5

GAMBIT MISSION FACTORS

Situation: GAMBIT 52 is scheduled to launch prior to 1 Mar 81.

Issue: Should GAMBIT 51 be launched in place of GAMBIT 52?

A. GAMBIT vehicles' characteristics

1. GAMBIT 51

a. Low orbit, high resolution capability only; FY 82 programmatic decision to:

(1) not modify G-51 to dual mode configuration

(2) launch prior to July 1981

If G-51 is not launched prior to July 1981, it must be refurbished because of piece-part shelf life expirations. Dual mode modification is the most prudent action once refurbishment is initiated.

b. Mission capability is 120 days at 75 nm perigee (high resolution)

2. GAMBIT 52

a. Dual mode capability; can operate:

(1) complete mission for high resolution at 75 nm for 120 days.

(2) complete mission for broad area search (BAS) at 350-450 nm for 120 days.

(3) a mix of high resolution and BAS at two distinct altitudes for 120 days.

b. Mix of high resolution and BAS can be performed:

(1) high resolution (75 nm) for 35 days, followed by BAS (350 nm) for 85 days.

(2) BAS (350 nm) for 93 days, followed by high resolution (75 nm) for 27 days.

c. Propellant is the pacing constraint on the profile mixes:

(1) If the vehicle is committed to the BAS orbit first, the remaining propellant for reshaping the

orbit to low altitude and maintaining the orbit restricts the high resolution time span.

(2) If the vehicle is committed to the high resolution orbit first and the BAS orbit is to follow, the high resolution time span must be restricted to provide propellant for reshaping to a higher BAS orbit.

(3) Propellant restricts the mixes to finite choices; there are not infinite options to make "real time" changes. Once propellant is consumed, the expenditure is history, and further capabilities are limited by the remaining available propellant.

B. Mission Requirements

1. Three needs are readily identifiable in the near term:

a. High resolution technical intelligence: the last such mission was in the spring of 1979.

b. Agricultural and drug control analysis (color and false-color infrared film capabilities).

c. Assured imaging capability during the March through ~~June 1981 period~~ [redacted]

[redacted]

2.

a. G-51 can perform all three mission needs.

b. G-52 can perform all three mission needs <u>if</u> the orbit is restricted to only 75nm without a BAS capability. If a BAS option is selected with G-52, the missions are impacted:

(1) High resolution technical intelligence will be restricted to 30-35 days.

(2) Grain and drug analysis will be severely degraded because of radiation damage to the multispectral films during the high BAS orbit.

(3) Assured imaging, although possible, will be at lesser than possible quality during the BAS span.

3. BAS should not be a driving need in the March-June time frame. HEXAGON mission 1216 will be completed approximately 1 March 1981; current search status will be at a high satisfaction level.

C. Recommendation: GAMBIT 51 should be scheduled in place of GAMBIT 52 for the March 81 launch.

1. Either vehicle assures continued imaging capability
2. Only G-51 can fulfill the complete high resolution technical intelligence mission (unless G-52 were to fly a low altitude throughout it's mission life, which would be a waste of the capability since G-51 could do the same).
3. Only G-51 can fulfill agricultural and drug collection.
4. Holding G-51 for a later mission will necessitate reprogramming of refurbishment and modification funds.