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Note: The following letter text and attachment is extracted from a Joint Channel document (BYE-12973-73 and BYE 2248-73/1) on file in SP-6. This letter is in response to Reference a, also on file in SP-6, which forwarded for comment, requirements matrices generated by SAFSP and SAFSS.

MEMORANDUM FOR: Director, National Reconnaissance Office

SUBJECT: Planning Requirements for Imagery Collection in the 1980s

References: a. D/NRO Memorandum for the Committee Chairman, dated 27 Mar 73 (BYE 12659-73)

b. D/NRO Memorandum for the Board Chairman, dated 14 Nov 72

1. As requested, the Committee has reviewed in detail the format and data content of the requirements matrices for Space Shuttle planning forwarded in your Memorandum, Reference a. The following views and recommendations are based on written comments received from Members, an extensive discussion at the 26 April 73 Committee meeting, and intervening discussions with members of your staff.

2. As you know the community is currently well along in the development of a consolidated and refined formulation for the Board of area search and target surveillance requirements and related guidance for NRO long-range planning purposes. The consolidation of requirements will, among other things, provide considerable data on a system-independent basis as you suggested in your 14 Nov 72 request (Reference b). While focused primarily on the next five years, or so, the updated guidance would be directly applicable for longer term planning purposes such as required for the Space Shuttle. The specific modifications we are recommending to the projected requirements matrices forwarded under Reference a. reflect the revised data elements in the draft consolidated guidance.

3. The matrices developed in your original "strawman" projection understandably represent very simplified and generalized renditions of presumed future needs. A number of aspects can be evaluated realistically, however, only in the context of mutually understood and agreed assumptions as to specific applications, and defined parameters for the imagery satellite systems mix presumed to be operational in the pre-1980s time frame. Without this basic perspective (planning ingredient), it is questionable whether adjustment in factors can be meaningful for the various collection requirements addressed.

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SAFE NO: *67*

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1	TO Col L. Roberts, <input type="text"/>	INITIALS		CIRCULATE	
		DATE		COORDINATION	
2				FILE	
				INFORMATION	
3				NOTE AND RETURN	
				PER CON-VERSATION	
4				SEE ME	
				SIGNATURE	
REMARKS					
<p>As promised in the 23 Jul Orientation Briefing in 4th floor conference room, this is your copy of planning requirements forwarded by SAFSS for our use.</p> <p>to: <input type="text"/></p> <p><input type="text"/> We need to start an interface in conjunction with the shuttle and in response to the original message which led to this briefing JWK</p>					
FROM		<input type="text"/> /SP-6 Asst Deputy Director		DATE 25 Jul 73	
				PHONE 32570	

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4. I believe it is important that the Committee and NRO Staff element maintain close contact in the course of your Space Shuttle planning to assure mutual understanding and common application of these data at each stage of the activity and I suggest that periodically we jointly review and formally update the data elements contained in the proposed formats.

5. Subject to the Committee's reservations noted above, I am forwarding, at Annex, a revised set of the original matrices, modified to take into account at least certain major changes and recommendations resulting from our review. The following points apply to the format as originally proposed.

- a. Elements such as color versus black/white imagery requirements should be deleted from the matrices as planning factors at this time. It seems dubious that such distinctions could or should be allowed to materially affect design choices at this early stage of Space Shuttle-related planning. On the other hand, if these distinctions have a major bearing, they can be sharpened but with specific focus in mind.
- b. We have added the element "Timeliness of Image Return" to all categories. This is a major characteristic in the requirements which, presumably, would have a major role in any Space Shuttle applications planning.
- c. The number of requirements categories has been expanded and titles modified where appropriate to conform to the categories delineated in the forthcoming consolidated guidance. Additionally, as you requested, the preliminary values in the projected requirements matrices have been adjusted where appropriate.
- d. Despite the understandable desire to have parallelism among the various Tables, we recommend that the "1973" columns for the Warning/Indications and Crisis Reconnaissance categories remain blank, or else use more nearly nominal data, to avoid potential confusion over the fact that, while requirements exist now, the capabilities to deal with them are not available yet.

6. You indicated that two major additional judgments essential for total planning were needed: (1) the identification of relative values for each of the functional collection categories, and (2) estimates of the degrees of collection overlap (i.e., the amount of collection in each category which could satisfy some requirements in other categories). We will work with Dr. Kahal and his staff to attempt formulation of some appropriate guidance in these two areas consistent with your needs in the Space Shuttle application. It appears unrealistic to assign some arbitrary, mutually

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exclusive priority rankings or values to the broad functional intelligence collection categories or to attempt broadly -- and again, arbitrarily -- to estimate degrees of collection overlap in the absence of defined criteria concerning system capabilities. A thorough elaboration of the assumptions that must be made is essential in any meaningful approach to these complex questions and can be worked out best through consultation.

7. With respect to relative value, each functional requirements category is made up of sub-elements which, themselves, vary in relative value at any point in time. Some elements in a category are relatively more valuable than the average or least valuable element in other categories and vice versa. It is impractical, therefore, to attempt assignment of relative values to the categories, as such, in mutually exclusive terms. It would be misleading to allow small differences in projections of relative value among categories in the 1980s to have any significant effect on Space Shuttle design choices or considerations.

8. With regard to estimates on degrees of collection overlap, these depend both on the characteristics of collection systems and on the contents of the collection categories themselves. For example, some of the broad area coverage provided by a system-like HEXAGON satisfies some installation surveillance requirements, but that overlap is because of the collection system, not the requirements category. Similarly, technical surveillance requirements apply to some installations which may also have importance for strategic or general purposes, or for warning. A number of the distinctions related to overlap are defined in the forthcoming consolidated guidance and we will work closely with Dr. Kahal and his staff to develop a suitable means of defining the "areas of overlap" appropriate to Space Shuttle planning purposes.

COMMITTEE CHAIRMAN

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IMAGERY COLLECTION REQUIREMENTS FOR PLANNING

Requirements Categories

I. SEARCH

A. Broad Area Strategic

- 1. Target Clusters
- 2. Developed
- 3. Undeveloped

B. Limited Area Directed (Special/Ad Hoc)

II. SURVEILLANCE

A. Strategic

B. General

C. Technical

D. Warning/Indications

E. Special Directed

III. CRISIS RECONNAISSANCE

IV. SECONDARY AREA COVERAGE

A. Mapping, Charting and Geodesy (Panoramic)

B. Mapping, Charting and Geodesy (12-inch Stellar Terrain)

C. Foreign Intelligence/Ad Hoc

D. Domestic Applications

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CATEGORY IA1: SEARCH-BROAD AREA STRATEGIC (TARGET CLUSTERS)

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity <sup>1/</sup>	400K NM <sup>2</sup>	300K NM <sup>2</sup>	400K NM <sup>2</sup>	600 K NM <sup>2</sup>
Quality	2 Ft - 4 Ft	2 Ft - 4 Ft	2 Ft - 4 Ft	2 Ft - 3 Ft
Frequency (Nominal Collection Interval)	Quarterly (80%)	3 Mo - 4 Mo	Quarterly	Quarterly
Timeliness of Imagery Return (Sensing-Viewing)	≤ 30 days	30 days	≤ 30 days	≤ 30 days
Special Requirements	100% Stereo	100% Stereo	100% Stereo	100% Stereo

<sup>1/</sup> Gross area figures given are comprised of individual, specifically delineated target cluster areas varying in size from 200 to 9,000 sq. n. m. and ranging throughout the Eurasian Communist countries and the Middle East. In 1973 they number 136; for the projected planning period the number should not exceed 150.

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CATEGORY IA2: SEARCH-BROAD AREA STRATEGIC (DEVELOPED)

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity [Area divided into several unique country or region accounting units.]	5.0M NM <sup>2</sup>	5.0M NM <sup>2</sup>	5.5M NM <sup>2</sup> (+10%)	6.0M NM <sup>2</sup> (+20%)
Quality	2 Ft - 4 Ft	2 Ft - 4 Ft	2 Ft - 4 Ft	2 Ft - 4 Ft
Frequency <sup>1/</sup> (Nominal Collection Interval)	40%/3 Mo 80%/6 Mo 92%/9 Mo	20%/3 Mo 80%/6 Mo 92%/9 Mo	40%/3 Mo 80%/6 Mo 92%/9 Mo	90%/6 Mo
Timeliness of Imagery Return (Sensing-Viewing)	≤ 30 Days	≤ 60 Days	≤ 30 Days	≤ 30 Days
Special Requirements	100% Stereo Area divided into several unique country accounting units.	90% Stereo 10% Mono	100% Stereo	100% Stereo

<sup>1/</sup> Cumulative, unique.

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CATEGORY IA3: SEARCH-BROAD AREA STRATEGIC (UNDEVELOPED)

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	5.3M NM <sup>2</sup>	5.3M NM <sup>2</sup>	5.8M NM <sup>2</sup> (+10%)	6.4M NM <sup>2</sup> (+20%)
Quality	2.5 Ft - 7 Ft	2.5 Ft - 7 Ft	2.5 Ft - 6 Ft	2 Ft - 5 Ft
Frequency (Nominal Collection Interval)	10%/3 Mo 40%/6 Mo 80%/12 Mo 97%/24 Mo	10%/3 Mo 40%/6 Mo 80%/12 Mo 97%/24 Mo	10%/3 Mo 40%/6 Mo 80%/12 Mo 97%/24 Mo	10%/3 Mo 30%/6 Mo 80%/12 Mo 97%/24 Mo
Timeliness of Imagery Return (Sensing-Viewing)	≤ 60 Days	≤ 60 Days	≤ 60 Days	≤ 60 Days
Special Requirements	100% Stereo	80% Stereo 20% Mono	100% Stereo	100% Stereo

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CATEGORY IB: SEARCH-LIMITED AREA DIRECTED--SPECIAL/AD HOC

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	400K NM <sup>2</sup>	200K NM <sup>2</sup>	400 K NM <sup>2</sup>	600K NM <sup>2</sup>
Quality	2.5 Ft - 4 Ft	≤ 4 Ft	2 Ft - 4 Ft	≤ 2 Ft
Frequency (Nominal Collection Interval)	Variable repetition: Weekly- Quarterly	Quarterly	Weekly - Quarterly	Weekly
Timeliness of Imagery Return (Sensing-Viewing)	≤ 30 Days	≤ 30 Days	20 Days-30 Days	10 Days-20 Days
Special Requirements	100% Stereo	100% Stereo	100% Stereo	100% Stereo

1/ Communist Countries/Mid-East

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CATEGORY IIA: SURVEILLANCE<sup>1/</sup>-STRATEGIC

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	2.8K <sup>2/</sup> Tgts	3K Tgts	3.5K Tgts	4K Tgts
Quality	2 Ft - 4 Ft	≤ 3 Ft	≤ 2.5 Ft	≤ 2 Ft
Frequency (Nominal Collection Interval)	Weekly Quarterly Semi-Annual <sup>3/</sup>	Weekly - Quarterly	Weekly - Quarterly	Weekly - Monthly
Timeliness of Imagery Return (Sensing-Viewing)	Variable but ≤ 30 Days	Variable but ≤ 30 Days	Variable but ≤ 30 Days	Less than 30 Days
Special Requirements	100% Stereo	100% Stereo	100% Stereo	100% Stereo

<sup>1/</sup> Surveillance targets are located throughout the Eurasian Communist countries and the Middle East.

<sup>2/</sup> Includes 2,500 USSR targets, of which 2,400 are SALT-related. Approximately 1,500 of these are located in 25 target clusters delineated for the Soviet ICBM force

<sup>3/</sup> Weekly -- 50 Targets  
 1 Month -- 150 Targets  
 2-3 Month -- 1,500 Targets  
 6 Month -- 1,100 Targets

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CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	≤ 10K Tgts <sup>1/</sup>	11K Tgts	15K Tgts	20 K Tgts
Quality	2 Ft - 3 Ft	≤ 3 Ft	≤ 2 Ft	≤ 2 Ft
Frequency (Nominal Collection Interval)	Weekly Quarterly Semi-annual <sup>2/</sup>	Weekly Quarterly Semi-annual	Weekly Quarterly Semi-annual	Weekly Semi-annual
Timeliness of Imagery Return (Sensing-Viewing)	Variable but ≤ 30 Days	Variable but ≤ 30 Days	Variable but ≤ 30 Days	Less than 30 Days
Special Requirements	100% Stereo	75% Stereo 25% Mono	100% Stereo	100% Stereo

<sup>1/</sup> Includes 1,100 targets in USSR and EE identified as MBFR-related. Estimated overall target category growth rate is 5 percent per year, primarily involving China targets.

<sup>2/</sup> Weekly -- 900 Targets  
 1 Month -- 200 Targets  
 2-3 Month -- 4,200 Targets  
 6 Month -- 6,000 Targets

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CATEGORY IIC: SURVEILLANCE-TECHNICAL

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity <sup>1/</sup>	1,700 Tgts	3,000 Tgts	4,000 Tgts	6,000 Tgts
Quality	≤ 12 In			
Frequency (Nominal Collection Interval)	Weekly Monthly Quarterly <sup>2/</sup>	Weekly Monthly Quarterly	Weekly Monthly Quarterly	Weekly Monthly
Timeliness of Imagery Return (Sensing-Viewing)	Variable but ≤ 30 Days	Variable but ≤ 30 Days	Variable but ≤ 30 Days	Less than 30 Days
Special Requirements <sup>3/</sup>	100% Stereo 1% Sp View	100% Stereo 5% Sp View	100% Stereo 15% Sp View	100% Stereo 25% Sp View

1/ This total may be viewed as including repeat coverage of selected targets during the specified "Nominal Collection Interval." Such coverage may be required, for example, to provide multiple aspects of a target during a single access period.

2/ Weekly - 75 targets; Monthly - 150 targets; Quarterly (2-3 Mo) - 1,300 targets. A small number of targets, perhaps 1 - 2%, require access on a near-daily basis.

3/ The term "Special Viewing" (Sp View) includes collection needs such as specific sun angles, obliquities, and viewing aspect angles.

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CATEGORY IID: SURVEILLANCE - WARNING/INDICATIONS

CHARACTERISTICS	1973 <sup>1/</sup>	198X		
		MIN	NOM	MAX
Quantity	[ 1,000 Tgts ]	1,100 Tgts	2,000 Tgts	2,500 Tgts
Quality (GRD Equiv)	[ ≤ 2.5 Ft ]	≤ 3 Ft	≤ 2.5 Ft	≤ 2 Ft
Frequency (Nominal Collection Interval)	[ 250 Tgts/ Day ]	150 Tgts/day	250 Tgts/day	375 Tgts/day
Timeliness of Imagery Return (Sensing-Viewing)	[REDACTED]			
Special Requirements	[ Mainly Mono ]	75% Stereo 25% Mono	100% Stereo [REDACTED]	100% Stereo

<sup>1/</sup> No existing system capability in 1973 .

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CATEGORY IIE: SURVEILLANCE-SPECIAL DIRECTED

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	500 Tgts	100 Tgts	500 Tgts	1,000 Tgts
Quality	≤ 2 Ft	≤ 2 Ft	≤ 2 Ft	≤ 1 Ft
Frequency (Nominal Collection Interval)	Weekly	Daily	Daily	Daily
Timeliness of Imagery Return (Sensing-Viewing)	[Redacted]			
Special Requirements				

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CATEGORY III: CRISIS RECONNAISSANCE<sup>1/</sup>

CHARACTERISTICS	1973*	198X		
		MIN	NOM	MAX
Quantity <sup>2/</sup>		70 Tgts <sup>3/</sup> 4K NM <sup>2</sup> 300 NM LOC	≥ 200 Tgts <sup>4/</sup> ≥ 10K NM <sup>2</sup> ≥ 500 NM LOC	≥ 300 Tgts <sup>4/</sup> ≥ 15K NM <sup>2</sup> ≥ 700 NM LOC
Quality		Tgts: 2-3 Ft <sup>5/</sup> Areas & LOC: 3-5 Ft	Tgts: 1 - 3 Ft <sup>5/</sup> Areas & LOC: 2-3 Ft	Tgts: 1 - 2 FT <sup>5/</sup> Areas & LOC: 2 - 3 Ft
Frequency (Nominal Collection Interval)		One Day	75%: One Day 25%: Intervals < One Day	50%: One Day 50%: Intervals < One Day
Timeliness of Imagery Return (Sensing-Viewing)		[Redacted]		
Special Requirements		90% Stereo 10% Mono  [Redacted] desired Critical Situations: 3 - 5/Yr Avg. Duration of Coverage: 1 Mo	90% Stereo 10% Mono  [Redacted] Critical Situations: 3 - 5/Yr Avg Duration of Coverage: 1 Mo	100% Stereo  [Redacted] Critical Situations: 8/Yr Avg Duration of Coverage: 1 Mo

1/ Projected from findings of Study of Intelligence Requirements for Crisis-Response Satellite Imagery, COMIREX-D-13. 7/11.

2/ Imagery is required for: (1) Installation surveillance (Tgts), (2) Area search, and (3) Lines of communication (LOC) surveillance.

3/ Target Frame Size: ≥ (3NMx3NM); Avg. LOC Width: 5 NM

4/ Imagery of ≤ 1 Ft GRD (or equivalent) may be needed in special situations.

5/ In terms of access opportunities.

\* No existing system capability in 1973.

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CATEGORY IVA: SECONDARY AREA COVERAGE--  
MAPPING, CHARTING AND GEODESY  
(PANORAMIC)

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	5M NM <sup>2</sup>	2M NM <sup>2</sup>	2.3M NM <sup>2</sup>	3M NM <sup>2</sup>
Quality	2.5 Ft-10 Ft	5 Ft - 10 Ft	2.5 Ft -7.5 Ft	2 Ft - 5 Ft
Frequency (Nominal Collection Interval)	12 Mo	12 Mo	12 Mo	12 Mo
Timeliness of Imagery Return (Sensing-Viewing)	≤ 90 Days	≤ 90 Days	≤ 90 Days	Less than 90 Days
Special Requirements	100% Stereo	90% Stereo 10% Mono	100% Stereo	100% Stereo

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CATEGORY IVB: SECONDARY AREA COVERAGE--  
 MAPPING, CHARTING AND GEODESY  
 (12-inch STELLAR TERRAIN)

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	7M NM <sup>2</sup>	3M NM <sup>2</sup>	3 - 5M NM <sup>2</sup>	5M NM <sup>2</sup>
Quality	30 Ft - 40 Ft	30 Ft	25 Ft - 30 Ft	20 Ft
Frequency (Nominal Collection Interval)	12 Mo	12 Mo	12 Mo	12 Mo
Timeliness of Imagery Return (Sensing-Viewing)	≤ 90 Days	≤ 90 Days	≤ 90 Days	Less than 90 Days
Special Requirements	100% Stereo Doppler Beacon	90% Stereo 10% Mono	100% Stereo Doppler Beacon	100% Stereo Doppler Beacon

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CATEGORY IVC: SECONDARY AREA COVERAGE--  
FOREIGN INTELLIGENCE/AD.HOC<sup>1/</sup>

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	1M NM <sup>2</sup>	1.5M NM <sup>2</sup>	2M NM <sup>2</sup>	2M NM <sup>2</sup>
Quality	2.5 Ft - 4 Ft	≤ 4 Ft	2.5 Ft - 3 Ft	≤ 2 Ft
Frequency (Nominal Collection Interval)	12 Mo	12 Mo	≤ 9 Mo	6 Mo
Timeliness of Imagery Return (Sensing-Viewing)	≤ 30-60 Days	60 Days	≤ 30 Days	≤ 30 Days
Special Requirements	100% Stereo	50% Stereo 50% Mono	75% Stereo 25% Mono	100% Stereo

<sup>1/</sup> Outside Communist territory/Mid-East (viz. Japan, Western Europe, South Asia

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DOMESTIC APPLICATIONS

CHARACTERISTICS	1973	198X		
		MIN	NOM	MAX
Quantity	300K NM <sup>2</sup>	650K NM <sup>2</sup>	1M NM <sup>2</sup>	1M NM <sup>2</sup>
Quality	2.5 Ft-10 Ft	5 Ft - 10 Ft	2.5 Ft - 7.5 Ft	2 Ft - 5 Ft
Frequency (Nominal Collection Interval)	12 Mo	12 Mo	12 Mo	12 Mo
Timeliness of Imagery Return (Sensing-Viewing)	≤ 90 Days	≤ 90 Days	≤ 90 Days	Less than 90 Days
Special Requirements	100% Stereo	90% Stereo 10% Mono	100% Stereo	100% Stereo

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