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~~(S)~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

THE NRO STAFF

MEMORANDUM FOR MR. PLUMMER
DR. COOK

SUBJECT: Itek's Versus Perkin-Elmer's Star Sensor for HEXAGON

REFERENCE: CHARGE 2594, 27 Mar 76

In response to Mr. Plummer's direction on 19 February for an independent evaluation of the Bendix/Itek [redacted] star sensor, Maj Gen Kulpa has recommended proceeding with the Perkin-Elmer approach (TAB A). His recommendation is based on a management analysis which shows an inability to meet the schedule for SV-17. While I tend to agree with Maj Gen Kulpa's recommendation, I would be more comfortable with a first-hand review of the evaluation which was conducted. (b)(1) (b)(3)

With your concurrence, I will send the message at the right, asking for a one-hour briefing on this subject on Friday, 2 April 1976.

WILLIAM L. SHIELDS, JR.
Brigadier General, USAF
Director

Attachment

HEXAGON/[redacted] (b)(1)

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CLASSIFIED BY BYEMAN - 1 EXEMPT FROM GENERAL DECLASSIFICATION SCHEDULE OF EXECUTIVE ORDER 11652 EXEMPTION CATEGORY 5B2 DECLASSIFY ON IMP DET.

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~~S E C R E T~~ 270130Z MAR 76 CITE CHARGE 2594.

PRIORITY WHIG.
HANDLE VIA BYEMAN CHANNELS ONLY
HEXAGON [redacted] (b)(1)
DELIVER BY 0700 29 MAR 76 (b)(3)
FOR: MR PLUMMER
FROM: GEN KULPA
SUBJECT: BENDIX-ITEK STAR SENSOR ASSEMBLY (SSA)
1. AS I MENTIONED IN OUR TELECON ON FRI, 26 MAR 7, WE HAVE COMPLETED BOTH A TECHNICAL AND MANAGEMENT/CONTRACTUAL REVIEW OF THE SSA TO DETERMINE IF THE SSA WOULD BE A COMPETITIVE ALTERNATIVE TO S-CUBED FOR THE HEXAGON METRIC PAN SYSTEM (MPS). THIS MESSAGE SUMMARIZES THE RESULTS OF THESE REVIEWS AND CONTAINS MY RECOMMENDATIONS.
2. TECHNICAL EVALUATION A FAIR AND OBJECTIVE TECHNICAL EVALUATION BY SAFSP, SAFSS, DMA AND AEROSPACE PERSONNEL ARRIVED AT THE FOLLOWING CONCLUSIONS:
A. THE SSA REQUIRES SIGNIFICANT MODIFICATIONS IN ORDER TO BE USED FOR THE MPS APPLICATION.

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B. THE MODIFICATIONS REQUIRED TO MAKE THE SSA CAPABLE TO MEET THE MPS REQUIREMENTS APPEAR FEASIBLE FROM A TECHNICAL STANDPOINT.
C. ASSUMING THE MODIFICATIONS WOULD BE SUCCESSFUL, NO TECHNICAL BASIS COULD BE FOUND TO ELIMINATE THE SSA CONCEPT FROM BEING A POTENTIAL CANDIDATE FROM A FEASIBILITY STANDPOINT. THE SSA CONCEPT (WITH MODIFICATIONS) COULD POTENTIALLY PROVIDE ALMOST AS GOOD ACCURACY AS THE PERKIN-ELMER SOLID STATE STELLAR (S-CUBED) SENSOR.
D. THE TECHNICAL REVIEW REVEALED SEVERAL AREAS OF CONCERN WHICH SHOULD BE STUDIED IN DETAIL BEFORE SUCCESS OF THE SSA IN THE MPS APPLICATION CAN BE ASSURED. THESE CONCERNS CENTER AROUND THE SSA CONCEPT REQUIRING HIGH ACCURACY [redacted] DATA WHICH PROBABLY WOULD REQUIRE [redacted] BE INCORPORATED WITH THE SSA. ADDING [redacted] WILL UNDOUBTEDLY HAVE SIGNIFICANT IMPACT ON THE HEXAGON VEHICLE AND WOULD (b)(1) (b)(3)

EQUIRE FURTHER STUDY. IN GENERAL, THE SSA CONCEPT HAS MANY OF THE SAME TYPE OF CONCERNS WHICH [redacted] NG PERFORMED.

3. COL BLANKENSHIP WAS A MEMBER OF THE TECHNICAL EVALUATION COMMITTEE AND CAN PROVIDE ANY FURTHER DETAILS YOU MAY DESIRE REGARDING THE TECHNICAL EVALUATION. THE TECHNICAL REVIEW WAS CONDUCTED LIKE A SOURCE SELECTION BOARD SO I WOULD SUGGEST THE NUMBER OF PEOPLE ALLOWED TO REVIEW THE COMMITTEE'S FINDINGS BE SENERELY RESTRICTED.

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4. MANAGEMENT/CONTRACTUAL ASPECTS - A SEPARATE REVIEW OF THE MANAGEMENT AND CONTRACTUAL ASPECTS WAS PERFORMED AND ARRIVED AT THE FOLLOWING CONCLUSIONS:

A. THE TIME REQUIRED TO STUDY AND SSA CONCEPT, COMPLETE CONTRACTUAL REQUIREMENTS, AND COMPLETE MANUFACTURING AND TESTING WOULD EXCLUDE SSA EFFECTIVELY FOR SV-17. TO INSURE SV-17 EFFECTIVITY WE MUST CONTINUE WITH S-CUBED ON A SELECTED SOURCE PROCUREMENT.

B. PERKIN-ELMER SHOULD INTEGRATE THE STAR SENSOR INTO THE HEXAGON SENSOR SUBSYSTEM REGARDLESS WHO BUILDS THE STAR SENSOR.

C. ONLY TWO COMPETITIVE CONTRACTUAL ARRANGEMENTS OF MANY REVIEWED ARE CONSIDERED POSSIBLE. ONE APPROACH WOULD BE FOR US TO COMPETE THE SSA AND S-CUBED AND PROVIDE THE HARDWARE AS GFE OR AS A DIRECTED SOURCE TO PE. A SECOND APPROACH WOULD BE TO HAVE PERKIN-ELMER PROVIDE A STAR SYSTEMS ON A MAKE OR BUY BASIS AND REQUIRE SSA, S-CUBED AND POSSIBLY OTHER SENSORS TO BE COMPETED. SELECTED SOURCE PROCUREMENT OF THE SSA WITHOUT COMPETITION COULD NOT BE JUSTIFIED.

5. THE SSA APPROACH IS ESTIMATED TO COST 32.0 MILLION

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DOLLARS. FUND PROTECTION FOR AN ADDITIONAL 5.2 MILLION DOLLARS SHOULD BE PROVIDED FOR POSSIBLE MODIFICATIONS AND UNKNOWNS. THE DETAILS OF OUR IN-HOUSE ESTIMATE IS SHOWN BELOW.

6. A. BENDIX/ITEK SUBCONTRACTS

[redacted] AND OTHER SUBCONTRACT (b)(1) (b)(3)

COST	$7.800M
STAR SENSOR ASSEMBLIES (4)	4.800
SUBTOTAL	$12.600

B. PERKIN-ELMER CAMERA SYSTEM INTEGRATION.

LABOR AND OVERHEAD	5.000
COMPUTER, TRAVEL AND OTHER	.800
G&A AT 22.75 PCT	4.200
FEE	3.400
SUBTOTAL	13.400

C. LMSC MODIFICATION AND INTEGRATION 6.000

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D. CONTINGENCY (20 PCT OF CAMERA SYSTEM) 5.200
TOTAL $37.200M

7. OUR COST ESTIMATE IS BASED ON THE FOLLOWING ASSUMPTIONS:

A. BENDIX/ITEK WOULD BE SUBCONTRACTORS TO P.E. FOR CAMERA SYSTEM INTEGRATION.

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B. BENDIX/ITEK [redacted] AND STAR SENSOR ASSEMBLIES BOUGHT FOR [redacted] ARE BASICALLY THE SAME SYSTEMS THAT WILL BE USED IN THIS SSA APPROACH. MAJOR MODIFICATIONS ARE NOT ANTICIPATED. (b)(1) (b)(3)

C. HEXAGON SUSTAINING MANPOWER AT PERKIN-ELMER IS NOT NECESSARILY AVAILABLE FOR THE EFFORT. (THIS IS THE SAME BASIS AS OUR ORIGINAL S-CUBED ESTIMATE.)

D. LMSC MIDSECTION MODIFICATION AND INTEGRATION COST WOULD BE SOMEWHAT HIGHER THAN S-CUBED BECAUSE OF [redacted] THERMAL IMPACTS. (b)(1) (b)(3)

8. IN SUMMARY, WE COULD FIND NO TECHNICAL ADVANTAGE TO THE SSA OVER THE S-CUBED APPROACH, THE COST OF THE SSA IS NO LESS THAN THE S-CUBED, AND THE SSA COULD NOT BE AVAILABLE BEFORE SV-18. THEREFORE, I RECOMMEND THAT WE PROCEED NO FURTHER ON THE BENDIX/ITEK SSA AND THAT WE CONTINUE WITH THE PRESENT DEVELOPMENT OF THE S-CUBED FOR SV-17 EFFECTIVITY.

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