~~(S)~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

OFFICE OF THE DIRECTOR

14 February 1975

MEMORANDUM FOR DR. HALL

SUBJECT: Follow-on HEXAGON Mapping Capability

I have reviewed the options for providing a continuing mapping capability in conjunction with the currently approved HEXAGON program. Of the original options presented to you on 14 and 17 January 1975, you concluded that only Option 1 (buy two more MCSs) and Option 4 (delay two MCS missions until the last two HEXAGON flights) offer viable alternatives. In either case, you indicated that a study of Metric Pan System feasibility should be accomplished. My review was based on the schedule data at TAB A and the performance and cost data at TAB B. The performance data was derived from collection simulations made by the Satellite Operations Center; the cost data was provided by SAFSP through the NRO Comptroller.

My assessment of the technical, cost and schedule risk of these two options is that the risk is acceptable for both cases. After reviewing the analysis in TAB B, I conclude that after SV-18, the high priority requirement satisfaction level for the two options will be nearly equal. For these high priority requirements, a coverage delta in Option 4 as compared to Option 1 would range from about 17% less area and 11% fewer SIOP targets after SV-12 in 1976, to 5% and 0.1% after SV-18 in 1980. This small difference in priority 1 through 4 area coverage and SIOP coverage, along with relatively high and equal SIOP coverage to the increased accuracy requirement, must be weighed against a cost difference of $13.9M.

As you know, the cost and schedule data at TAB B is predicated on an early decision in this matter.

J. W. Plummer

Atch
Schedule Data (TAB A)
Analysis (TAB B)

WORKING PAPER

SS-7

HEXAGON

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HEXAGON MAPPING MISSION

HEXAGON	SV- 9	10	11	12	13	14	15	16	17	18
SCHEDULE	OCT'74	APR'75	OCT'75	APR'76	OCT'76	APR'77	OCT'77	OCT'78	OCT'79	OCT'80
MAPPING CAMERAS MM 205' H(1) 95' V	*	*	*	*	*	*	*	*	(3)	(3)
GEODETIC PACKAGE MX(2) 85' H 75' V					*	*	*	(3)	(3)	(3)

NOTE:
(1) VALUES ARE 90% CEP FOR HORIZONTAL; 90% LINEAR FOR VERTICAL
(2) GEODETIC PACKAGE REDUCES ORBIT ERRORS TO 30' INTRACK, 30' ACROSSTRACK AND 30' VERTICAL (1σ) VS CURRENT 90, 60, 30 WITH DOPPLER BEACON SYSTEM
(3) POSSIBLE ADDITIONAL MCS AND GEOPAC PROCUREMENTS

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HEXAGON FOLLOW-ON MAPPING OPTIONS

	OPTION 1 (Buy MCSs for SV-17 and 18)	OPTION 4 (Slip MCS Missions from SV-11 and 12 Until SV-17 and 18)	DIFFERENCE (Option 1 minus Option 4)
Go-ahead required by:	ASAP	July 1975	-
Mission Accomplishment (%)			
A. Through 1976 (SV-12)			
(1) Priority 1-4 Area	47	30	17
(2) Priority 5 Area	4	2	2
(3) SIOP, Current Accuracy Requirement	88	77	11
(4) SIOP, Projected Accuracy Requirement (GEOPACs after SV-13)	0	0	0
B. Through 1978 (SV-16)			
(1) Priority 1-4 Area	70	60	10
(2) Priority 5 Area	7	0	7
(3) SIOP, Current Accuracy Requirement	97	95	2
(4) SIOP, Projected Accuracy Requirement (GEOPACs after SV-13)	50	50	0
C. Through 1980 (SV-18)			
(1) Priority 1-4 Area	75	70	5
(2) Priority 5 Area	29	7	22
(3) SIOP, Current Accuracy Requirement	97.3	97.2	0.1
(4) SIOP, Future Accuracy Requirement (GEOPACs after SV-13)	65	65	0
Cost (FY76-81)	$25.4M	$11.5M	$13.9M
Cost Phasing			
FY-76	$ 9.7	-	9.7
FY-77	9.7	4.8	4.9
FY-78	2	3.1	-1.1
FY-79	2	1.55	.45
FY-80	2	1.70	.30
FY-81	-	0.35	-.35

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