PURPOSE

- INTRODUCE THE DAMON EXPERIMENT TO THE COMMUNITY
  - CAPABILITIES
  - TRADE OFFS

- OBTAIN COMMUNITY INVOLVEMENT
  - REQUIREMENTS DEVELOPMENT
  - MISSION PLANNING
  - TASKING
  - EXPLOITATION

TOP SECRET/D/H

Handle Via BYEMAN/TALENT KEYHOLE Control Systems Jointly
BRIEFING OUTLINE

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

Handle Via BYEMAN/TALENT/KEYHOLE Control Systems Jointly
BACKGROUND

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

- DAMON IS EXPERIMENTAL

- NOT AN OPERATIONAL SYSTEM
WHAT IS DAMON?

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

TOP-SECRET/D/H

Handle Via BYEMAN/TALENT-KEYHOLE Control Systems Jointly
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
Handle Via BYEMAN/TALENT KEYHOLE-Control System Only
PROGRAM SCHEDULE

FLIGHT #

<table>
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<tr>
<th>1</th>
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</table>

(1st SHUTTLE) FLIGHT

(1st OPERATIONAL) FLIGHT

(1st DOB) FLIGHT

SHUTTLE MILESTONES

1980

1981

1982

1983

CONTRACT AWARD

PDR

CDR

BEGIN ACCEPTANCE TESTING

1st DAMON

HARDWARE DELIVERY

2nd DAMON

DAMON MILESTONES

SECRET/D/H

Handle Via BYEMAN/TALENT-KEYHOLE Control Systems Jointly
STS/PAYLOAD DESCRIPTION

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Handle Via BYEMAN/TALENT KEYHOLE Control Systems Jointly
SYSTEM CHARACTERISTICS

CAMERA
HEXAGON TWO CAMERA ASSEMBLY

FILM CAPACITY
80 K FEET UUTO
(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

APERTURE AFT CAMERA

MOUNTING BALL (2)

FILM CHUTE (AFT CAMERA)

APERTURE, FORWARD CAMERA

FILM CHUTE

PLATEN END OF OPTICAL BAR

TWO-CAMERA ASSEMBLY (TCA) (PAYLOAD)

PAYLOAD SUPPORT STRUCTURE

SECONDARY STRUCTURES

AFT FLIGHT DECK PANEL

ARTICULATED DOORS

ENVIRONMENTAL SHIELD

A - 14

TOP SECRET/DA
ORBIT IMPACTS

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
LAUNCH TIME IMPACTS

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

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

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

INC 57°
ALT 150 NM

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

LAUNCH TIME: 0100Z (0600 EST)
LOW CONSTANT SUN ANGLES
MAXIMUM SOUTHERN HEMISPHERE ACCESS

Handle Via BYE/TO/TALENT KEYHOLE Control System Jointly
AUGMENT EXISTING SEARCH SYSTEMS

DEVELOP 3RD WORLD SEARCH DATA BASE

UPDATE CERTAIN MAP PRODUCTS

NUCLEAR FACILITIES SEARCH

UNDERWATER MAPPING

CD

CIVIL APPLICATIONS

DRUG MONITORING

ECONOMIC ANALYSIS

UTILITY
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
Page Denied
SIMULATION CONDITIONS

CAMERA SYSTEM: SAME OPTICS AS HEXAGON

FILM LOAD: BLACK & WHITE
FOR EACH STEREO PAIR
BLACK & WHITE FOR ALL MONO OPERATIONS

ORBIT

INCLINATION: 57°
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°
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
## SIMULATION ACCOMPLISHMENT (MSQNM)

<table>
<thead>
<tr>
<th>NEED</th>
<th>UNIQUE AREA</th>
<th>DUE FOR COLLECTION</th>
<th>IMAGED UNIQUELY CLOUD-FREE</th>
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<tbody>
<tr>
<td>NON-METRIC MC&amp;G</td>
<td>11.6</td>
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<td>STANDING SEARCH</td>
<td>5.4</td>
<td>3.2</td>
<td>1.7</td>
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<td><strong>GROSS AREA</strong></td>
<td><strong>20.6</strong></td>
<td><strong>18.4</strong></td>
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**IMAGED** : 23.3
**CLOUD FREE** : 13.9

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Handle Via BYEMAN/TALENT KEYHOLE Control Systems Jointly
OPERATIONS CONCEPT

Handle Via BYEMAN/TALENT-KEYHOLE Control Systems Jointly
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

Handle Via BYEMAN/TALENT-KEYHOLE Control Systems Jointly
INTERFACES

- COMIREX - PLANNING, TASKING, EXPLOITATION

- GWC - PREDICTED AND VERIFIED WEATHER

TOP-SECRET/D/H

Handle Via BYEMAN/TALENT-KEYHOLE Control Systems Jointly
### PLANNING SCHEDULE

#### INTELLIGENCE COMMUNITY

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<td>1981 PRELIMINARY FLIGHT PLAN (ORBIT AND GROSS SHUTTLE ORIENTATION PROFILE)</td>
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<td>1981 PRELIMINARY MISSION PLAN</td>
<td>1981 CARGO INTEGRATION REVIEW</td>
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<td>1981 UPDATE REQUIREMENTS DEFINITION</td>
<td>1982 FINAL MISSION PLAN</td>
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<td>1982 UPDATE MISSION PLAN</td>
<td>1982 FINAL FLIGHT PLAN</td>
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### TOP-SECRET/D/H

Handle Via BYEMAN/TALENT-KEYHOLE Control Systems Jointly

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SUMMARY

DAMON

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

COMMUNITY INVOLMENT IS NEEDED TO REAP MAXIMUM BENEFITS FROM THIS EXPERIMENT

- LESSONS LEARNED
- INTELLIGENCE PRODUCT

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TOP SECRET/D/H