25X1

25X1

25X

PROGRAM GOALS (FY 1966)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS

SPONSOR

CIA (NRO)

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

25X1

25X

25X1 [redacted] 25X1

[redacted] 25X

PROGRAM/RESOURCES FORECAST (FY 1966)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM

Goals

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

*In Millions

REQUIREMENTS

Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
[redacted]					

25X

25

25X1 [redacted]

[redacted]

TOP SECRET

25X1

25X1

25X

PROGRAM GOALS (FY 1967)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS

SPONSOR

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

CIA (NRO)

25X

25X1

TOP SECRET

25X1

25X1

25X

PROGRAM/RESOURCES FORECAST (FY 1967)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM

REQUIREMENTS

	Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor

25X

Goals

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

*In Millions

25X

Encl. 3
Page

25X1

25X1

25X

PROGRAM GOALS (FY 1968)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

SPONSOR

CIA (NRO)

25X1

25X

25X1 [redacted]

[redacted]

25X1

25X

PROGRAM/RESOURCES FORECAST (FY 1968)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM

Goals

REQUIREMENTS

Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
[redacted]					

25X

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

*In Millions

25X

[redacted]

25X1 [redacted]

TOP SECRET

25X1

25X1

25X

PROGRAM GOALS (FY 1969)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS

To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.

SPONSOR

CIA (NRO)

TOP SECRET

25X1

25X

[redacted]

25X1

TOP SECRET

[redacted]

[redacted] 25X1

PROGRAM/RESOURCES FORECAST (FY 1969)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM

Goals

To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.

*In Millions

REQUIREMENTS

Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
[redacted]					

25X1

25X1

Encl. 3
Pa [redacted]

[redacted]

25X1

25X1

25X

PROGRAM GOALS (FY 1970)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS	SPONSOR
To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.	CIA (NRO)

25X1

25X

[redacted] 25X1

TOP SECRET

25X1 [redacted]

[redacted] 25X

PROGRAM/RESOURCES FORECAST (FY 1970)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM	REQUIREMENTS					
Goals	Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.	[redacted]					25X

*In Millions

25X1

Encl. 3
Page 10

25X1 [redacted]

TOP SECRET

[redacted]

25X1

25X1

25X1

PROGRAM GOALS (FY 1971 - 1975)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS	SPONSOR
To deploy and use the ISINGLASS vehicle operationally over highly defended denied areas, to develop countermeasure techniques to extend the useful operational lifetime, [redacted] for use in manned or unmanned versions of the vehicle.	CIA (NRO)

25X1

25X1

25X1

25X1 [redacted] TOP SECRET 25X1 [redacted] 25X

PROGRAM GOALS (FY 1976 - 1981)

CATEGORY: MANNED HYPERSONIC RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS	SPONSOR
To use the ISINGLASS vehicle, including possible countermeasure techniques [redacted] over less highly defended areas. It is anticipated that developing defenses in the Sino-Soviet bloc will preclude use over these areas by this time period.	CIA (NRO)

25X1

[redacted] TOP SECRET 25X1 25X [redacted]

SECRET

31 October 1968

MEMORANDUM FOR THE RECORD

SUBJECT: MAC ISINGLASS Briefing

1. On 30 October 1968 [redacted] 25X1
25X1 of the [redacted], briefed OSA and the DD/S&T on the Model 192 ISINGLASS boost glide reconnaissance vehicle. The briefing included a review of the in-depth parametric analysis from which ISINGLASS evolved, the engineering technology used for the fabrication of an ISINGLASS and a vulnerability analysis against the Galosh ABM, the TALLIN A air defense system and a postulated System III system using an advanced type ABM called Missile X.

2. The general conclusion was that the ISINGLASS could survive in (1) any of the HE warhead environments, (2) the TALLIN A nuclear environment with a nuclear warhead, (3) the Galosh nuclear environment by circumventing the system deployed around Moscow and (4) the System III nuclear environment by accepting a very small denied area and programmed maneuvers.

3. Mr. Duckett, DD/S&T, stated his position that consideration of a nuclear environment was somewhat academic since he did not feel that a nuclear warhead would be used by any system against a single aircraft. He emphasized, however, that his position in no way negated the MAC effort since there were organizations within the intelligence community which would disagree with him. Mr. Duckett further stated that the major firm intelligence gap related to the MAC vulnerability study was confirmation of the estimated TALLIN A capability. Although he felt that the CIA estimate
25X1 of [redacted] for the TALLIN A performance limit was reasonably accurate, one certainly couldn't deny the
25X1 possibility of a [redacted] capability as well as jet heads on the warhead for terminal guidance.

[redacted] 25X1

ASD/R&D/OSA

SECRET

25X1

25X1

25X

PROGRAM GOALS (FY 1966)

CATEGORY: MANNED HYPERSONIC RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS	SPONSOR
To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.	CIA (NRO)

25X1

25X

25X1 [redacted] [redacted] 25X

PROGRAM/RESOURCES FORECAST (FY 1966)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM	REQUIREMENTS					
Goals	Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.	[redacted]					25X

*In Millions

Encl. 3
Page 2

25X1 [redacted]

[redacted]

TOP SECRET

25X1 25X1 25X1

PROGRAM GOALS (FY 1967)

CATEGORY: MANNED HYPERSONIC RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS

SPONSOR

CIA (NRO)

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

25X1

25X

TOP SECRET

25X1 [redacted]

25X1 [redacted] 25X

PROGRAM/RESOURCES FORECAST (FY 1967)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM

Goals

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

*In Millions

REQUIREMENTS

Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
[redacted]					

25X

25X

Encl. 3
Page [redacted]

25X1 [redacted]

25X1

[redacted]

TOP SECRET

[redacted]

25X

25X1

PROGRAM GOALS (FY 1968)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS

To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.

SPONSOR

CIA (NRO)

25X1

[redacted]

TOP SECRET

25X

[redacted]

25X1 [redacted]

25X1 [redacted]

25X [redacted]

PROGRAM/RESOURCES FORECAST (FY 1968)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM	REQUIREMENTS					
Goals	Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
To establish the feasibility and initiate development of a high performance rocket engine, hypersonic boost glide vehicle, and camera system capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas. This system will perform at speeds in excess of Mach 20.0 and at altitudes over 200,000 feet.	[redacted]					

25X [redacted]

*In Millions

25X [redacted]

Encl. 3
Page 6

25X1 [redacted]

TOP SECRET

25X1

25X1

25X

PROGRAM GOALS (FY 1969)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS

To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.

SPONSOR

CIA (NRO)

25X1

25X

TOP SECRET

[redacted]

25X1

TOP SECRET

[redacted]

[redacted] 25X1

PROGRAM/RESOURCES FORECAST (FY 1969)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM	REQUIREMENTS					
Goals	Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.	[redacted]					25X1

*In Millions

25X1

Encl. 3
Pa[redacted]

[redacted]

TOP SECRET

25X1

25X1

25X

PROGRAM GOALS (FY 1970)

CATEGORY: MANNED HYPERSONIC RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS	SPONSOR
To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.	CIA (NRO)

25X1

25X

25X1 [redacted] 25X1 [redacted] 25X

PROGRAM/RESOURCES FORECAST (FY 1970)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

PROGRAM	REQUIREMENTS					
Goals	Total Money*	Personnel	Hardware	Capital Investment	R&D	Sponsor
To flight test three aircraft and produce eight operational aircraft and camera systems for deployment in FY 1971, capable of providing quick reaction, wide swath, high quality photography of highly defended denied areas.	[redacted]					25X

*In Millions

25X1

25X1 [redacted]

[redacted]

[redacted] 25X1

[redacted] 25X1

[redacted] 25X

PROGRAM GOALS (FY 1971 - 1975)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS	SPONSOR
To deploy and use the ISINGLASS vehicle operationally over highly defended denied areas, to develop countermeasure techniques to extend the useful operational lifetime, [redacted] for use in manned or unmanned versions of the vehicle.	CIA (NRO)

25X1

[redacted] 25X1

[redacted] 25X

[redacted] 25X1

TOP SECRET [redacted] 25X1

[redacted] 25X

PROGRAM GOALS (FY 1976 - 1981)

CATEGORY: MANNED HYPERSONIC

RECONNAISSANCE VEHICLE (ISINGLASS)

GOALS	SPONSOR
To use the ISINGLASS vehicle, including possible countermeasure techniques [redacted] over less highly defended areas. It is anticipated that developing defenses in the Sino-Soviet bloc will preclude use over these areas by this time period.	CIA (NRO)

25X1

[redacted] 25X1

TOP SECRET [redacted] 25X

[redacted]

[redacted]

Copy 2 of 9

27 April 66

MEMORANDUM FOR THE RECORD

SUBJECT: ISINGLASS Briefing of Mr. John E. Kirk, DDR&E

1. On 26 April 1966 [redacted] (D/TECH/OSA) and [redacted] (SS/OSA) briefed Mr. Kirk on ISINGLASS in his office. General Giller, who had requested the briefing, also attended. Mr. Kirk is Assistant Director, DDR&E, for Space Technology and works for Dr. Fink.

2. In general, Mr. Kirk seemed very favorably impressed by the ISINGLASS idea and system and stated that it had several important advantages over the single pass orbital system with maneuverable re-entry which he has been pushing. He did express considerable doubt that the Pratt & Whitney engine could be man rated within the time period, 31 months, that we need to hold to the four year production schedule. He felt that Pratt & Whitney would probably run into problems, particularly thermal problems in the main chamber, and that there was good reason for the cautious USAF engine program at Pratt & Whitney.

3. Finally, he said he would discuss the project with Dr. Fink and perhaps arrange for both of them to be more extensively briefed by McDonnell Aircraft Corporation.

[redacted]

Advanced Projects Division
(Special Activities)

OSD REVIEW COMPLED

25X1

[redacted]

[redacted]

25X1

25X1

25X1

APD/OSA/ [redacted] (27 Apr 66)

Distribution:

1 - APD/OSA
2 - D/R/CIA
3 - DD/S&T
4 - D/SA
5 - D/TECH/OSA
6 - SSD/OSA
7 - PSD/OSA
8 - D/TECH/OSA (Chrono)
9 - RB/OSA

25X1

25X1

OSA 2598-68

14 August 1968

MEMORANDUM FOR THE RECORD

SUBJECT: Trip Report - DD/SA Visit to Los Angeles 30-31 July 1968

1. On 30 July 1968 [redacted] Parangosky visited Lockheed Aircraft Corporation for the purpose of meeting with Kelly Johnson to introduce him to the "induced drag program" of VRC. Kelly agreed to keep an open mind on the subject and cooperate in determining its possible value, if any, to the U-2. Kelly believes, as we do, that the next wind tunnel series (in a larger wind tunnel) should produce more definitive results than the first series of tests. Kelly wondered if "tunnel" effects could have contributed to some of the favorable results encountered in the small-scale wind tunnel tests. The second VRC series of tests (at Ames) should provide answers to this question. Kelly reminded us that the U-2 wing is an efficient one. He therefore would be surprised if significant improvements could be obtained by use of spanwise diffusers. He also suggested that diffusers, themselves, may be "draggy". Kelly may elect to do some wind tunnel tests of his own at LAC's Rye Canyon facility. We told Kelly that [redacted] would visit Lockheed soon to review in depth the VRC program and results (for the benefit of Kelly's performance people, such as [redacted] to enable LAC to better understand the induced drag program).

25X1

X1

X1

2. On 30 July Mr. Parangosky met with [redacted] McDonnell Aircraft Company, St. Louis and [redacted] McDonnell-Douglas Aerospace, Huntington Beach, Calif.) to receive comments from the latter on the ISINGLASS program. [redacted] when he was in the Air Force, compiled the AFSC paper on ISINGLASS prior to his retirement a few years ago. Salient comments made by [redacted] about the AFSC paper (one copy only delivered to Dr. McMillan, Under Secretary of the Air Force) and related matters:

25X1

X1

X1

X1

NRO review(s) completed.

a. If one needed an ISINGLASS recce type capability in a relatively short time (four or five years) technology is sufficiently along (in hand) to enable the development of an ISINGLASS (more reality for example than a SCRAMJET) and with confidence. The key technical reservation, subject to solution, flagged by the report pertained to the question of uniform window cooling to solve the gradient problem.

b. A piloted ISINGLASS was accepted without question.

c. Dr. McMillan and Dr. Flax were impressed with the AFSC findings. Further Dr. McMillan felt that money should be spent to pursue high temperature technology though not necessarily ISINGLASS since a requirement for the ISINGLASS system had not been officially surfaced. Later, during a Dr. Flax/AFSC review, Dr. Flax was willing to spend modest sums of money [redacted] toward development of ISINGLASS technology since it had generic appeal to collateral applications. [redacted] was surprised to learn that we (CIA/OSA) never were funded by NRO to do the foregoing since he believed that Dr. Flax was ready to provide funds to us. 25X NRO X1

d. [redacted] as one McDonnell employee to another advised [redacted] to continue pushing ISINGLASS wherever possible in Washington, i.e., with the Agency or the Pentagon. He feels strongly that "all eggs are in the satellite basket" and that other options should be available. X1 X1

3. On the afternoon of 31 July, [redacted] and I visited Hycon Co. (B-camera manufacturer) a subsidiary of McDonnell-Douglas, for a courtesy call. We met [redacted] and toured the facilities. The Hycon management took the opportunity to bemoan the fact that the Itek optical bar camera eventually will supplant the B camera in the U-2 program. I was reminded that B camera lens developments still make the camera a cheap and attractive alternative, particularly in the event the optical bar camera does not measure up to expectations. 25X1 25X1 X1 25X1

[redacted]
JOHN PARANGOSKY
DD/SA

Dist:
DSA
DDSA(file)
DR&D
RB

[redacted] 25X1

Copy ___ of ___

4 August 1969

MEMORANDUM FOR: Comptroller, OSA

SUBJECT : EXCOM Issue NO. 3
Advanced Aircraft R&D

X1 REFERENCES : A - [redacted] dtd 1 Aug 1969, Subj: EXCOM Meeting - 8 Aug 1969

X1 B - [redacted] dtd 30 July 1969, Subj: NRP Financial Program for 1970

Attached hereto are D/R&D comments on subject EXCOM Issue NO. 3 as requested in Reference A and as set forth in Reference B.

[redacted] 25X1

Deputy for
Research and Development
Special Activities

Attachment: (1)
As stated

X1 D/R&D/OSA/[redacted] 4 Aug 1969

Distribution:
Copy 1 - COMPT/OSA
2 - D/COMPT/OSA
3 - BFD/COMPT/OSA
4 - D/SA
5 - D/M/OSA
6 - D/R&D/OSA
7 - RB/OSA

[redacted] 25X1

Attachment to [redacted] 25X1

ISSUE NO. 3 - ADVANCED AIRCRAFT R&D

BACKGROUND:

OSA is conducting a study of Advanced Aerodynamic Reconnaissance Systems under direction of the NRO. This two phase study approved by the EXCOM explores various methods of achieving a quick reaction strategic reconnaissance capability survivable primarily in the sovbloc defensive environment through the 1975-1980 period. The first phase, X1 using FY-69 funding of [redacted] involves two contractors. A contract was initiated with [redacted] on 25X1 27 January 1969 for the defensive threat analysis and establishment of survivable profiles and tactics options. X1 This effort is funded at [redacted]. A contract was initiated X1 with [redacted] in May 1969 to conduct a technological comparison of candidate hardware concepts meeting the profiles and tactics formulated [redacted] This effort funded 25X1 X1 at [redacted] is scheduled for completion by 30 November 1969. The second phase of the study proposed for FY-1970 funding X1 at [redacted] would involve analysis, refinement, and further definition of one or more optimum candidate configurations in terms of hardware technology constraints in relation to the threat. This second phase would be scheduled for completion in June 1970.

SIGNIFICANCE:

Survivability is the key to any future reconnaissance system. Analysis of the threat and survivability form a major part of this study along with technological feasibility. This study is beginning to show that survival may be questionable for a nonmaneuvering vehicle following a constant or fixed track. We feel that the results of this kind of analysis coupled with the technological feasibility and constraints involved in such parametrics as maneuverability will greatly enhance the ability to weigh various options and decide upon future courses of action.

 [redacted] 25X1

25X1

RECOMMENDATION:

One of the final purposes of this study is to provide a firm basis for program cost estimates involving one or more options for a most survivable system. A decision at this time to discontinue the study predicated upon future year budgetary funding estimates would be to prejudge the outcome of the study.

The CIA recommends against Option d, and considers a, b, or c as possible alternates but recommends an additional option which would fund the FY-70 studies now; then have a special EXCOM review to determine further action when the results of the final FY-1970 funded studies are available.

[redacted]

25X1

DRAFT

ISSUE NO. 3 - ADVANCED AIRCRAFT R&D

BACKGROUND:

OSA is conducting a study of Advanced Aerodynamic Reconnaissance Systems. This two phase study approved by the EXCOM explores various methods of achieving a quick reaction capability survivable primarily in the sovbloc defensive environment through the 1975-1980 period. The first phase, using FY-69 funding of [redacted] involves two 25X1
X1 contractors. [redacted] in January 1969 initiated work on the defensive threat analysis and establishment of survivable profiles and tactics options at a level of [redacted] 25X1
X1 [redacted] in May 1969 initiated work on a technological comparison of candidate hardware concepts meeting the profiles
X1 and tactics formulated [redacted]. This effort funded at
X1 [redacted] is scheduled for completion by 30 November 1969. The second phase of the study proposed for FY-1970 funding
X1 at [redacted] would involve analysis, refinement, and further definition of one or more optimum candidate configurations in terms of hardware technology constraints in relation to the threat. This second phase would be scheduled for completion in June 1970.

SIGNIFICANCE:

Survivability is the key to any future reconnaissance system. Analysis of the threat and survivability form a major part of this study along with technological feasibility. This study is beginning to show that survival may be questionable for a nonmaneuvering vehicle following a constant or fixed track. We feel that the results of this kind of analysis coupled with the technological feasibility and constraints involved in such parameters as maneuverability will greatly enhance the ability to weigh various options and decide upon future courses of action.

RECOMMENDATION:

One of the purposes of this study is to provide a basis for program cost estimates for a survivable system. A decision at this time to discontinue would be to prejudge the outcome of the study and deny us valuable information. We recommend against Option d. We do recommend re-approval of the FY-70 studies now with an EXCOM review after their completion in June 1970 to determine further action.

[redacted] 25X1

File

1. Veh Concept (Adv Aircraft) #5
2. FY71-74 NRO Prog Call #6
3. NRO FY-70 Budget Call #7
4. FY71-75 CIA Prog Call xtra draft cc

[redacted] 25X1

Copy 5 of 8

17 July 1969 ILLEGIB

[redacted]

MEMORANDUM FOR: Comptroller, OSA

SUBJECT : Advanced Aircraft Briefing for [redacted] 25X1
11 July 1969

X1 REFERENCES : A. [redacted] dtd 29 Apr 66 titled "NRO Program Cost Estimates" (FY-68-72)

X1 B. [redacted] dtd 4 May 65 titled "Summary Review of ISINGLASS Program"

X1 C. [redacted] dtd 3 May 65 titled "Program B FY-66 Budget Submission"

X1 D. [redacted] dtd 20 May 65 titled "Program B FY-67 through FY-71 Funding Forecast"

1. During subject briefing, [redacted] raised the question regarding inclusion of engine development and procurement. He indicated that one of the ISINGLASS cost estimates in his possession excluded engine development and procurement. 25X1

2. Reference A, the FY-68-72 Budget Submission dated 29 April 1966 and forwarded to NRO did exclude ISINGLASS engine development and procurement. This document based its cost estimates on technical data confirmation initiated in FY-66 with a projected IOC in FY-73. Support for the eight operational aircraft was also included. Total funds expended by the end of FY-72 would have been [redacted] 25X1

X1 [redacted] (without engines). The estimated cost of the excluded engine development and procurement was set at

X1 [redacted] This implied that the [redacted] 25X1

X1 would have become [redacted] had the engine development and procurement been included.

[redacted] 25X1

3. Reference B, an internal ISINGLASS document for the DD/S&T dated 4 May 1965 was the basis for the last chart (attached) presented at subject briefing when [redacted] 25X1 raised the "engine" question. Both this document and the chart included engine development and procurement. Cost estimates were predicated on a FY-66-70 development time period and indicated the additional costs for delivery completion by the end of the seventh year for the eight operational aircraft with their 16 engines. These cost estimates as presented and as set forth in Reference B page 14 were [redacted] 25X1
X1 [redacted] for the development phase plus [redacted] 25X1
X1 [redacted] for eight operational aircraft with their 16 engines. These estimates resulted in a total of [redacted] 25X1 for a program comparable to that set forth in paragraph 2 above except that engine development and procurement was
X1 included in the [redacted] program and excluded from the
X1 [redacted] program of para 2.

4. Reference B, the same internal ISINGLASS document dated 4 May 1965 which included engine development and procurement, was also the basis for Reference C, the FY-66 Budget Submission to NRO dated 3 May 1965 which included engine development and planned subsequent year procurement. This (Ref C) paper reflected an initial year expenditure of
X1 [redacted] for FY-66. Reference D, the FY-67-71 Funding Forecast to NRO dated 20 May 1965 again included engine development and procurement and reflected a total expenditure
X1 of about [redacted] for the period FY-67 through FY-71.

5. During subject briefing and with reference to the last chart (attached), it was clearly stated that a [redacted] 25X1 inflation was applied to the [redacted] ISINGLASS development 25X1
X1 to bring it to [redacted] in terms of today's dollars and
X1 that the same [redacted] inflation must be applied to the [redacted] 25X1 (for eight operational ISINGLASS aircraft and 16 engines) to
X1 bring it to today's [redacted] It was then clearly stated
X1 that the [redacted] and the [redacted] were additive and 25X1 would result in a total of [redacted] 25X1

6. In summary then, a program (including engine development and procurement) estimated in 1965 at [redacted] 25X1 for the FY-66-70 time period is estimated in 1969 at [redacted] 25X1
X1 [redacted] for the FY-71-75 time period. This reflects an
X1 increase of [redacted] for inflation or an average
X1 increase of [redacted] per year over five years.

25X1

7. This memorandum is considered an internal OSA working paper. Suggest that COMPT/OSA have the reference documents reviewed in terms of dates, actual forwarding through channels, and proper interpretation of dollar estimates prior to preparation of any formal summary response to [redacted] question as may be appropriate.

X1

[redacted]

25X1

Deputy for
Research and Development
Special Activities

Attachments:
As stated

X1 D/R&D/OSA/[redacted]/17 Jul 1969

Distribution:
Copy 1 - COMPT/OSA
2 - D/SA
3 - BFD/COMPT/OSA
4 - CMD/COMPT/OSA
5 - 7 - D/R&D/OSA
8 - RB/OSA

[redacted]

25X1

[redacted]

ADVANCED AIRCRAFT

ROM COSTS FY-1971 THROUGH 1975

LIMITATIONS:

FY-69 PARAMETRIC STUDY FOR SURVEY OF SURVIVABLE PROFILES AND CANDIDATE CONFIGURATIONS - INCOMPLETE

FY-70 STUDY CONTINUATION TO EXAMINE OPTIMUM PROFILE AND SELECTED CONFIGURATION AND TO DEFINE PROGRAM - NOT STARTED

NO REAL BASIS FOR COST ESTIMATES OR PLANNING EXISTS

[redacted]

ADVANCED AIRCRAFT

ROM COSTS FY-1971 THROUGH 1975

ASSUMPTIONS:

PRE-JUDGE STUDY EFFORTS

USE BEST AVAILABLE COSTING DATA BASE

PROJECT TO CURRENT TIME PERIOD DOLLARS

APPROACH:

BE CONSERVATIVE AND REALISTIC

BASE COSTS ON HYPERSONIC VEHICLE - (ISINGLASS)

APPLY INFLATIONARY FACTOR

[redacted]

ADVANCED AIRCRAFT

25X1

BASIS - FOR FY 66-70 COST [redacted] (Estimated May 1965)

5 YEAR DEVELOPMENT & FLIGHT TEST PROGRAM (FY-66 - FY-70)

3 TEST AIRCRAFT

7 ENGINES

CAMERA ENGINEERING & TEST

FACILITIES

FIRST FLIGHT - END OF 3rd YEAR

PRODUCTION AIRCRAFT INITIATION - END OF 2nd YEAR

8 AIRCRAFT

16 ENGINES

DELIVERIES START - END OF 4th YEAR

FINISH - END OF 7th YEAR

ADDITIONAL COST TO COMPLETE PRODUCTION [redacted]

25X1

[redacted]

[redacted] 25X1A

[redacted] 25X1A

Copy [redacted]

8 APR 1965

MEMORANDUM FOR: Deputy Director for Science and Technology

SUBJECT : Budget Projections - FY 1966 through FY 1970

1. Forwarded herewith are dollar and position estimates (Attachments A and B respectively) for the Office of Special Activities, Fiscal Years 1965 through 1970. These estimates are based on the following assumptions:

a. Project IDEALIST will continue as an operational project through Fiscal Year 1970 at approximately the same level of effort that exists today. It is expected that sometime during this time period enemy air defenses will preclude utilization of the vehicles where presently employed, however, they will be used at other locations in the world where over-flights are required to obtain critical intelligence information.

b. Project OXCART will be operational in the Far East, through Fiscal Year 1970, in accordance with the following time schedule:

Phase I - September 1965 -- Sixty (60) day staging capability, twice a year, from [redacted] 25X1A

Phase II - February 1966 -- Sixty (60) day staging capability, twice a year, plus SKYLARK capability at [redacted] X1A

Phase III - July 1966 -- Permanent detachment in the Far East.

[redacted] 25X1A

X1A [redacted]

Phase IV - January 1967 -- Permanent detachment in the Far East, plus SKYLARK capability at [redacted] 25X1A

Phase V - July 1968 -- Permanent detachment in the Far East with deployment capability, plus SKYLARK capability at [redacted] X1A

c. Project ISINGLASS will be initiated in Fiscal Year 1966 and operationally ready in Fiscal Year 1970. Planning envisions [redacted] X1NRO as the test and development site for ISINGLASS and that the establishment of a permanent OXCART overseas detachment, with deployment capability, will permit diverting some of the remaining personnel to support Project ISINGLASS.

d. [redacted] X1A site will be activated in the Far East in Fiscal Year 1966 and will continue through Fiscal Year 1970.

e. Project CORONA will continue through Fiscal Year 1970 at approximately the same level of effort that exists today and that CIA will be responsible for payload management.

f. Projects [redacted] X1A will become operational during the projection period.

2. Existing projects require currently available personnel consequently, increased activity in these projects (deployment of OXCART) and the initiation of new projects (ISINGLASS, [redacted] 25X1A X1A dictate the need for additional personnel, support, and funding. The additional requirements are as follows:

a. Personnel.

(1) OXCART - 195 new positions (93 in FY 1966, 29 in FY 1967, and 73 in FY 1968).

(2) ISINGLASS - 41 new positions (23 in FY 1966, and 18 in FY 1967).

(3) [redacted] X1A - 10 new positions in FY 1966.

(4) FY 1969 over FY 1968. An increase of [redacted] 25X1A for personal services (positions not identified by project) offset by a net decrease of [redacted] for travel requirements 25X1A
X1A (a decrease of [redacted] for OXCART offset by an increase
X1A of [redacted] for ISINGLASS).

(5) FY 1970 over FY 1969. An increase of [redacted] 25X1A
X1A consisting of [redacted] for personal services (positions not identified by projects) and an increase of [redacted] for 25X1A
ISINGLASS travel.

3. Questions pertaining to this submission should be directed
X1A to me or [redacted] Programs Staff. 25X1A

[redacted]

JACK C. LEDFORD
Colonel USAF
Assistant Director
(Special Activities)

Attachments: (2) As stated

CONCUR:

X1A [redacted]
C/PS/OSA

X1A [redacted]
C/B&F/OSA

X1A [redacted]

2 July 1965

PLANNING MEMORANDUM

Schedule of Actions

1. The DD/S&T offices will be requested to provide the specific programs and resources requirements for the first five year period by year and the long range program goals for the second and third five year periods using the categories and sub-categories listed in Appendix A (with additions where necessary) and in a format compatible with Appendix B by 16 July. It is anticipated that each office will provide one or two support planners to the DD/S&T planning group for this exercise.

2. The office contributions required under paragraph 1 will be collated into a DD/S&T package by 23 July for submission to the Agency planning group. It is anticipated that this collation exercise will require the office planners acting as a staff in support of the DD/S&T plan.

3. By following the above schedule, it will be possible for the Agency planning group to develop an integrated Agency plan with adequate time to revise the format, establish priorities, and develop any additional support papers in time to meet the 1 September deadline.

RAYMOND C. SHRECKENGOST

[redacted]

25X1A

SAMPLE

APPENDIX A

PROPOSED ORGANIZATION OF FUNCTIONAL CATEGORIES
FOR FIFTEEN-YEAR PLAN

A-1	Intelligence Collection
A-2	Information Processing and ADP
A-3	Intelligence Production
*A-4	Covert Action
A-5	Program Planning and Support

*It is assumed that only the Central Intelligence Agency could make a meaningful contribution under this section and that programs would not be subject to USIB review.

INTELLIGENCE COLLECTION

I. OVERHEAD PHOTOGRAPHY

A. System Wide

B. Satellites

C. Aircraft

D. Drones

[redacted] 25X1A

II. SIGINT (Overt and Covert)

A. System Wide

B. Fixed Stations

C. Satellites

D. Aircraft

E. Ships

[redacted] 25X1C

SAMPLE

Appendix B-1

PROGRAM GOALS: 1966-1970

CATEGORY: INFO PROCESSING/ADP

Sub-Category	Goals	Sponsor
7. PHOTO INTERPRETATION		
A. System Wide	To enlarge the scope and expand the responsibilities and capabilities of the National Photographic Interpretation Center so that it may provide integrated, timely exploitation of all nationally significant photographic and other image producing systems.	NPIC
B. Photo Imagery	To provide a national effort capable of handling the steadily increasing volumes of higher resolution photography and to prepare for the real-time readout of remote "dumping" systems for use in fast developing situations.	

5X1NRO

[redacted]

[redacted]

25X1

5 April 1965

MEMORANDUM FOR THE RECORD

Morning Meeting of 5 April 1965

General Carter was in the Chair as Acting DCI.

The Current Intelligence Briefing covered: the Vietnam situation, progress being made in reaching draft agreements between Japanese and South Korean negotiators, tension in Yemen growing out of the assassination of a popular anti-Egyptian official, constriction of allied movements in the Berlin area, Cuba, [redacted] views of Chinese Communist foreign policy, assessment of the latest CORONA mission [redacted]

25X1

[redacted]

DDP asked what procedures there are to coordinate visits by Agency employees to the injured Saigon personnel in local hospitals. It was agreed that there would be no such visits in the immediate future, but that the Medical Staff would be the eventual focal point.

DDS&T reported on the BLUESPRINGS shoot-down Saturday. [redacted]

25X1

[redacted]

25X1

[redacted]

25X1

DDS&T noted for the record, as regards recent DCI requests that Secretary Vance be briefed on ISINGLASS, that this was done some time ago by DDS&T.

Kent noted that the State/DIA/CIA memo requested by DCI concerning Vietnam will be coordinated tomorrow and can be issued either as a USIB memo or a SNIE.

Kent referred to the completion of Part 3 (General Purpose Forces) of the IAP, and recommended that General Carter sign off on this as Acting Chairman of USIB.

General Carter asked Knoche to arrange to show the DCI's letter to Bundy, Rusk, and McNamara on Vietnam to Cline, Kent, and R. Jack Smith and others who have a like need-to-know.

X1 General Carter reported that General Fitch has said that they can not make [redacted] available to ONE as requested by Kent.

General Carter covered the main points of the 2 April NSC meeting on Vietnam as covered by the DCI's memo.

General Carter reported on his conversation with [redacted] 25X1
on 2 April concerning PFIAB and [redacted] interest in "classical" 25X1
intelligence matters.

General Carter read Vice President Humphrey's letter of 30 March to Mr. McCone. General Carter suggested that DDP, DDI, and DDS&T make arrangements to meet and brief the Vice President periodically.

H. Knoche

[redacted]

25X1

21 April 1965

MEMORANDUM FOR: Deputy Director for Science and Technology

SUBJECT : Project ISINGLASS

The Director does not wish to take this out of our reserve and asks that you prepare the necessary papers to be presented to the NRO Executive Committee so that funds will be made available from NRO.

(Signed) Marshall S. Carter

Marshall S. Carter
Lieutenant General, USA
Deputy Director

Attachment
Copy #1, [redacted] w/att

25X1

Distribution:
Cy #1 - DDS&T
#2 - Ex Dir and D/BPAM
#3 - DDCI
#4 - O/DCI
#5 - ER
#6 - AD/OSA

NRO review(s) completed.

[redacted]
Copy #3

25X1

TOP SEC

[redacted] 25X1

Copy 1 of 6

3 December 1968

Vehicle Concept

MEMORANDUM FOR THE RECORD

SUBJECT: Advanced Aircraft Briefing for NRO
X1 Visit by [redacted]

X1 1. [redacted] visited D/R&D late on 2 December.
X1 He indicated that [redacted] NRO Staff was voicing the opinion that he expected subject briefing by OSA would resurrect ISINGLASS and that this would be very unfavorable
X1 to the NRO complex. [redacted] was shown the briefing charts and advised that they address a study effort only without any prejudgement whatsoever and that we hoped the study might result in an as yet uninvented concept. He indicated considerable relief and satisfaction since he had already publicly denounced [redacted] opinion. 25X1

X1 2. [redacted] indicated confidentially that he felt
X1 [redacted] opinion came from Gen. Berg who had been aware of ISINGLASS and recently may have discussed it with the DD/S&I.

25X1

[redacted]
Deputy for
Research and Development
Special Activities

X1 D/R&D/OSA/[redacted] 3 Dec 1968

Distribution:
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5 - Chrono
6 - RB/OSA

SECRET [redacted] 25X1

NRO review(s) completed.

X1A [redacted] TOP SECRET [redacted] 25X1A

Copy 1 of 7

7 JUN 1965

MEMORANDUM FOR : Deputy Director for Science and Technology

SUBJECT : Transmittal of 5-15 Year Papers Relating to Quick Reaction Systems and Security/Contracting Policies

X1A Transmitted herewith is [redacted] with attachments concerning above subject.

(Signed) Jack C. Ledford

JACK C. LEDFORD
Brigadier General, USAF
Assistant Director
(Special Activities)

Day Isiglass

NRO review(s) completed.

TOP SECRET [redacted] 25X1A

5X1A [redacted] TOP SECRET [redacted] 25X1A

Copy 5 of 7

7 JUN 1965

MEMORANDUM FOR : Deputy Director for Science and Technology

SUBJECT : Transmittal of 5-15 Year Papers Relating to Quick Reaction Systems and Security/Contracting Policies

5X1A Transmitted herewith is [redacted] with attachments concerning above subject.

(Signed) Jack C. Ledford

JACK C. LEDFORD
Brigadier General, USAF
Assistant Director
(Special Activities)

NRO review(s) completed.

TOP SECRET [redacted] 25X1A

TOP SECRET

5X1A [redacted] [redacted] 25X1A

D/TECH/OSA:John Parangosky:hmj (4 June 1965)
Distribution:
1 - DD/S&T
2 - AD/OSA
3 - SS/OSA
4 - PS/OSA
5 - D/TECH/OSA
6 - APD/OSA
7 - D/TECH/OSA (Chrono)
8 - RB/OSA
9 thru 14 - D/TECH/OSA

TOP SECRET

[redacted] 25X1A

5X1A [redacted] Attachment I to [redacted] 25X1A

QUICK REACTION, IMAGE FORMING INTELLIGENCE COLLECTION SYSTEMS IN THE PERIOD 1965-1980.

1. Introduction

This memorandum surveys the prospects and needs for image-forming intelligence collection systems (photographic, etc.) for quick-reaction to world crisis, which can be available in the following fifteen years. Specifically excluded are strictly military systems, (e.g. post-strike reconnaissance) and those which could politically only be employed in a hot-war situation, either because of the high risk of operator loss or the absence of a "plausible denial" capability. Included are all systems forming intelligence information images of the terrain and culture;

5X1 IRO [redacted] rather, this memorandum is limited to vehicles and systems designed to give rapid access to intelligence in specific crisis situations. (These crisis systems may be, in fact, special applications of normal systems, where this capability can be built in.) The crisis may be "tactical", where one wishes information regarding the details of the situation in a specific, local area, or it may be "strategic" where one needs information on the overall stature and war-readiness of a prospective major opponent such as the USSR or China. Normal systems include the currently undeveloped and unexploited "socio-economic" photographic intelligence application.

2. The Meaning of "Quick Reaction"

Frequently, in the discussion of system improvements to the intelligence collection schemes, reference is made to the need for quick reaction. For this memorandum, the meaning of "quick reaction" is:

 [redacted] 25X1A

While maintaining a state of readiness, at a reasonable cost, the system can obtain and return to the policy makers, the necessary information in a minimum time (on the order of 24 hours) after the call for the information. Reaction time includes time for flight and recovery of the information, time needed to prepare the system for a particular mission, time to return the necessary data from the recovery site and time to analyze and submit to the policy makers.

It is within this last item, analysis and submission, that there is often misunderstanding. On the one hand it may be considered necessary to submit to policy makers a hard copy of high resolution photography; on the other hand, it may be considered necessary to submit only the results of the analysis, as read by competent analysts. In actuality, the analysis is all that is logically required; the policy makers are generally not the competent analysts, do not have time for detailed analysis, and thus cannot extract the needed information from raw photographs. However, one cannot deny the psychological impact on the policy makers of having in hand a picture, no matter how little understood, which demonstrates the information on which the analysis is based. In addition, photographic data is needed at a central location for correlation with prior photography and other sources.

The reaction time includes the time necessary to generate the mission plan. As systems develop, computer software improves; given the target location, the mission can be generated automatically. As our backlog of information increases from the routine CORONA [redacted] flights, the knowledge of what needs to be observed in a particular situation also improves, as well as our knowledge of the geographic location of the areas of interest. The increasing automation is not without its pitfalls, as it is all too easy to attempt to substitute computer logic for reasoning decision.

25X1 NRO 25X1A

5X1A [redacted] Attachment I to [redacted] 25X1A

3. Basic Needs

With the development of high-altitude aircraft and satellite reconnaissance photography over the past 15 years, the intelligence community has come to rely to an increasing extent on the "hard" intelligence derived from such systems. The search is for ever quicker receipt analysis of the information. Concurrently, the increasing capability of ground-air defensive networks in denied areas force consideration of less vulnerable systems. In addition to the active defensive networks coming into operation, increased Soviet bloc activity in the passive, camouflage defensive techniques is probable. For some intelligence requirements there is need for a more detailed rendition of the targets, i.e., high resolution systems. The needs fall naturally into four categories, in order of importance:

a. increased speed of response

b. less vulnerability to active defenses

c. less vulnerability to passive defenses

d. more detailed rendition of targetry

In time of crisis, the first two are of utmost importance, as one expects more definite effort to negate reconnaissance and time is critical. The third item, camouflage penetration, is not critical in this year, but will become significant within the next ten years. The fourth item, higher resolution, reflects the continuing demand for more detail (at the same time, the coarse looks tend to be more accurate, with better detail). As any design is a set of compromises, it appears likely that the ultimate needs will be best satisfied by a mix of systems designed for specific tasks. Specifically, there is a real need for continuation of aerodynamic vehicles and balloons, as well as satellites; the aerodynamic for tactical applications and specific targets, balloons for economic observation of certain types of targets. The impact of the above listed four basic categories of needs on development areas, platforms, sensor systems, and data

handling is illustrated in Appendix I. The following sections of this memorandum discuss the developmental areas in general details. The timing of expected developments is estimated in Appendix II.

4. Platforms

a. Aerodynamic Vehicles: Following the development of IDEALIST and OXCART manned aircraft, and TAGBOARD drone aircraft, future developments in aerodynamic vehicles for overflight purposes can come in two different regimes: first, hypersonic vehicles, initially the boost-glide system such as ISINGLASS, and second, powered flight vehicles, based either on rocket engine or on an air-breathing engine such as the SCRAMJET. These vehicle developments are required in order to reduce the vulnerability of the vehicle to manageable levels, by reducing the reaction time of the defense systems. (An alternate approach to reducing defensive reaction time is the terrain-following, low altitude, high-speed aircraft (B-58, F-111). For reconnaissance, these low-altitude aircraft suffer from very limited cross-track coverage and they can be employed only under war-time circumstances. The camera problems associated with the high angular rates inherent in these vehicles are severe, but can probably be managed. We consider this type of aircraft to be limited to the Defense Department, for development and use in war-time tactical applications.)

The boost-glide ISINGLASS vehicle using rocket propulsion is feasible in the next five years for application in the following five. Subsequent development should allow powered flight. Air breathing, hypersonic aircraft are a longer range development; the prime need is for validation of the supersonic combustion ramjet (SCRAMJET) engine concept. This concept is promising at this time, and is being actively pursued by NASA and the Air Force. However, there has been, to date, no solid demonstration. When available, the SCRAMJET will provide the payload capability for meaningful sustained hypersonic flight. Other advanced propulsion concepts are generally only meaningful in extended orbital or inter-planetary flight. The application of nuclear propulsion

may have some significance for the reconnaissance operation, but the nuclear aircraft is not being actively pursued by the government at this time; its eventual application to the reconnaissance mission has not been examined in detail. However, it would appear to have primary benefit for long-term flight in more normal speed-altitude regimes. The extremely high specific impulse rocket engines (plasma, photon, etc.) are generally low thrust, and not usable for near-earth applications. The use of hydrogen-flourine seems the best available specific impulse for chemical rockets, in this application with hydrogen-oxygen being more generally applied for economic reasons. (The five year program cost for ISINGLASS using flourine oxidizer is about double the oxygen system.)

b. Satellites: Currently satellites are limited in application to quick reaction by several factors:

Count-down time, time from request for data to launch, including mission planning and vehicle preparations.

Time from launch to coverage of desired targets caused by orbital restraints.

Recovery time and transportation of take.

The high cost of an individual launch and cost of facilities, precluding continued frequent launchings during a crisis period, and also limited economic usefulness for coverage of localized targets.

The above factors are all generally associated with the physical recovery of photographic film. The development of facsimile or "television" readout via radio communication link would negate most of these objections. Current technology would allow the early (next two to three years) development and operation of somewhat primitive, limited capability readout systems; a concerted technological development program over the next five to ten years would be needed for a really desirable system. While these readout systems would suffer

from the orbital mechanics constraints in acquisition of targets, a modest number of operating systems would allow world-wide coverage on an almost continuous basis.

Concurrent developments in communications satellites will eventually allow a real-time observation, of a number of targets. These developments are probably in order in about ten years. Such systems are subject to jamming or other active countermeasures.

5X1A The specific technologies involved are being explored under the [redacted] program.

c. Balloons: Since the earlier unfortunate experiences within the government with balloon over-flights, the application of balloons to Soviet over-flight has been politically untenable. However, recent developments in balloon technology will, if pursued, allow flight in the [redacted] 25X1A regime with useful payloads. Such payloads would be inexpensive to fly, but costly to shoot down. Developments are in hand to allow steering of the balloon with small CEP's. The projected usage is for short-range penetration, using real-time readout; a "tactical" system applicable in local hot spots(e.g. Cyprus, Cuba, etc.)

5. Sensors

Current operational sensors are panchromatic silver halide recording cameras. Resolution of one foot is accomplished at aircraft altitudes, three feet at satellite altitudes. Developments are conceivable in angular resolution, allowing better detail recording or higher altitude operation. However, the most useful developments will be in the extension to color recording, adding another dimension to the data. This color recording has several benefits:

a. basic information content increase

b. detection of many types of camouflage, which can "fool" the panchromatic camera

c. application to socio-economic analysis and forecasting, (crop analysis, etc.). The "color recording" noted above might either be in color film, (e.g., Koda-color) or in

5X1A [redacted]

Attachment [redacted] to 25X1A

multiple, photographic color separation cameras (spectral-zonal photography), including near infra-red recording. The over-all cost will be considerably higher than current panchromatic black and white. (This color recording potential is not directly related to quick reaction, except as its use may complicate quick reaction capability from added complexity.)

25X1 NRO

[redacted]

a. [redacted]

b. [redacted]

25X1 NRO

5X1 [redacted]

5X1 [redacted]

5X1D [redacted]

6. Data Handling

As noted above, in the discussion of quick reaction satellites, a major advance is needed in the data handling process. The factor discussed there was in data transmission. This data transmission problem is also applicable to other platforms; in addition, there are a number of other data handling problems, limiting overall reaction time, whose solution is probably closely tied in. These are in the fields of rapid analysis, storage, and retrieval. Of significance is that the critical analysis is usually a change detection and interpretation of the meaning of the change. The change detection involves a comparison of the current photograph with earlier photographs, hence the need for storage and retrieval. The application of spacial spectral analysis is of interest here. Some mechanization of the change detection would speed up the analysis process considerably, allowing available manpower to concentrate on verifying and interpreting the changes. The analysis problems apparently have much technology in common with the data transmitting, both handling the information in an electrical or digital analog. Data compression, redundancy reduction techniques, and encoding procedures, useful in transmission bandwidth compression, have promise of

allowing mechanization of the change detection operation. We see little hope of the replacement of human judgment in estimating the significance of observed changes.

7. Conclusion:

On the basis of the projected political situations over the next fifteen years it is postulated that the primary needs for developments for quick reaction systems are:

The development of the high-speed aircraft (ISINGLASS) to provide a relatively invulnerable platform for reconnaissance.

The development of high-speed data transmission systems to allow rapid transmission of photographic data from the field sites to Washington.

The extension into high resolution systems of the [redacted] 25X1 NRO

Concurrently, considerable effort is warranted in the fields of data analysis, storage, and retrieval, to shorten the time from receipt of data to completion of analysis.

Goals for quick reaction reconnaissance systems, plotted against realistic operational availability dates, are shown in the first figure of Appendix III. The obsolescent systems shown as phased-out, except for special applications, will have usefulness in lightly defended areas indefinitely, until the maintenance of the system becomes overly expensive. The second and third figures illustrate the developmental interrelationships of some of the systems and subsystems.

25X1A

5X1A [redacted]

PLATFORMS

1965-70

A. Current Inventory and late development stage:

U-2: Subsonic, high altitude aircraft, 1 ft. photo platform (manned).

Atlas-Agena-OCV: Satellite platform for 3 ft. photo system (unmanned).

Thor-Agena: Satellite platform for 15 ft. photo system (unmanned).

OXCART: Mach 3.2 high altitude aircraft, 1 foot photo-platform, requires advanced electronic countermeasures equipment (manned).

SR-71: Advanced version of OXCART, increased payload capability, requires advanced electronic countermeasures equipment (manned). [redacted]

Drones: Subsonic, high altitude drones in USAF inventory, high vulnerability.

Miscellaneous USAF reconnaissance aircraft, subsonic and limited supersonic.

B. Well into development stage:

TITAN-III: Various versions for extended satellite payloads.

TAGBOARD: Mach 3.3 drone

C. Early development stage or forecast:

[redacted] 25X

Boost-glide aerodynamic vehicles, 7500 mile range.

[redacted] 25X1A

5X1A [redacted]

5X1A [redacted]

1970-75 High accuracy, ZI recovery re-entry bodies.
Mobile Launch of satellite systems.
Orbital maneuver capability for satellites.

5X1A [redacted]
Powered flight hypersonic vehicles (rocket powered),
12,000 mile range.

5X1 NRO [redacted]

1975-80 Powered flight hypersonic vehicles, extended range,
24,000 n.mi. supersonic combustion ramjet.

[redacted]

25X1A

PLATFORMS:

Aerodynamic

- U-2
- OXCART
- SR-71
- TAGBOARD
- BOOST-GLIDE (ISINGLASS)
- HYPERSONIC ROCKET
- HYPERSONIC SCRAMJET

Satellite

- Atlas-Agena-OCV
- Thor-Agena
- Titan III
- [redacted]
- [redacted]
- [redacted]
- 21 Recovery
- MOBILE LAUNCH
- [redacted]

OBSOLETE, OPERATIONAL

DEVELOP → ← OPERATIONAL →

DEVELOP → ← OPERATIONAL →

DEVELOPMENT → ← OPERAT →

← DEVELOP → OPERATIONAL →

← DEVELOP → OPERATIONAL →

← DEVELOPMENT →

OPERATIONAL

OPERATIONAL

DEVELOPMENT ← OPERATIONAL →

DEVELOPMENT ← OPERATIONAL →

DEVELOP ← OPERATIONAL →

← DEVELOPMENT → LIMITED CAPAB. → ← FULL C

← DEVEL → OPERATIONAL →

← DEVELOP → OPERATIONAL

← DEVELOP → OPERA

DEVELOP → OPERATIONAL

DEVELOP → ← OPERATE

← DEVELOP → OPERATE

YEAR → 65 66 67 68 69 70 71 72 73 74 7

Next 1 Page(s) In Document Exempt

Approved For Release 2003/09/30 : CIA-RDP71B00822R000100110005-1

5X1A

T[redacted]ET

DATA HANDLING

1965-70

A. Current

Physical Transport of films
Human Search and Analysis

B. Early development and forecast:

Limited, unsecure facsimile transmission satellite
Automated storage and retrieval of photographic images

1970-75 Limited automatic change detection
Wide-band facsimile transmission systems
Communications satellites, limited capability
- satellite-satellite relay
- ground to ground transmission
Simple Image Integration
Frequent Observations and Good "baseline" data
Near real time observation

1975-80 Spacial Spectral Analysis
Automation of change detection
Compensation for spacial frequency response characteristics of sensors and recording media
Secure data links
Continuous monitoring of selected targets

25X1A

T[redacted]RET

DATA HANDLING

Transmission

- Low Bandwidth
- High Bandwidth
- Data Compression
- Communication Satellite (ground-ground)
- [redacted]
- Secure Transmission

Analysis

- Store and Rapid Retrieve (photo records)
- Rapid Access Storage (electrical)
- Automatic Target Acq.
- Automatic Change Detection
- Image Integration
- Image Enhancement
- Image Analysis

DEVELOP ← OPERATIONAL →

DEVELOPMENT → ← OPERATIONAL

CONTINUING DEVELOPMENTS

DEVELOP → OPERATIONAL (1st GENERATION)

DEVELOP → OPERATIONAL (2nd GEN

DEVELOP → OPERATIONAL

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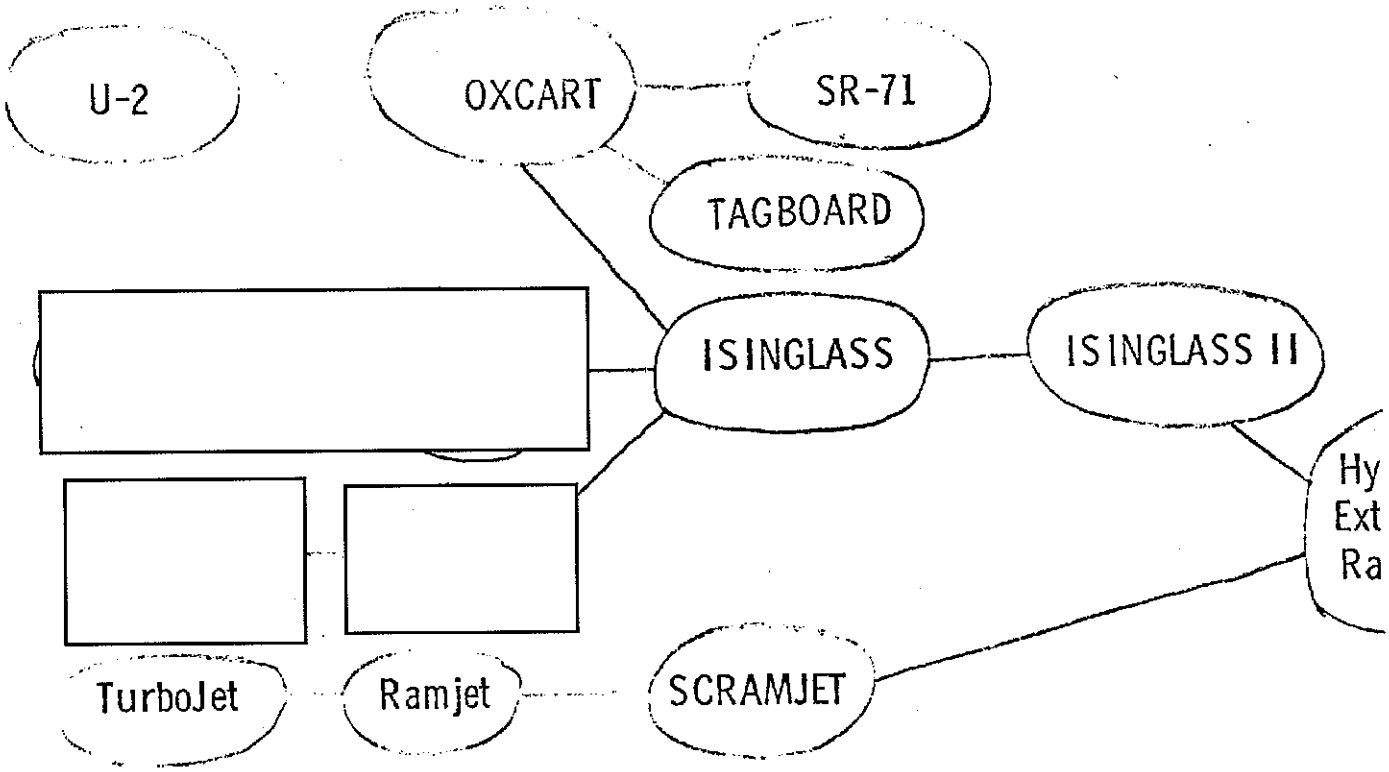

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Inter-relations of various Aerodynamic Reconnaissance Vehicl

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Approved For Release 2003/09/30 : CIA-RDP71B00822R000100110005-1

USSR or China. Normal systems include the currently undeveloped and unexploited "socio-economic" photographic intelligence application.

2. The Meaning of "Quick Reaction"

Frequently, in the discussion of system improvements to the intelligence collection schemes, reference is made to the need for "quick reaction." ~~This is a need which~~, like all ~~virtue, is seldom~~ argued; again, ~~like all virtue,~~ it is ~~seldom adequately understood~~ in the context of the discussion. In our frame of reference, we mean by quick reaction, the following: While maintaining a state of readiness, at a ~~reasonable~~ cost, the system can obtain and return to the policy makers, the necessary information in a minimum time (on the order of 24 hours) after the call for the information. Reaction time includes time for flight and recovery of the information, time needed to prepare the system for a particular mission, time to return the necessary data from the recovery site and time to analyze and submit to the policy makers. It is within this last item, analysis and submission, that there is often misunderstanding. On the one hand it may be considered necessary to submit to policy makers a hard copy of high resolution photograph; on the other hand, it may be considered necessary to submit only the results of the analysis, as read by competent analysts. In actuality, the analysis is all that is logically required; the policy makers are generally not the competent analysts, do not have time for detailed analysis, and thus cannot extract the needed information

from raw photographs. However, one cannot deny the psychological impact on the policy makers of having in hand a picture, no matter how little understood, which demonstrates the information on which the analysis is based.

The reaction time includes the time necessary to generate the mission plan. As systems develop, computer software improves; given the target location, the mission can be generated automatically. As our backlog of information increases from the routine CORONA

5X1A [redacted] flights, the knowledge of what needs to be observed in a particular situation also improves, as well as our knowledge of the geographic location of the areas of interest. The increasing automation is not without its pitfalls, as it is all too easy to attempt to substitute computer logic for reasoning decision.

3. Basic needs

With the development of high-altitude aircraft and satellite reconnaissance photography over the past 15 years, the intelligence community has come to rely to an increasing extent on the "hard" intelligence derived from such systems. The search is for ever quicker receipt of the information, and analysis. Concurrently, the increasing capability of ground-air defensive networks in denied areas force consideration of less vulnerable systems. In addition to these active defensive networks coming into place, increased Soviet bloc activity in the passive, camoflage defensive techniques is probable. For some intelligence requirements there is need for a more detailed rendition of the targets, i.e., higher resolution systems. The needs fall naturally into four

categories, in order of importance:

1) increased speed of response
2) less vulnerability to active defenses
3) less vulnerability to passive defenses
4) more detailed rendition of targetry.

In time of crisis, the first two are of utmost importance, as one expects more definite effort to negate reconnaissance and time is critical. The third item, camouflage penetration, is not critical in this year, but will become significant within the next ten years. The fourth item, higher resolution, reflects the continuing demand for more detail (at the same time, the coarse looks tend to be more accurate, with better detail.) As any design is a set of compromises, it appears likely that the ultimate needs will be best satisfied by a mix of systems designed for specific tasks. Specifically, there is a real need for continuation of aerodynamic vehicles and balloons, as well as satellites; the aerodynamic for tactical applications, and specific targets, balloons for economic observation of certain types of targets. The impact of the above listed four basic categories of needs on development areas, platforms, sensor systems, and data handling is illustrated on Attachment 1. The following sections of this memorandum discuss the developmental areas in general details. The timing of expected developments is estimated in Attachment 2.

4. PLATFORMS

Aerodynamic Vehicles:

Following the development of the IDEALIST and OXCART manned aircraft, and the TAGBOARD drone aircraft, future developments in aerodynamic vehicles for overflight purposes can come in two different regimes: first, hypersonic vehicles, initially the boost-glide system such as ISINGLASS, and second, powered flight vehicles, based either on the ISINGLASS system or on the air-breathing engine such as the SCRAMJET. These vehicle developments are required in order to reduce the vulnerability of the vehicle to manageable levels, by reducing the reaction time of the defense systems. (An alternate approach to reducing reaction time is the terrain-following, low altitude high-speed aircraft (B-58, F-111). For reconnaissance, these low-altitude aircraft suffer from very limited cross-track coverage and they can be employed only under war-time circumstances. The camera problems associated with the high angular rates inherent in these vehicles are severe, but can probably be managed. We consider this type of aircraft to be limited to the Defense Department, for development and use in war-time tactical applications.)

The boost-glide ISINGLASS vehicle using rocket propulsion is feasible in the next five years for application in the following five. Subsequent development may allow powered flight. Air breathing, hypersonic aircraft are a longer range development; the prime need is for validation of the supersonic combustion ramjet (Scramjet) engine concept. This concept is promising at this time, and is being actively pursued by NASA and the Air Force.

However, there has been, to date, no solid demonstration. When available, the scram-jet will provide the payload capability for meaningful sustained hypersonic flight. (Other advanced propulsion concepts are generally only meaningful in extended orbital or inter-planetary flight. The application of nuclear propulsion may have some significance for the reconnaissance operation, but the nuclear aircraft is not being actively pursued by the government at this time; its eventual application to the reconnaissance mission has not been examined in detail. However, it would appear to have primary benefit for long-term flight in more normal speed-altitude regimes. The extremely high specific impulse rocket engines (plasma, photon, etc.) are generally low thrust, and not usable for near-earth applications.) The use of hydrogen-flourine seems the best available specific impulse for chemical rockets, in this application with hydrogen-oxygen being more generally applied for economic reasons. (The five year program cost for ISINGLASS using flourine oxidizer is about double the oxygen system.)

Satellites:

1. Currently satellites are limited in application to quick reaction by several factors:

a. Count-down time, time from request for data to launch, including mission planning and vehicle preparations.

b. Time from launch to coverage of desired targets caused by orbital restraints.

c. Recovery time and transportation of take.

d. The high cost of an individual launch and cost of facilities, precluding continued frequent launchings during a crisis period, and also limited economic usefulness for coverage of localized targets.

2. The above factors are all generally associated with the physical recovery of photographic film. The development of facsimile or "television" readout via radio communication link would negate most of these objections. Current technology would allow the early (next two to three years) development and operation of somewhat primitive, limited capability readout systems; a concerted technological development program over the next five to ten years would be needed for a really desirable system. While these readout systems would suffer from the orbital mechanics constraints in acquisition of targets, a modest number of operating systems would allow world-wide coverage on an almost continuous basis.

3. Concurrent developments in communications satellites will eventually allow a real-time observation, of a number of targets. These developments are probably in order in about ten years. Such systems are subject to jamming or other active countermeasures.

4. The specific technologies involved are being explored under the [redacted] program. 5X1A

Balloons:

Since the earlier unfortunate experiences within the Agency with balloon over-flights, the application of balloons to

Soviet over-flight has been politically untenable. However, recent developments in balloon technology will, if pursued, allow flight in the [redacted] regime with useful payloads. Such paylodds would be inexpensive to fly, but costly to shoot down. Developments are in hand to allow steering of the balloon with small CEP's. The projected usage for short-range penetration, using real-time readout; a "tactical" system applicable in local hot spots (e.g., Cyprus, Cuba, etc.)

5X1A

4. SENSORS

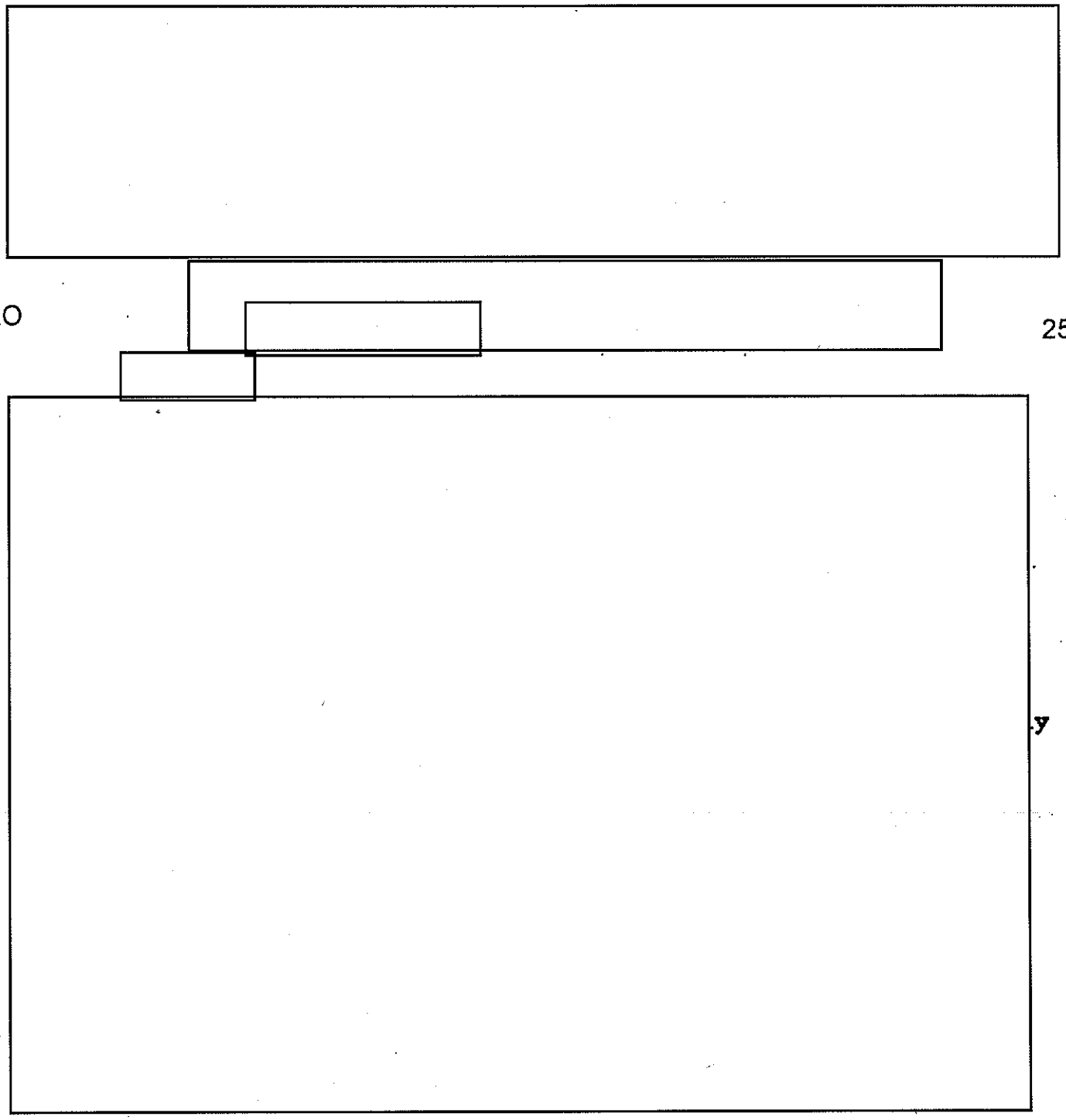
Current operational sensors are panchromatic silver halide recording cameras. Resolution of one foot is accomplished at aircraft altitudes, three feet at satellite altitudes. Developments are conceivable in angular resolution, allowing better detail recording or higher altitude operation. However, the most useful developments will be in the extension to color recording, adding another dimension to the data. This color recording has several benefits:

a. The basic information content increase.

b. The detection of many types of camouflage, which can "fool" the panchromatic camera.

c. Application to socio-economic analysis and forecasting, (crop analysis, etc.). The "color recording" noted above might either be in color film, (e.g., Kodacolor, or in multiple, photographic color separation cameras (spectral-zonal photography), including rear infra-red recording. The over-all cost will be considerably

higher than current panchromatic black and white. (This color recording potential is not directly related to quick reaction, except as its use may complicate quick reaction capability from added complexity.)



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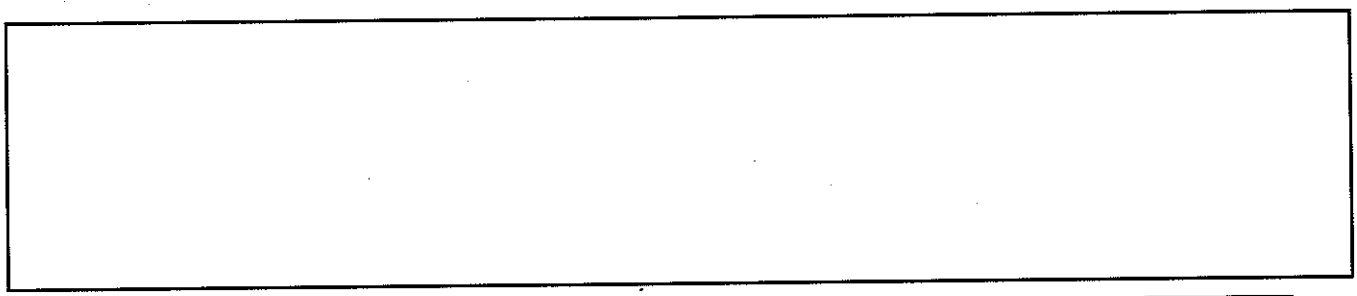

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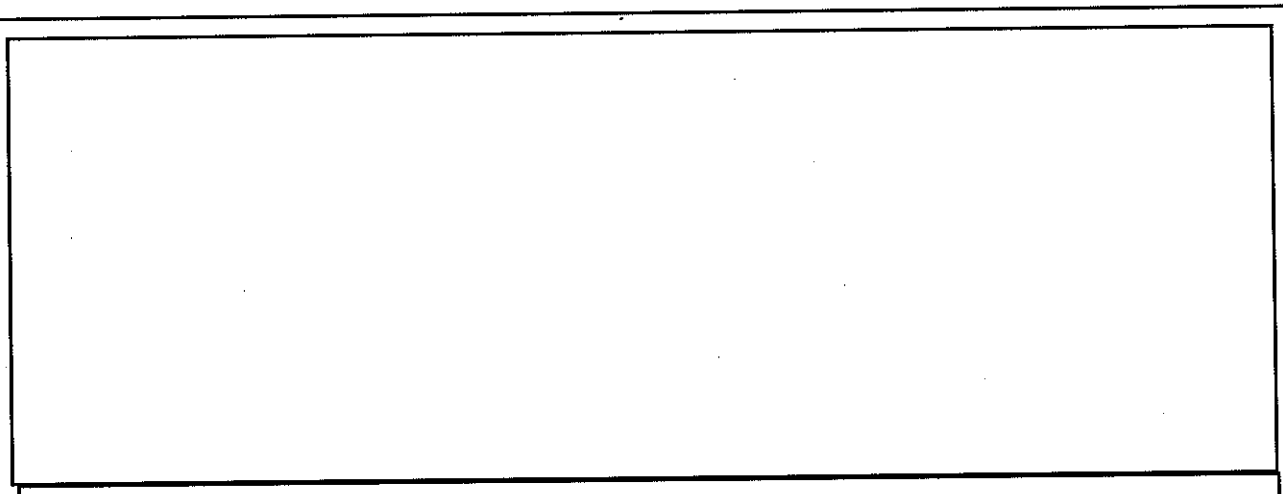

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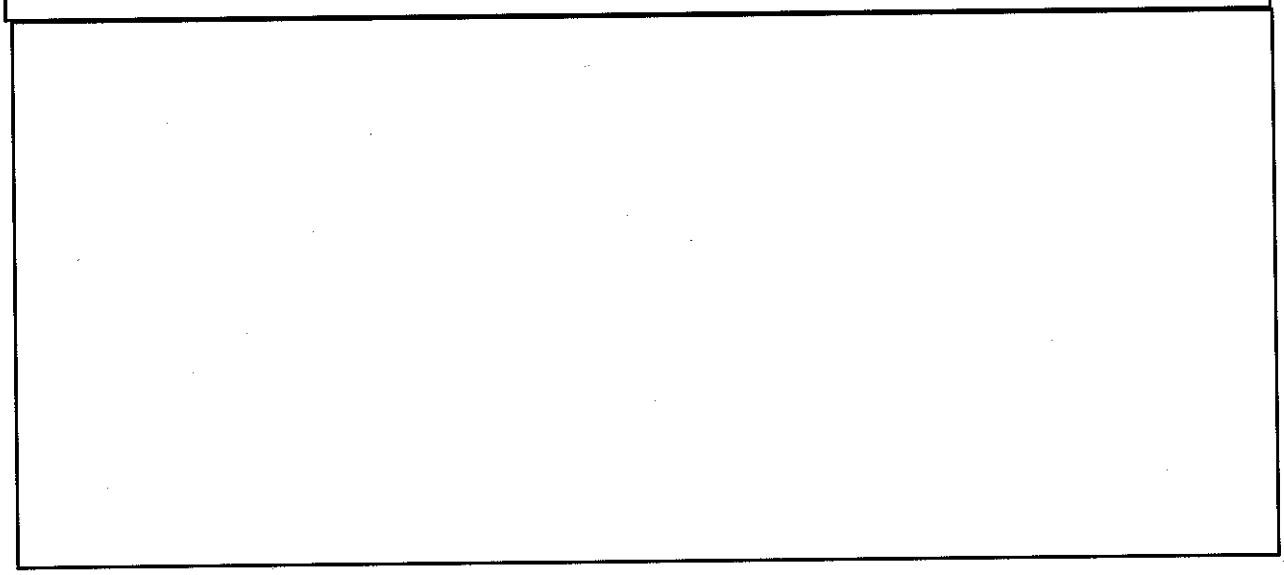

5. DATA HANDLING

As noted above, in the discussion of quick reaction satellites, a major advance is needed in the data handling process. The factor discussed there was in data transmission. This data transmission problem is also applicable to other

platforms; in addition, there are a number of other data handling problems, limiting overall reaction time, whose solution is probably closely tied in. These are in the fields of rapid analysis, storage, and retrieval. Of significance is that the critical analysis is usually a change detection and interpretation of the meaning of the change. The change detection involves a comparison of the current photograph with earlier photographs, hence the need for storage and retrieval. The application of spacial spectral analysis is of interest here. Some mechanization of the change detection would speed up the analysis process considerably, allowing available manpower to concentrate on verifying and interpreting the changes. The analysis problems apparently have much technology in common with the data transmitting, both handling the information in an electrical or digital analog. Data compression, redundancy reduction techniques, and encoding procudures, useful in transmission bandwidth compression, have promise of allowing mechanization of the change detection operation. We see little hope of the replacement of human judgement in estimating the significance of observed changes.

6. Conclusion:

The attached time estimates (att. 2) are based on the considerations above. Emphasis can modify these times considerably; the realities of technological advances cannot be forecast and are most important in the actual progress over a fifteen year period.

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26 May 1965

PLATFORMS

1965-1970

A. Current Inventory - later development stage

U-2: Subsonic, high altitude aircraft, 1 ft. photo platform (manned).

Atlas-Agena-OCV: Satellite platform for 3 ft. photo system (unmanned).

Thor-Agena: Satellite platform for 15 ft. photo system (unmanned).

OXCART: Mach 3.2 high altitude aircraft, 1 foot photo-platform, requires advanced electronic counter-measures equipment (manned).

SR-71: Advanced version of OXCART, increased payload capability, requires advanced electronic counter-measures equipment (manned).

Drones: Subsonic, high altitude drones in USAF inventory, high vulnerability.

Miscellaneous USAF reconnaissance aircraft, subsonic and limited supersonic.

B. Well into development stages.

TITAN-III: Various versions for extended satellite payloads.

TAGBOARD: Mach 3.3 drone

C. Early development stages or forecast:

[redacted] 25X

Boost-glide aerodynamic vehicles, 7500 mile range.

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5X1A [redacted]

1970-75 High accuracy, ZI recovery re-entry bodies.
Mobile Launch of satellite systems.
Orbital maneuver capability for satellites.

5X1A [redacted]
Powered flight hypersonic vehicles (rocket powered), 12,000 mile range.

5X1A [redacted]

1975-80 Powered flight hypersonic vehicles, extended range, 24,000 n.mi. supersonic combustion ramjet.

PLATFORMS:

Aerodynamic

U-2

OXCART

SR-71

TAGBOARD

BOOST-GLIDE (SINGLE CLASS)

HYPERSONIC ROCKET

HYPERSONIC SCRAMJET

Satellite

Atlas-Agena-OCV

5X1A Thor-Agena

Titan III

5X1A [redacted]

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5X1A ZI Recovery 25X1

MOBILE LAUNCH NRO

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DATA HANDLING

Now:

Physical Transport of films
Human Search and Analysis

1965-70

Early development and forecast
Limited, unsecure facsimile transmission satellite
Automated to ground storage and retrieval of photographic images

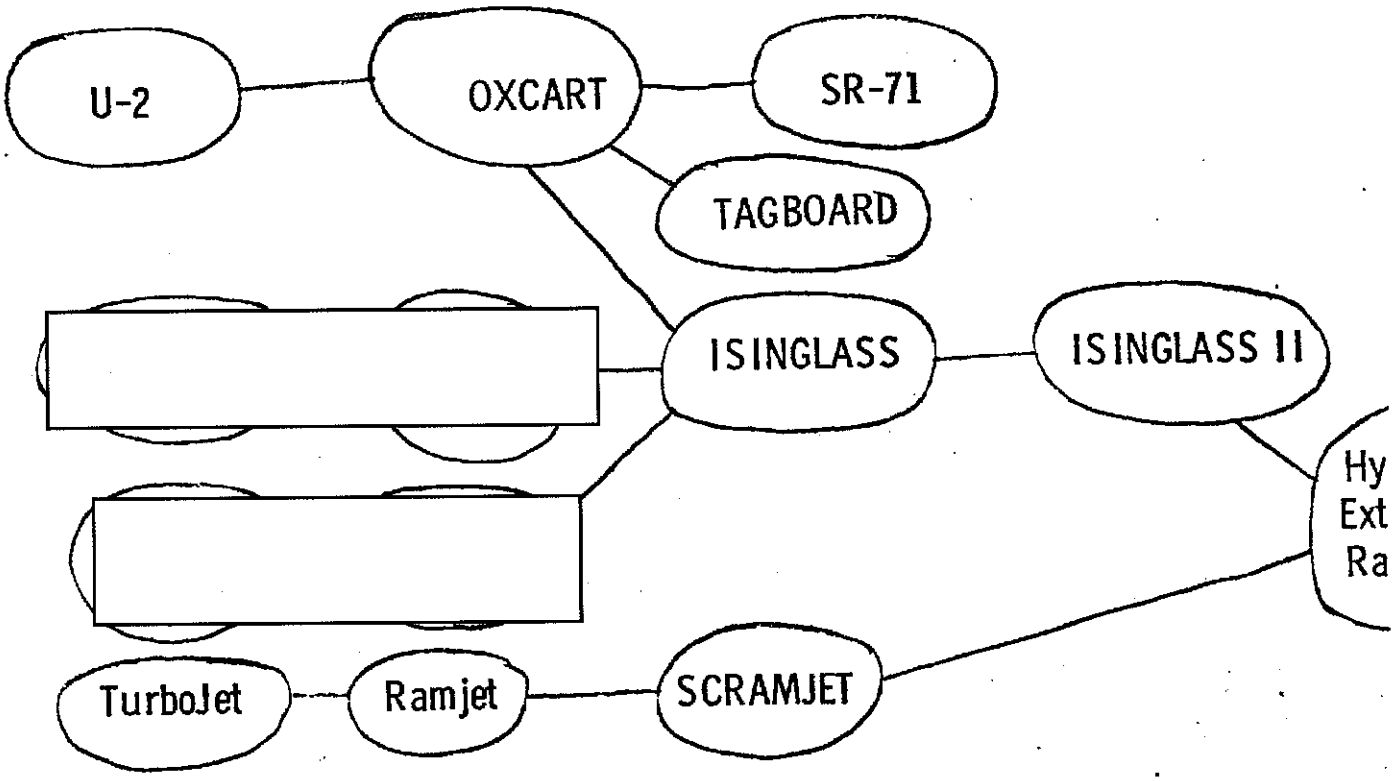
1970-65

Limited automatic change detection
Wide-band facsimile transmission systems
Communications satellites, limited capability
- -satellite-satellite relay
- -ground to ground transmission

Simple Image Integration
Frequent Observations and Good 'baseline" data
Near real time observation

1975-80

Spacial Spectral Analysis
Automation of change detection
Compensation for spacial frequency response characteristics of records
Secure data links
Continuous monitoring of selected targets



Inter-relations of various Aerodynamic Reconnaissance Vehicl

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21 June 1965

MEMORANDUM FOR THE RECORD

SUBJECT: Meeting with the Deputy Secretary of Defense on the National Reconnaissance Office (NRO)

1. The Director, accompanied by Mr. Bross, called on Mr. Vance in his office on 18 June at 1400 hours to discuss the reorganization of the NRO.

2. The Director opened the meeting with an exposition of his philosophy about the NRO which, he felt, should be a truly national institution serving the primary requirements of its various users in such a way as to best satisfy national interests. He pointed out that there were a number of current issues in dispute between elements of the NRO and elements of CIA. For example, the FY 1966 budget had never been reviewed in CIA. Mr. Vance agreed that this was deplorable and that projects should be approved and funds allocated by the Secretary of Defense and the DCI jointly. The Director also referred to the ISINGLASS project, which he suggested might illustrate parochial interests of the Air Force in the sense that the NRO was inclined to be skeptical about the project under CIA sponsorship but showed definite interest in its development under NRO (Air Force) management. The Director indicated his desire greatly to strengthen the NRO by providing adequate representation from the Agency and from services other than the Air Force. His belief is that, with genuine multilateral representation from all of the military services and CIA, and also NASA, and given good will and a real determination on the part of senior officials concerned (including himself and Mr. Vance), the NRP could be made to work.

3. Mr. Vance agreed in principle with all that Admiral Raborn had said. He identified what he considered to be the essential elements of the new organization.

NRO review(s) completed.

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Copy No. 5 of 5

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4. The first of these was an Executive Committee which should meet every two weeks on an agenda. Decisions of the Committee should be recorded and would serve as general guidance on matters of policy and as regards the allocation of responsibilities and funds.

5. In the research and development field, Mr. Vance believed that both the Air Force and CIA should be authorized to conduct research on design and develop conceptual studies with a view to promoting new ideas for systems. He felt that the cost of this activity might range from [redacted] a year on the part of the components involved. Mr. Bross suggested that it would probably be considerably less. Admiral Raborn indicated that it would be impossible to tell and would vary substantially from year to year. 25X1

6. The development and production of new systems however, in Mr. Vance's view, should be the responsibility of the NRO which should take over the contracts and supervise the engineering, production and procurement phases of all new systems. Admiral Raborn pointed out that he had in mind the importance of ensuring control of development on the part of users of the system or systems under development. This would lead to an arrangement under which responsibility for the development of specific payloads could be assigned to any one of the services, including the Army, depending on who had the primary interest in exploitation of the system once developed. Mr. Bross pointed out that this was the crucial issue in the negotiations which had previously taken place between CIA and the Defense Department, and that the CIA position, as formerly presented to the Secretary of Defense, had included the proposition that CIA's participation in the NRP should include responsibility for the development, production and procurement of payloads which would be delivered to a launching authority under the Air Force (or NRO) control, which would be responsible for mating, launching and inflight control of the system. In order to be absolutely clear on Mr. Vance's proposal, two actual illustrative situations

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were examined. One was the CORONA program, which is presently operational and for which specific improvements are projected. The second was the new general search system, which will be selected by the PSAC Panel under Dr. Land's chairmanship. The question was how, under Mr. Vance's proposal, these two situations would be handled. Mr. Vance said that he felt that CIA should continue to be responsible for the ongoing CORONA system and its improvement. He believed that responsibility for the development of the new search system should be given to the NRO.

7. Admiral Raborn asked Mr. Vance about the location of the D/NRO and Mr. Vance said that he should report directly to the Secretary of Defense. For the time being, however, he should continue also to be an Under Secretary or Assistant Secretary of the Air Force. The point was made that this was simply a continuation of the present arrangement, the wording of the present agreement providing that the D/NRO shall report directly to the Secretary of Defense and spend a considerable portion of his time on the NRP. Mr. Vance recognized the problem but said that under appropriate direction and supervision, he thought that the D/NRO could function objectively and that a face saving device was called for. Mr. Vance said that an arrangement under which the systems command of the Air Force was made responsible for launches and other Air Force reconnaissance activity, and under which both the Air Force and CIA were coordinated by a qualified individual operating directly under the Secretary of Defense would not be acceptable. This is because of concern that such an arrangement might give the Air Force too much power.

8. Mr. Vance then raised the issue of the SOC. He said that Gene Fubini had various objections to the transfer of the SOC to Langley and suggested that a briefing be arranged to explain the precise function of the SOC. He said that he felt the Agency responsible for the operation of the program should control the SOC. Admiral Raborn agreed but pointed out that he was responsible for the

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intelligence mission of the satellite operations and that the SOC was required to support this responsibility. Mr. Vance agreed that the DCI and USIB are responsible for establishing the intelligence mission of satellite operations and the scheduling and targeting of individual missions. He was under the impression, however, that the SOC performed an over-all service in the determination of the orbital plan and was not limited to delineation of intelligence objectives. It was agreed that there would be a briefing, at which the specific function of the SOC would be explained.

9. It was agreed that after resolution of the SOC problem, a new draft agreement would be prepared for consideration by the Director of Central Intelligence and the Secretary of Defense.

X1A 10. After the meeting, Admiral Raborn advised Dr. Wheelon and [redacted] of the substance of the discussions at the meeting and the areas of agreement which had been reached.

/s/ John A. Bross

JOHN A. BROSS
D/DCI/NIPE

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ADM-10.6

9 March 1964

MEMORANDUM FOR: AD/OSA

SUBJECT : ISINGLASS-64-3 [redacted] 25X1

In view of the decisions we made at the Advanced Projects meetings, it seems desirable to hold up the expenditure of any further funds on the advanced aircraft program until we have a clearer picture of what the requirements are. It is my understanding that your people will be working actively with OSI during this coming month to establish the vulnerability of the manned aircraft, considering speed-altitude-radar cross section over a wide range of these variables. I have discussed this approach with McMillan, and he is quite enthusiastic as my recent memorandum shows. Accordingly, I think we should hold up this approval until we have a complete plan.

[redacted] 25X1

ALBERT D. WHEELON
Deputy Director
(Science and Technology)

Attachment:

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MEMORANDUM FOR: Comptroller, Deputy Director for Science And Technology

SUBJECT: Fiscal Year 1971-1974 Cost Estimates

REFERENCE: Memorandum for Director of Special Activities from Comptroller, National Reconnaissance Office, subject as above, dated 10 October 1968,

X1 [redacted]

1. As requested in the referent memorandum, attached are Budget Estimates for IDEALIST, IDEALIST/SENIOR YEAR COMMON, U-2R PROCUREMENT, GENERAL R&D (AIRCRAFT), [redacted] and ADVANCED RECONNAISSANCE SYSTEMS for fiscal years 1971-1974. 25X1

2. As discussed with members of your staff subsequent to 10 October, it is understood that the OEL and ORD estimates will be sent directly to your office and hence are not contained herein.

3. Also included are the costs of procurement of an Advanced Aircraft System. It has been the practice in the past to highlight new systems when an advancement of this type should be attempted. The basis for this cost proposal is the ISINGLASS type vehicle, hence, the sums indicated are substantial. This submission is suggested and your decision as to timeliness is solicited even though the probability of approval is remote.

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NRO review(s) completed.

DONALD H. ROSS
Brigadier General, USAF
Director of Special Activities

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