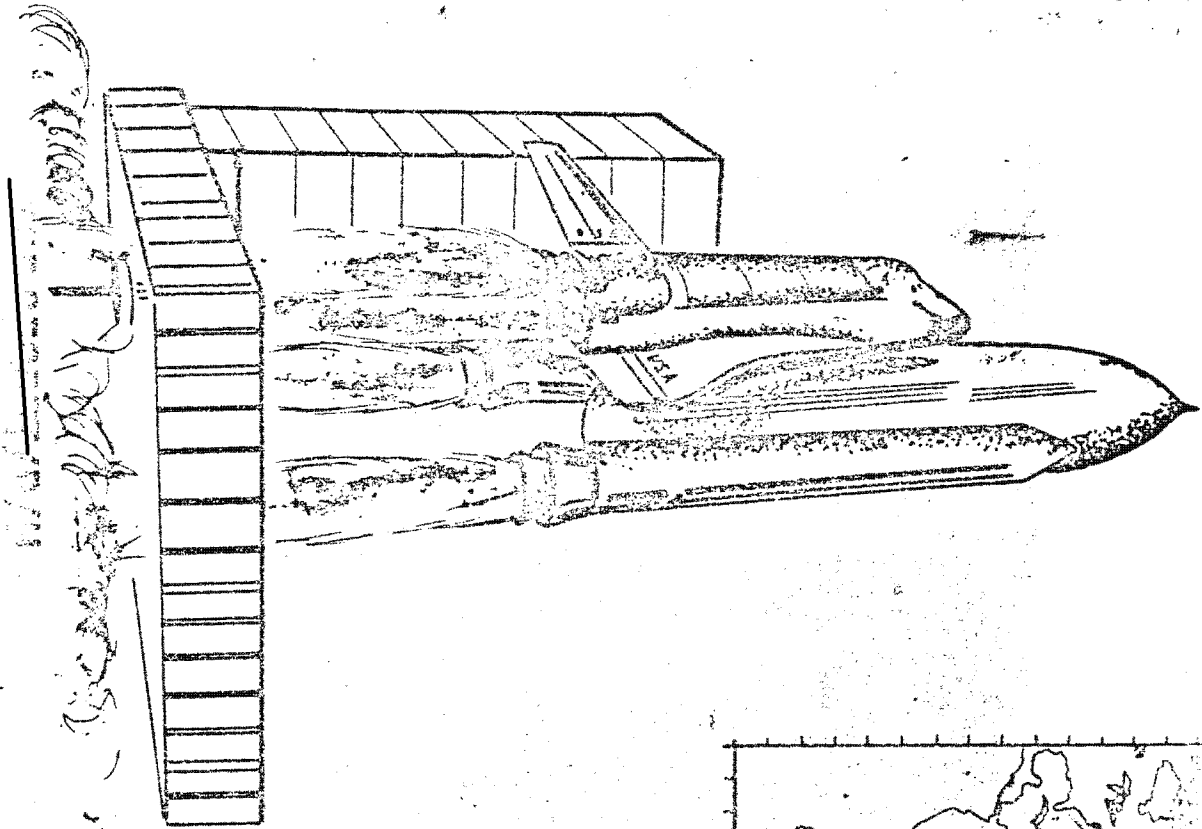
# EARLY STS CAPABILITIES

COMIREX-M-358  
BYE-1674-80  
Tab A



## NOMINAL:

LAUNCH SITE: ETR  
INCLINATION: 57° MAX  
ALTITUDE: 150 NM  
DURATION: 7 DAYS



Handed to the program by the Air Force Research and Development Command Systems Jointly

# SYSTEM CHARACTERISTICS

## CAMERA

HEXAGON TWO CAMERA ASSEMBLY

## FILM CAPACITY

80 K FEET UUTB  
(40 K FEET EACH CAMERA)

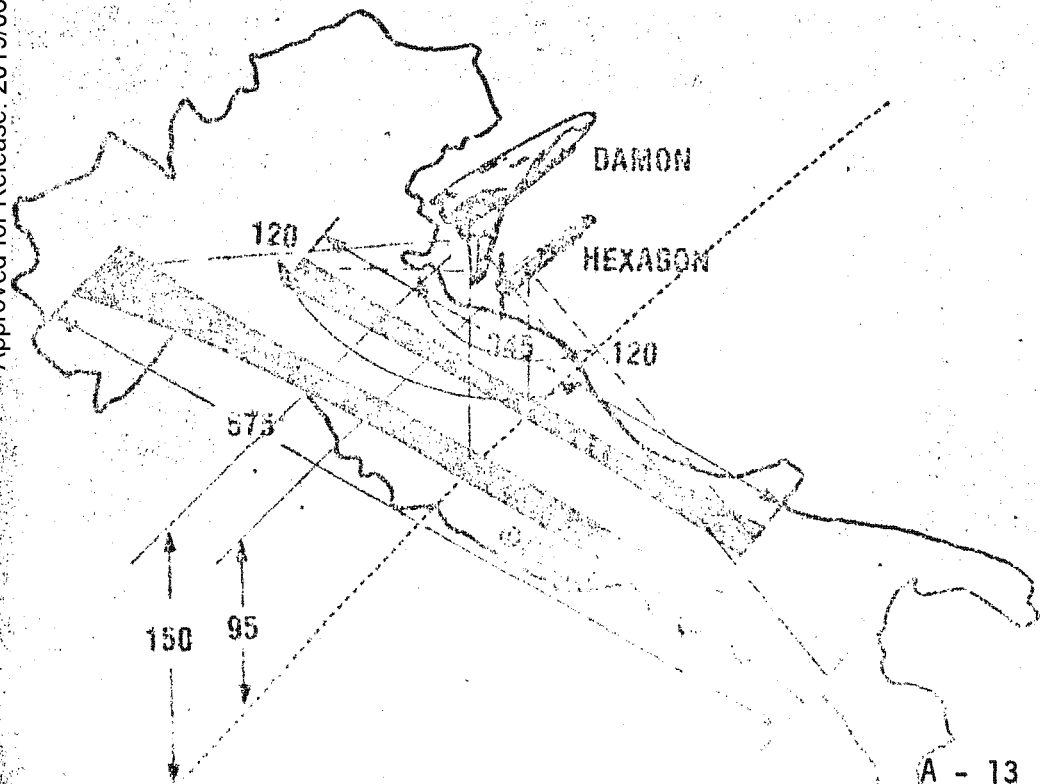
## FILM TYPES

BLACK & WHITE (SO-315)  
COLOR (SO-255)



## SCALE

190 K:1 AT NADIR  
400 K:1 AT 60° OBLIQUITY

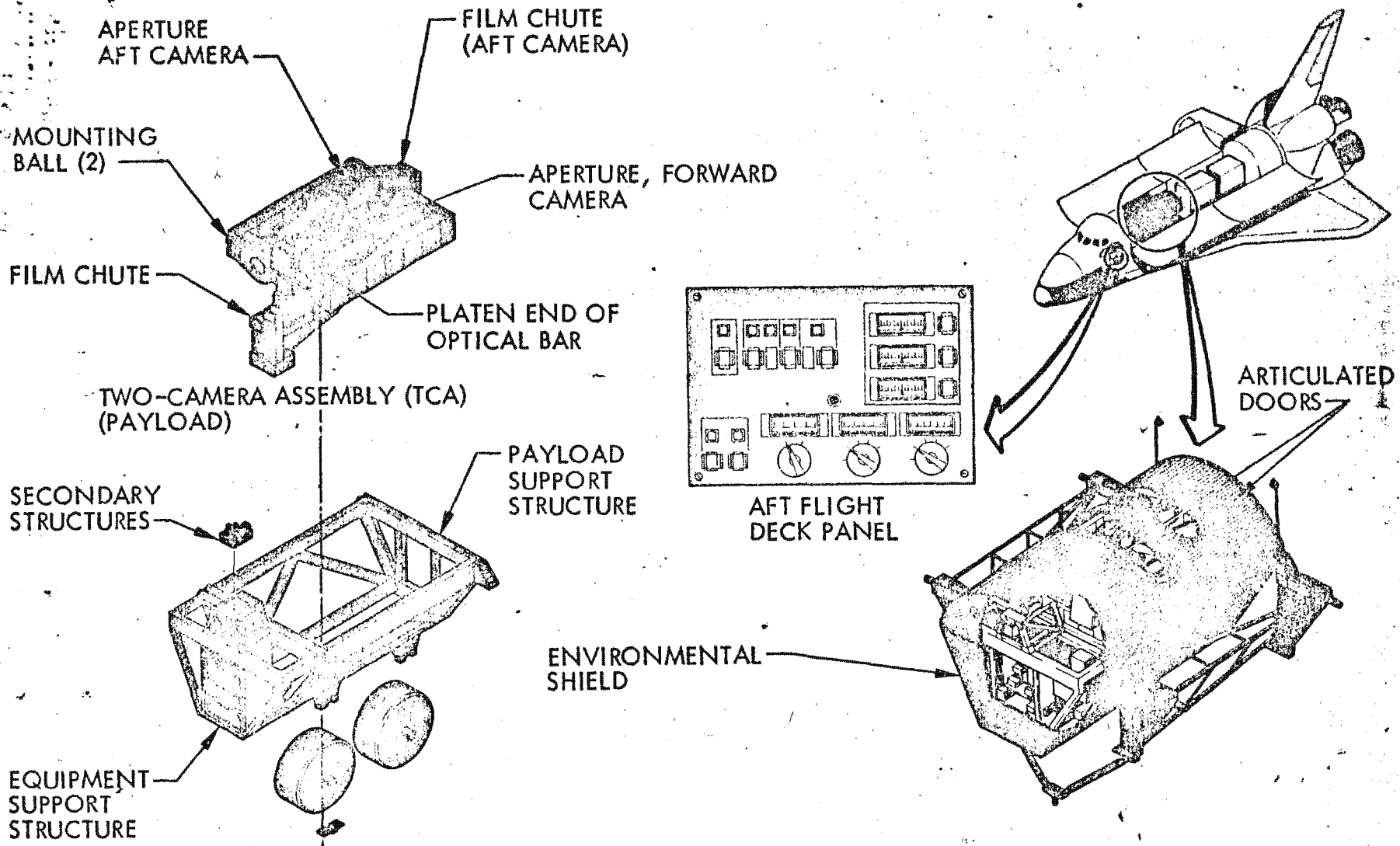


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# SPACECRAFT ASSEMBLY



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Tab A

# SYSTEM ORBIT CHARACTERISTICS

~~TOP SECRET/D/H~~

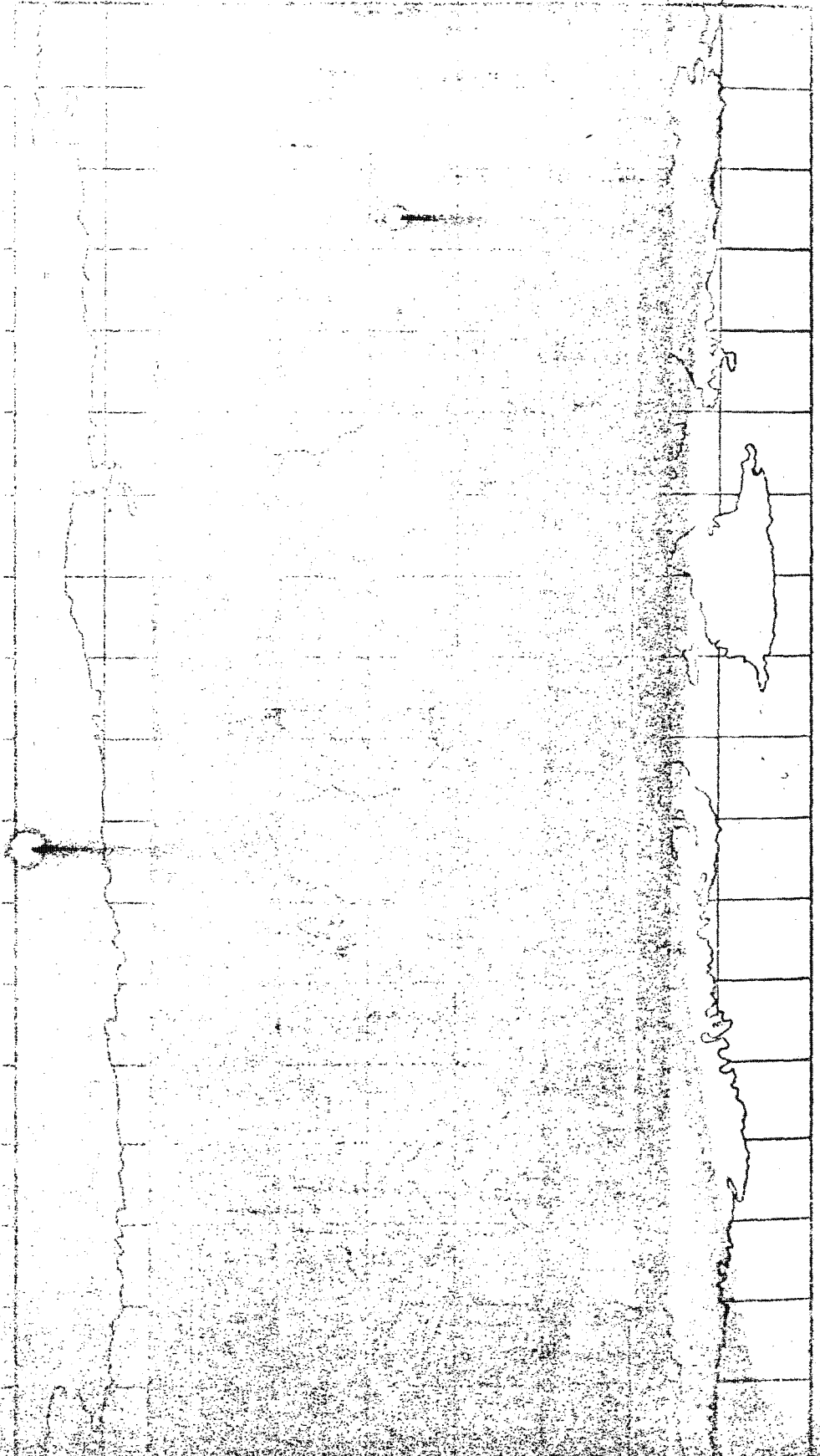
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NUMBER OF  
ACCESS IN  
DAYS

# GEOGRAPHICAL ACCESS

COMIREX-M-358  
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Tab A



LONGITUDE: 57°      ALTITUDE: 150 NM      MAX QUALITY: 45°

PERCENT OF ANNUAL REQUIREMENTS ACCESSED: 85%

~~TOP SECRET/D/H~~

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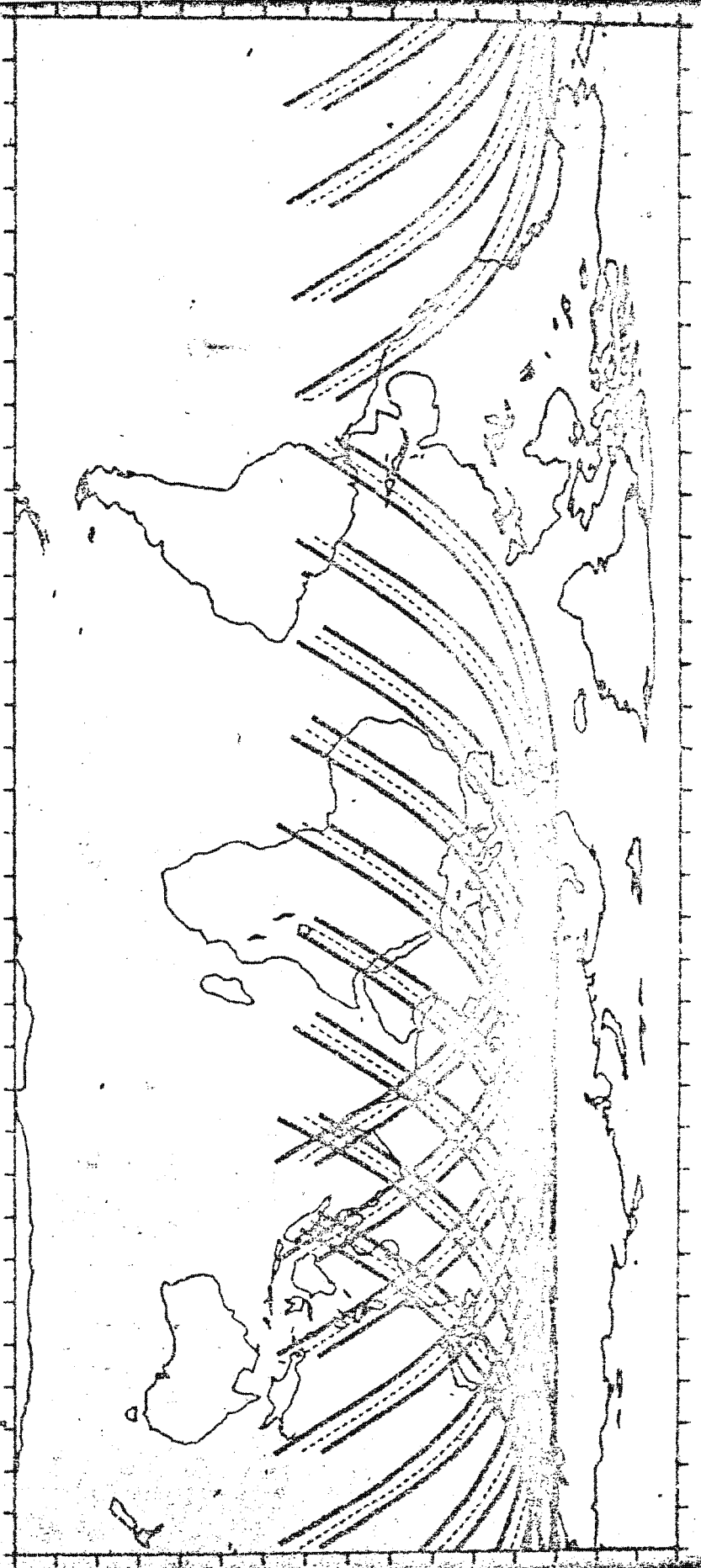
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01-H

ACCESS

COMIREX-M-358  
BYE-1674-80  
Tab A



INCLINATION: 57°

ALTITUDE: 150 NM

SWATH: 45°

LAUNCH TIME 1300Z (0800 EST)

~~SECRET/D/H~~

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# ORBIT IMPACTS

COMIREX-M-358  
BYE-1674-80  
Tab A

## LAUNCH TIME

- TIME OF LAUNCH DETERMINES LIGHTING PROFILES FOR PHOTOGRAPHY

## INCLINATION

- LOCAL IMAGING TIME VARIES UP TO 12 HOURS ON ANY GIVEN REV
- LOCAL TIME AND SUN ANGLE WALK EACH DAY

A - 18

~~TOP SECRET/D/H~~

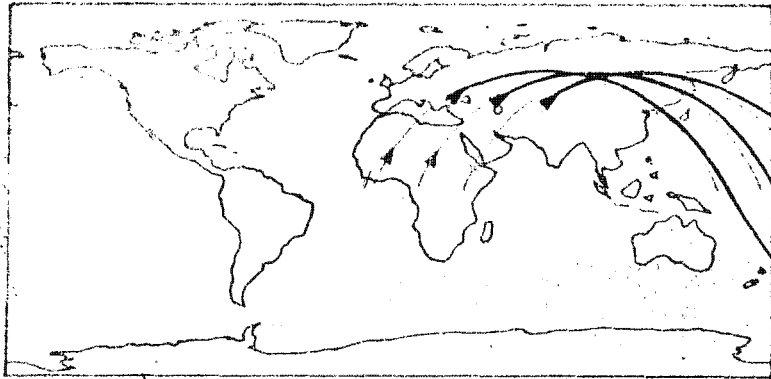
Handle Via BYEMAN/TALENT-KEYHOLE Control Systems Jointly

# LAUNCH TIME IMPACTS

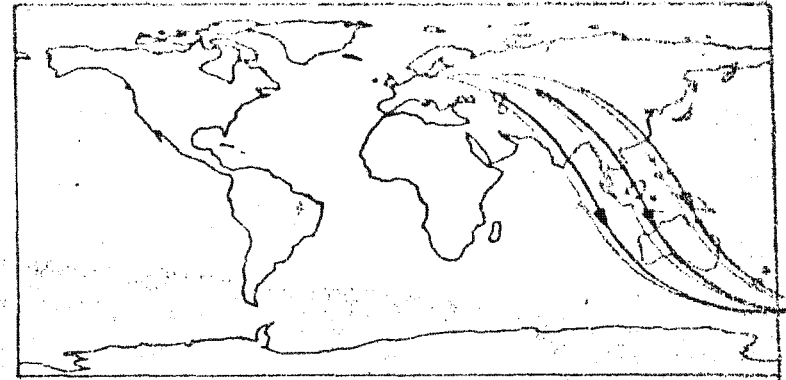
COMIREX-M-358

BYE-1674-80

Tab A



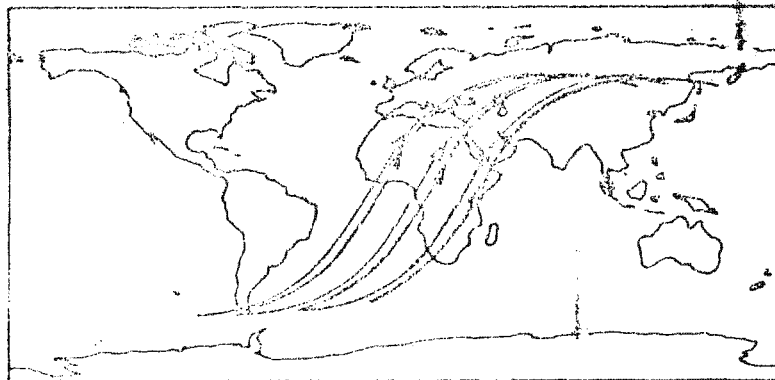
LAUNCH TIME: 1300Z (0800 EST)  
LOW CONSTANT SUN ANGLES  
MAXIMUM NORTHERN HEMISPHERE ACCESS



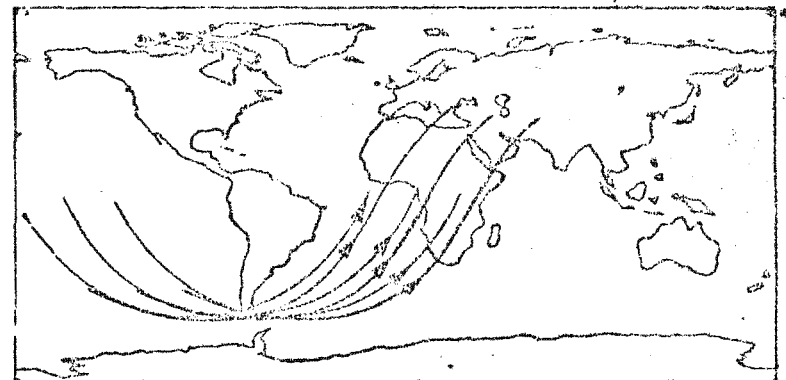
LAUNCH TIME: 0700Z (0200 EST)  
LOW -HIGH SUN ANGLES  
WORLD WIDE ACCESS

- DAY LIT PASSES DAY 1
- DAY LIT PASSES DAY 6

INC 57°  
ALT 150 NM



LAUNCH TIME: 1900Z (1400 EST)  
LOW-HIGH SUN ANGLES  
WORLD WIDE ACCESS



LAUNCH TIME: 0100Z (2000 EST)  
LOW CONSTANT SUN ANGLES  
MAXIMUM SOUTHERN HEMISPHERE ACCESS

~~SECRET/D/W~~

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~~TOP SECRET/D/H~~

**UTILITY**

A - 20  
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BYE-1674-80  
Tab A

COMIREX-M-358  
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Tab A

# UTILITY

- ECONOMIC ANALYSIS
- DRUG MONITORING
- CIVIL APPLICATIONS
- CC&D
- UNDERWATER MAPPING
- NUCLEAR FACILITIES SEARCH
- UPDATE CERTAIN MAP PRODUCTS
- DEVELOP 3RD WORLD SEARCH DATA BASE
- AUGMENT EXISTING SEARCH SYSTEMS

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~~TOP SECRET/D/H~~

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Tab A

# COVERAGE CASE STUDY

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A - 22

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(b)(1)  
(b)(3)

COMIREX-M-358

BYE-1674-80

Tab A

SDR#

## SIMULATION ASSUMPTIONS

- KH-9  ARE FLYING AND HEALTHLY
- STANDARD SHUTTLE ORBIT
- THE SHUTTLE IS A STABLE PLATFORM
- NO RESTRICTIONS DUE TO SHARED RIDE
- SHUTTLE ORIENTED FOR PHOTOGRAPHY
- NO ADVERSE MANNED IMPACT TO MISSION OPS

~~TOP SECRET~~

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# SIMULATED NEEDS

COMIREX-M-358  
BYE-1674-80  
Tab A

AREA  
(MSQNM)

10	3.6
11	11.6
12	5.4

A - 24

Handle Via BYEMAN/TALENT/KEYHOLE Control Systems Jimmy

~~TOP SECRET/D/MI~~



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(b)(1)  
(b)(3)

# SIMULATION CONDITIONS

COMIREX-M-358  
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Tab A

CAMERA SYSTEM: SAME OPTICS AS HEXAGON

FILM LOAD:



BLACK & WHITE

FOR EACH STEREO PAIR

BLACK & WHITE FOR ALL MONO OPERATIONS

## ORBIT

INCLINATION: 57<sup>0</sup>

ALTITUDE: 154 NM CIRCULAR

LAUNCH DATE: 18 SEPTEMBER

LAUNCH TIME: 0845Z

WEATHER: 1974, 3D-NEPH, 1200L

NIIRS MODEL: SIMPLIFIED HEXAGON MODEL

STATUS: FROM HEXAGON MISSION 1214

MAX OBLIQUITY: 45<sup>0</sup>

A - 26

~~TOP SECRET/D/H~~

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## SIMULATION LIMITATIONS

- USES 1200L WEATHER REGARDLESS OF LOCAL TIME OF ACCESS
- FORECAST SKILL IS MODELED FROM HEXAGON
- ONLY ONE REQUIREMENT PER CELL CONSIDERED IN TASKING
- FILM STACK IS BUILT POST-SIMULATION

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~~TOP SECRET/D/H~~

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(b)(1)  
(b)(3)

# SIMULATION ACCOMPLISHMENT (MSQNM)

COMIREX-M-358  
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Tab A

<u>NEED</u>	<u>UNIQUE AREA</u>	<u>DUE FOR COLLECTION</u>	<u>IMAGED UNIQUELY CLOUD-FREE</u>
NON-METRIC MC&G	11.6	11.6	5.4
STANDING SEARCH	5.4	3.2	1.7
	<hr/>	<hr/>	<hr/>
	20.6	18.4	9.4

**GROSS AREA**

IMAGED : 23.3

CLOUD FREE : 13.9

A - 28

~~TOP SECRET/D/H~~

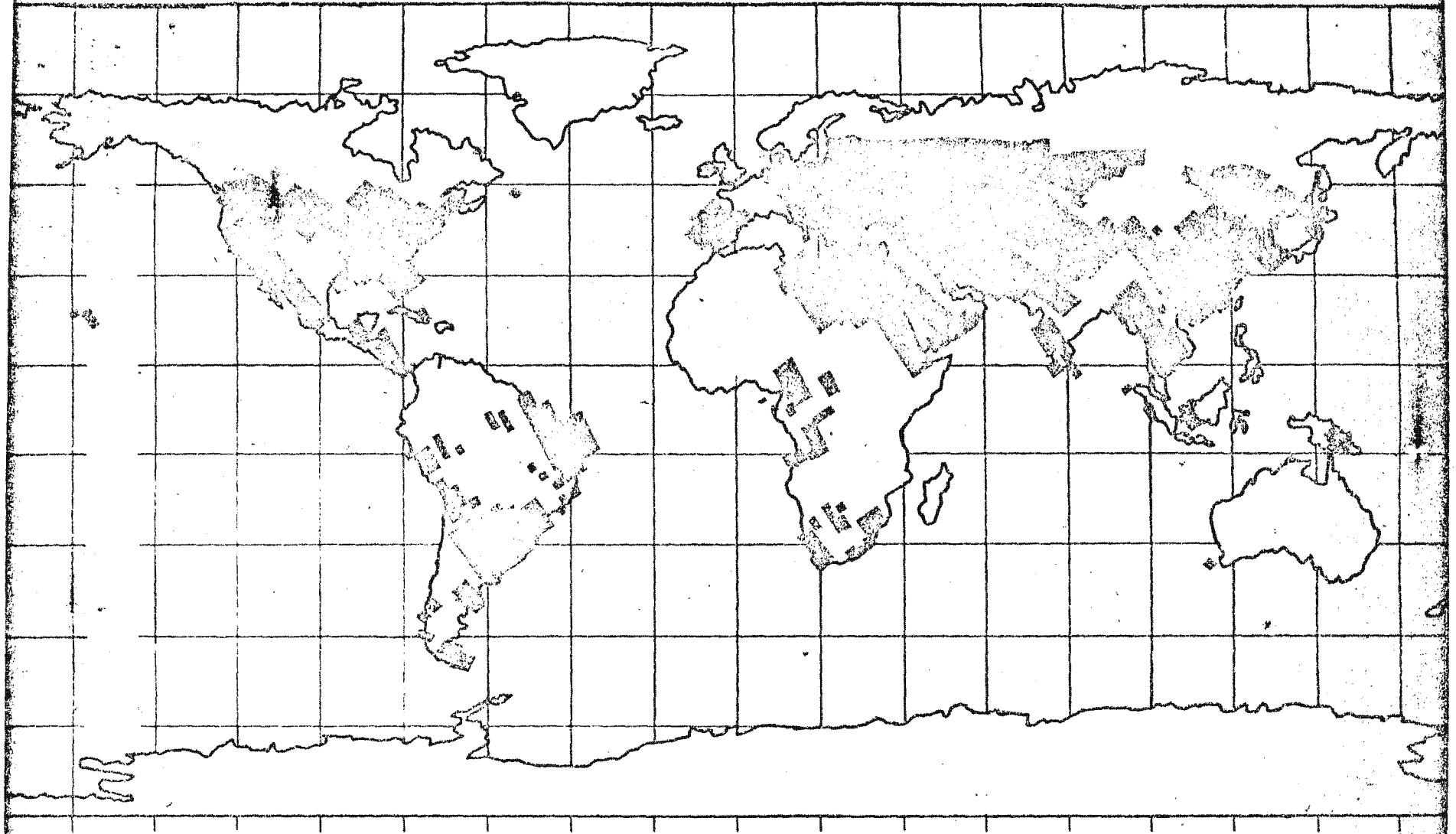
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# SIMULATED COVERAGE

COMIREX-M-358  
BYE-1674-80  
Tab A

0110

STEREO



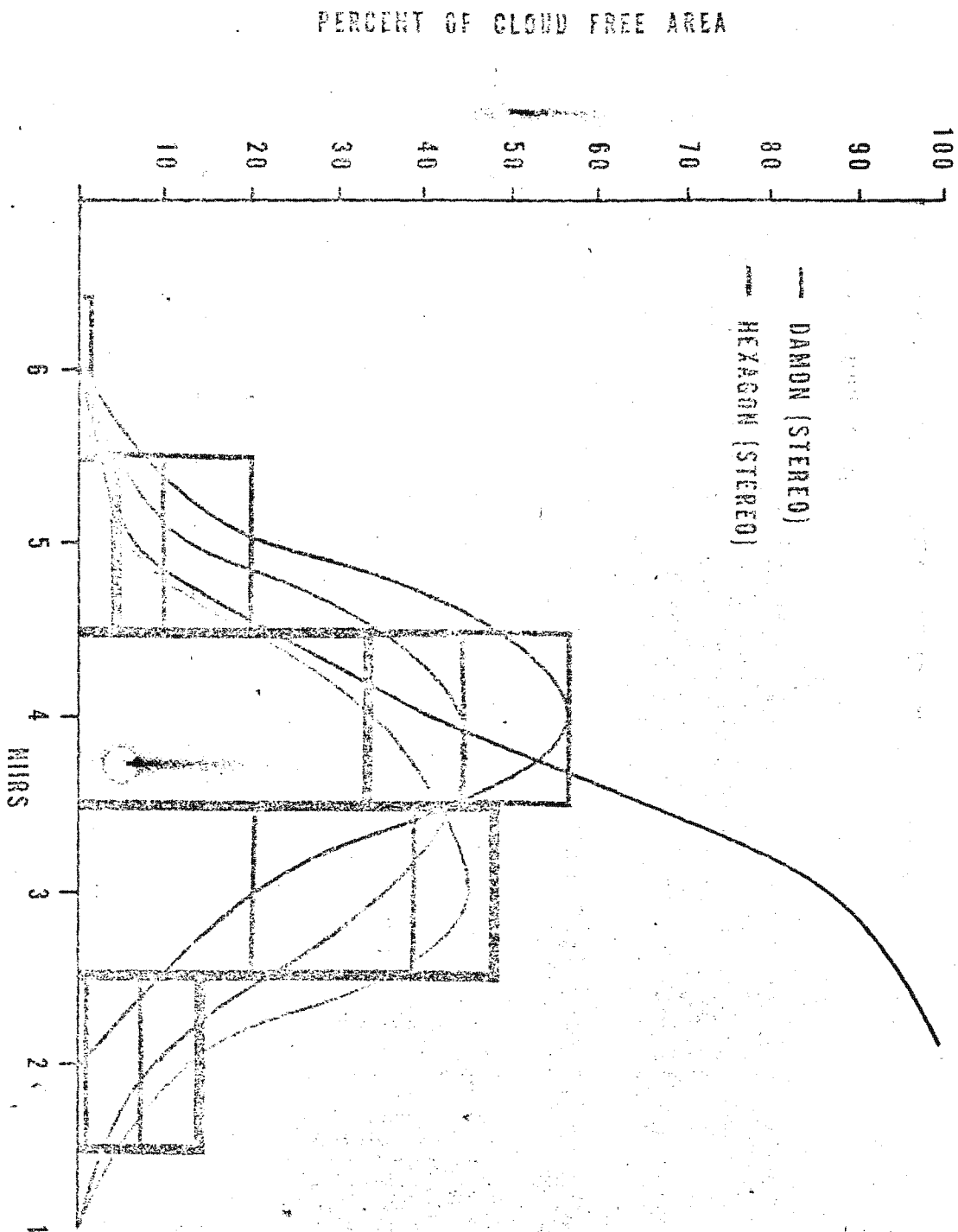
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# PIPS DISTRIBUTION

COMTEX-M-358  
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Tab A



~~TOP SECRET/U/M~~

A - 30  
Handle Via EYEMAN/TALENT/KEYHOLE Control Systems Unit

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Tab A

# OPERATIONS CONCEPT

~~TOP SECRET/D/H~~

A - 30

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## GROUND-RULES

- INTERFACES CLOSE AS POSSIBLE TO HEXAGON
- NO ON ORBIT INTERACTION BETWEEN DAMON AND HEXAGON
- MINIMUM BYEMAN IMPACT ON SHUTTLE

~~TOP SECRET/D/H~~

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(b)(1)  
(b)(3)

COMIREX-M-358  
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Tab A

## INTERFACES

- COMIREX - PLANNING, TASKING, EXPLOITATION
- GWC - PREDICTED AND VERIFIED WEATHER



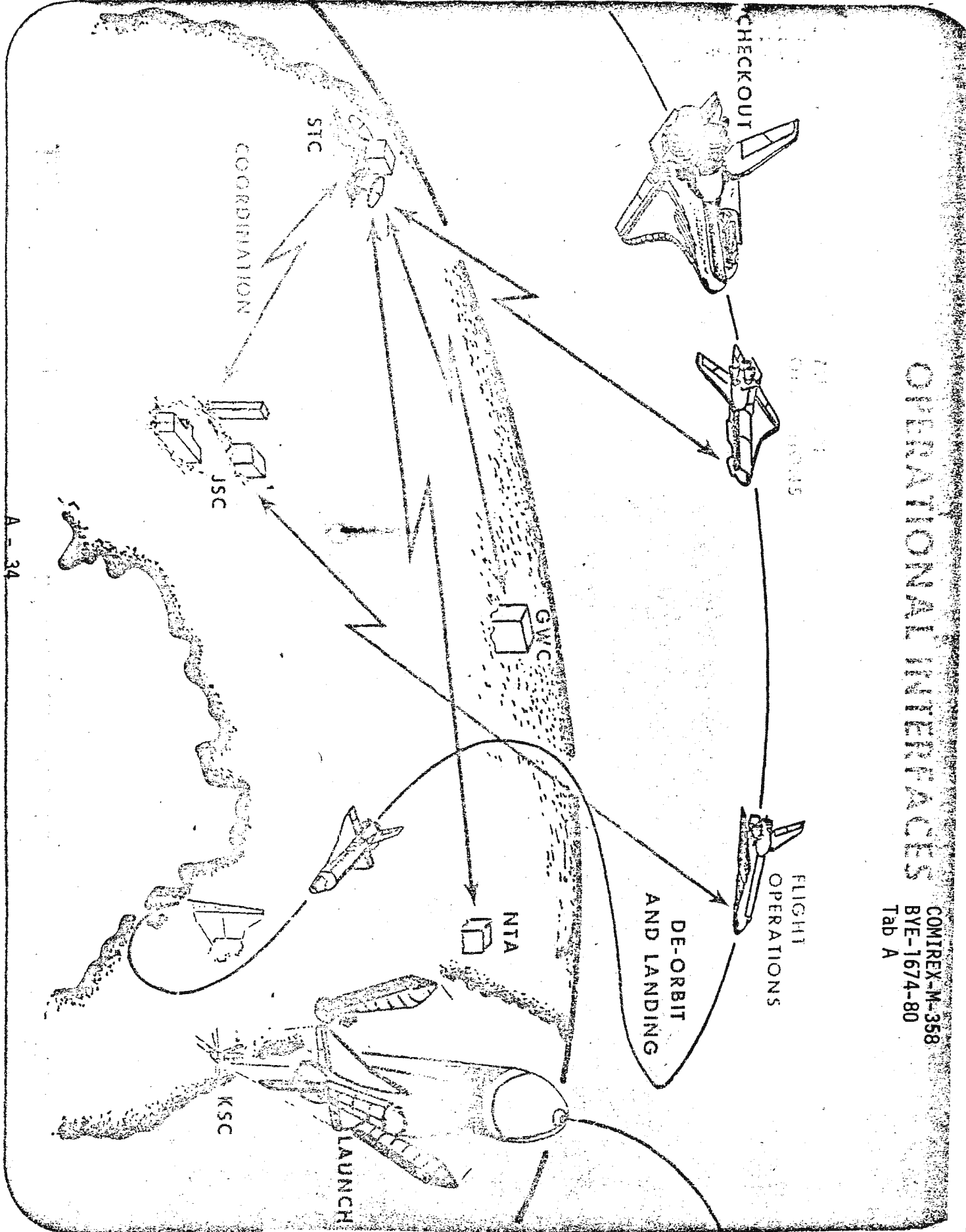
~~TOP SECRET/D/H~~

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# OPERATIONAL INTERFACES

COMIREX-M-358  
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Tab A



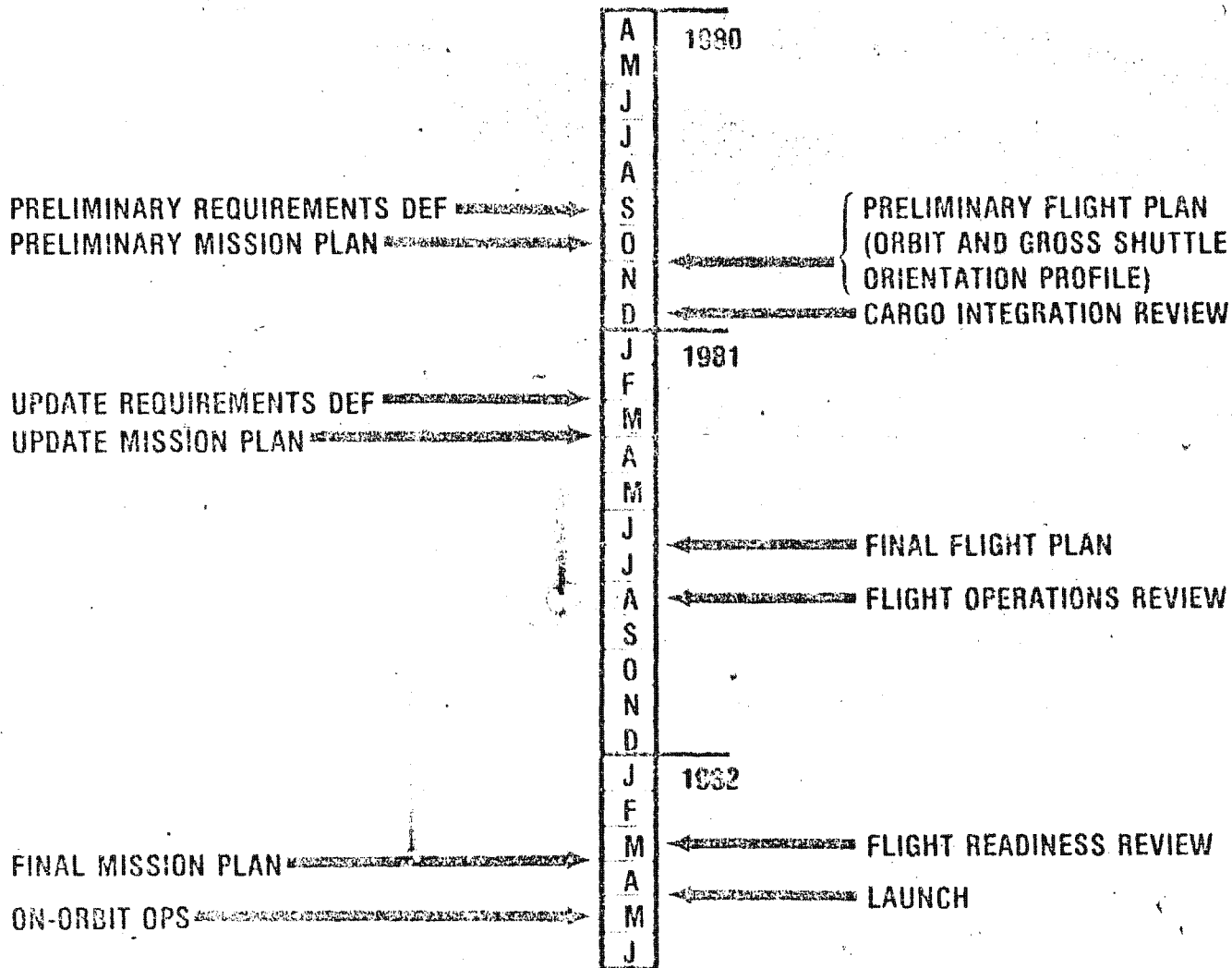
A-34

# PLANNING SCHEDULE

COMIREX-M-358  
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Tab A

## INTELLIGENCE COMMUNITY DECISION POINTS

## NASA MILESTONES



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~~TOP SECRET/D/H~~

# SUMMARY

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Tab A

# SUMMARY

COMIREX-M-358  
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Tab A

## DAMON

- IS AN APPROVED EXPERIMENT
- PROVIDES EARLY STS EXPERIENCE
- INTRODUCES STS INVOLEMENT IN INTELLIGENCE COLLECTION
- PROVIDES A UNIQUE CAPABILITY TO EVALUATE  
NEW CONCEPTS IN THE STS ERA
- IS A COMMUNITY OPPORTUNITY

COMMUNITY INVOLEMENT IS NEEDED TO REAP MAXIMUM BENEFITS  
FROM THIS EXPERIMENT

- LESSONS LEARNED
- INTELLIGENCE PRODUCT

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