TOP SECRET

Col Yost

DEFENSE INTELLIGENCE AGENCY
WASHINGTON, D.C. 20301

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MEMORANDUM FOR THE DIRECTOR, NATIONAL RECONNAISSANCE OFFICE STAFF

SUBJECT: MC&G Contribution to Objective I of STG Program Opportunities

1. As discussed with Lt Col Yost, attached are two copies of a TKH version of an MC&G contribution to Objective I of the STG Program Opportunity Project. A SECRET version of this attachment was reviewed by your office and made available to Mr. Palley. The attached TKH version is substantially the same as the SECRET version except for Option I and the table setting forth the Technical Characteristics of Options.

2. The attached TKH version was prepared following conversations with Colonel Allen and Lt Col Yost which called for review and discussion with representatives of DIAMC as to content and optimum manner of including this information with material already prepared by NRO.

1 Enclosure a/s (2 cys)

ASSIST DIR FOR MAPPING,
CHARTING AND GEODESY

TCS-657634-69

HANDLE VIA
TALENT-KEYHOLE
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GROUP 1 Excluded from Automatic Downgrading and Declassification

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ISSUE: A program for systematic acquisition of accurate and timely mapping, charting, and geodesy information to satisfy military requirements.

DISCUSSIONS:

Objective: The program will fulfill the military requirements for space collectible data necessary to provide peacetime and wartime mapping, charting, and geodesy requirements. Present products vary extensively in design to support the total range of submarine, surface, air, and space weapon systems. Although some data is not suitable for air or space acquisition means; e.g., names, road classification, air facilities data, etc., the major elements of MC&G data are considered collectible by potential space acquisition systems.

Program Features:

Technical

(1) Accuracy

(a) Resolution suitable for large scale and local area maps.

(b) Positional consistent with weapon, navigation, and tracking system requirements.

(2) Geometric relationships provide for locating physical and cultural features relative to required accuracies.

(3) Include topographic, bathymetric, hydrographic, cultural, geodetic, geophysical and other related data.

(4) Continuous (peacetime and wartime).

(5)

(6)

(7) Multi-spectral (to include development of systems for precise bathymetric and hydrographic surveying from space, with underwater object location and identification capabilities).

(8) Multi-sensors, active and passive.

(9) Multi-planetary coverage.

(10) Automatic inflight change detection capability.

(11) Selective sensor control and monitorship.

(12) Secure system.

Non-Technical

(1) Selected materials releasable to cooperative countries.

(2) Releasable end products for general military use by United States and allied forces.

Program Value:

a. The value of the program is nationwide, with primary emphasis to support the weapons and operations of the Department of Defense. Civil mapping agencies would benefit directly within their respective functional areas (USGS, USC&GS, Agriculture, Forestry, etc.). Civil users of topographic, hydrographic, geodetic, and related materials and data would also benefit, e.g., the scientific community interested in such technical areas as geology, geomorphology, oceanography, forestation, agriculture, etc., and the governmental - administrative community concerned with land usage, ownership, resources management, etc.

b. Would reduce/eliminate most current DoD manned survey systems.

c. Essential to fulfillment of DoD MC&G requirements, timeliness, accuracy, and scope of coverage projected for the 15-year period.

d. Would reduce DoD MC&G data banks.

OPTIONS:

a. Option 1 - No DoD Funding (assumes KH-9 system with 12" SI):

(1) Under this option, the technical features of the space acquisition systems would be modified as follows:

(a) Intermittent rather than continuous.

(b) Spectral range limited to the visual range. This restriction would deny the development of systems for precise bathymetric and hydrographic surveying from space, with underwater object location and identification capabilities.

(c) Fair weather [redacted]

(d) Coverage confined to the earth. DoD MC&G requirements for coverage of the moon and other planets would depend upon NASA or other acquisition programs.

(e) No automatic inflight change detection capability.

(f) Degraded accuracy capability.

(g) Single sensor.

(h) No sensor control or monitorship.

(2) This option would continue the use of manned surface, submarine, and air systems and their appreciable dependence upon international cooperation for access to geographic areas, exchange of data, and participation in data acquisition and exploitation. The space acquisition systems would continue essentially as presently configured. Research and development programs would be designed to optimize conventional data acquisition systems in sub-surface, surface, and air environments, and at the same time improve the optical space acquisition systems for MC&G purposes. Inherent technical and political restrictions would continue to render the data acquisition capability and capacity inadequate to satisfy DoD needs and thus degrade the effectiveness and potentiality of the United States weapon systems, forces, strategy, and tactics. This option would deny the application of the state of the art to mapping, charting, and geodesy operations.

b. Option 2 - Intermediate Program:

(1) Under this option, the technical features of the acquisition systems would be modified as follows:

(a) Intermittent rather than continuous.

(b) Limited spectral range, excluding bathymetric and hydrographic capabilities.

(c) Degraded accuracy capability.

(d) Limited sensor control.

(e) No automatic inflight change detection capability.

(f) Loss of data currency and monitor capability.

(2) Responsiveness to MC&G support requirements would continue to be severely limited in hydrographic and nautical data and products. Flexibility to react to unforeseen tactical situations would be improved, but not optimized, for lack of assurance that data required could be obtained when and where needed.

c. Option 3 - Full Program: The program provides for the advancement of the state of the art to minimize restrictive surface, sub-surface, and air environment data acquisition systems and effectively apply space technology to the acquisition of MC&G in consonance with military weapon systems development and operations, and national military objectives. This program, within technical limitations, would establish and maintain adequate MC&G support of the United States military posture and potentiality. The United States independence in data acquisition would be approached, and international involvement in data reduction minimized consistent with related economics and other reasons for international involvement.

RECOMMENDATION: Option 3.

TECHNICAL CHARACTERISTICS OF OPTIONS

		OPTION 1	OPTION 2	OPTION 3
1.	Accuracy (1969-1984)			
	(a) Resolution for large scale and local area maps.	No	Partial	Yes
	(b) Positional accuracy	No	Partial	Yes
2.	Geometric relationships (1969-1984)	No	Yes	Yes
3.	Data categories			
	- topographic	Yes	Yes	Yes
	- cultural	Yes	Yes	Yes
	- geodetic	Yes	Yes	Yes
	- geophysical	Partial	Yes	Yes
	- hydrographic	No	No	Yes
	- bathymetric	No	No	Yes
4.	Continuous	No	No	Yes
5.				
6.				
7.	Multi-spectral	No	Partial	Yes
8.	Multi-sensors	No	Partial	Yes
9.	Multi-planetary	No	Yes	Yes
10.	Auto. Change detection	No	No	Yes
11.	Selective sensor control and monitorship	No	Partial	Yes
12.	Secure	Yes	Yes	Yes