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POINT PAPER

ON

DAMON

14 Apr pm

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o Objectives

- Establish precedent for reconnaissance from Shuttle
- Develop experience and technical data base to integrate payloads on STS
- Acquire useful intelligence to supplement [redacted] HEXAGON between now and 1984

  -- Limited NRP resources for 1982 and 1983

     --- Two HEXAGON flights
     --- [redacted] (b)(1) (b)(3)
     --- One GAMBIT flight

- Current problems

  -- Launch slip of three-four months
  -- On-orbit failures

- DAMON suitability as backup/gap filler

  -- Orbit optimized for crisis with up to three accesses per day for six days
  -- Synoptic coverage in seven days - up to 80,000 feet of black and white, color, [redacted] (b)(1) (b)(3)
  -- NIIRS 3-5 stereo
  -- Sixty day launch capability worst case after first turnaround

- DAMON suitability as low quality collector
- Evaluate utility of man in mission enhancement
- Evaluate benefits/impacts of orbiter services
- Develop a data source for other NRO [redacted] DoD systems

o Need

- DAMON is important due to [redacted] HEXAGON problems as a potential backup and supplemental collection system through 1984 (b)(1) (b)(3)
- DAMON follow-on could [redacted] HEXAGON and GAMBIT are phased out in 1985
- Without DAMON, [redacted] becomes Pathfinder at KSC
- DAMON will develop interfaces with people, facilities, timelines, procedures, security, ground flow and communication links at KSC and JSC

[redacted] (b)(1) (b)(3)

HEXAGON GAMBIT

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o Hardware: Lockheed Prime/Perkin-Elmer (P-E) Camera Subcontractor

- Proven HEXAGON two-camera assembly (TCA)
- Orbiter independent command, control, telemetry operation
- Support assembly for structure and orbiter bay interface

o Lockheed/P-E selection minimizes cost/technical risk

- Known and reliable camera system
- Existing operational software/procedures
- Substantial levels of GFE manpower and hardware are provided from on-going programs (GAMBIT and HEXAGON)
- Provides known data base for comparison with data obtain with STS operational use

o Performance

- NIIRS 3-5 range, 45" GRD average at 150 NM
- 12-15 million square nautical miles gross in six-day mission (80,000 Ft SO-315 film)
- 57° inclination orbit, 110-150 NM perigee expected

o First flight May 1982 (STS Flight 6)/second flight May 1983 (STS Flight 19) - Refurbish/refly on limited basis through 1984

Perceived Needs in the Post-85 Approved NRP Program

o Post-85 NRO imaging program has less capability than present

o Perceived needs include:

- Synoptic collection capability
- MC&G exploitation economy
- [redacted] (b)(1)
- Surge collection capability (b)(3)
- Back-up/alternate imaging capability
- Survivable imaging capability

Technical Alternatives to Fulfill Perceived Needs

o DAMON based concepts

- Minor modifications permit partial MC&G and additional reflights
- Major modifications permit full MC&G capability, quick reaction capability, [redacted] (b)(1) (b)(3)

o General pallet concepts

- Specialized mission pallets for extended experiments
- Multi-mission pallet capable of reconfiguration to supplement or to backup [redacted]

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

o Free flyer concepts

- STS launched on demand for supplement/backup to continuous surveillance missions
- STS launched [redacted] for quick reaction backup and surge search capability
- ELV launched on demand for crisis response and survivability/reconstitution of imaging capability

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

Program Review and Decision Milestones

o FY 80 program

- $16.5M for DAMON hardware acquisition
- $0M for supplement/backup systems study

o FY 81 program

- $21.7M requested for DAMON hardware and NASA flight cost reimbursement
- $4M requested for supplement/backup concept development and mission definition

o FY 82 program

- $25.8M requested for DAMON flight operations and pallet refurbishment
- $36M requested for initiation of competitive design contracts for required supplement/backup systems

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o NRO needs

- Precursor/Pathfinder for major NRO/STS payloads
- Imaging backup/gap filler
- MC&G experiment

o STS availability

- Importance of STS to NRP

  -- [redacted]
  -- [redacted] (b)(1)
  -- Post-85 all programs (b)(3)

- Issues to resolve

  -- Technical
  -- Security
  -- Procedural

- DAMON will resolve the issues early

  -- Planned mission #6 in May 1982
  -- Possible mission #5 in May 1982 - First operational flight
  -- Investigate mission #4 in May 1982 - Last oft
  -- Store for up to one year until STS is ready

As the STS slips

o Precursor/Pathfinder for NRO, STS payloads

- Why DAMON

  -- National security precedent
  -- Stress STS capabilities

     --- Non-trivial hardware to integrate
     --- Easily interpretable product to evaluate

  -- Provide useful imagery to supplement other systems

- Contributions already made

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HEXAGON [redacted] GAMBIT

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

-- Definitize STS performance, configuration and costing
-- Force security issue at Houston and KSC
-- [redacted] (b)(1) (b)(3)
-- Involve payload specialist in reconnaissance mission
-- Provide ride sharing opportunity - space sextant
-- Shorter integration schedule (21 versus 48 months)

- Pioneer innovative techniques for Shuttle era

-- Payload recovery and refurbishment
-- Cost saving techniques

--- Hardware design and test
--- Operations

o Backup/gap filler (after STS flies)

- Limited NRP resources for 1982 and 1983

-- Two HEXAGON flights
-- [redacted]
-- One GAMBIT flight

- Current difficulties

-- Launch slip of 3-4 months
-- On-orbit failures

- Desirable characteristics

-- Inexpensive hardware: $15M to go
-- Unprecedented responsiveness: crisis/backup

--- Priority from NCA
--- Inter-government transfer of previously appropriated funds

- DAMON suitability

-- Technical

--- Orbit optimized for crisis

---- Up to three accesses per day for six days

--- Synoptic coverage in seven or less days

---- Up to 80,000 feet of black and white, color, [redacted] (b)(1) (b)(3)

--- NIIRS 3-5 stereo

-- Programmatic

--- Schedule

---- 60 day launch capability worst case after first turnaround

--- Cost

---- $15M to complete hardware development
---- Recurring launch costs

o MC&G experiment

- Concern over method of satisfying DMA requirements after mid-80's

-- Harold Brown letter

- Low cost solution is Shuttle pallet, but DMA has concerns

-- Free flyer $800M versus STS pallet $50M - $300M
-- But there are STS issues

--- Stability
--- Coverage - weather
--- Accuracy
--- Image quality
--- Cost

- Important to conduct experiment to gather data on the issues

-- DAMON is fastest and cheapest way to gather valid data approximately $4M

o Conclusion

- Continue the DAMON program on schedule

-- Benefits are significant

--- Pathfinder
--- Backup
--- MC&G experiment

-- Not directly sensitive to STS schedule slips of up to six months
-- Costs are minimal