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BYE-1376-70  
SORS 9./105  
11 March 1970

UNITED STATES INTELLIGENCE BOARD  
SIGINT COMMITTEE  
SIGINT OVERHEAD RECONNAISSANCE SUBCOMMITTEE

MEMORANDUM FOR: THE CHAIRMAN, SIGINT COMMITTEE  
SUBJECT: Consideration of ARROYO

1. The SORS has reviewed the intelligence requirements for ARROYO intercept data and has considered ARROYO Program capabilities as well as costs/savings, trade-offs and program impacts of both the completion and the termination of the ARROYO Program. The detailed SORS study is forwarded herewith.

2. The Army Member, SORS, has reserved on the recommendation contained in the SORS study and has presented the following rationale to support his reservation:

a. There is no question as to the validity of the requirement for COMINT mapping. It is further apparent that the [redacted] as projected will not satisfy this requirement, nor will overhead photography, although the latter can provide contributing and complementary information.

b. From information which has been made available, it appears that ARROYO will have the capability to provide unique and useful COMINT mapping information. However, no meaningful study of the utility or desirability of any collection system can be made without considering resource implications, cost effectiveness, and possible tradeoffs. Since only limited data on resource implications of the ARROYO Program have been

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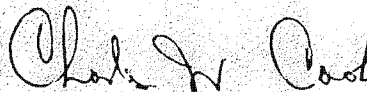
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made available, the Army cannot at this time reach any conclusion concerning the advisability of continuation of this program.

3. The other SORS Members, with the NRO Member abstaining on the basis of requirements consideration, have concurred in the attachment. They have concluded that the NRO Member has provided adequate data on which to consider costs, trade-offs and program impacts. The NRO Member has stated that termination of the ARROYO Program now would result in a savings of a few (less than five) million dollars, that these savings would be applied to a contingency fund and that these savings, at the present time, are not destined for use in other planned programs. Processing costs associated with the ARROYO data will be covered by an existing processing contract for P-11 payload data. It is believed that ARROYO will contribute significantly to intelligence data and to the development and programming of future COMINT collection systems. The SORS, with the exception of the Army Member, considers that sufficient data regarding the ARROYO Program have been made available to permit a valid judgment to be made to recommend the completion of this program.

4. It is recommended that you approve the recommendation for completion of the ARROYO Program which is contained in paragraph 8 of the attached study.



CHARLES W. COOK  
CHAIRMAN

SIGINT OVERHEAD RECONNAISSANCE SUBCOMMITTEE

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Copy 17  
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SORS 9./105  
5 March 1970

UNITED STATES INTELLIGENCE BOARD  
SIGINT COMMITTEE  
SIGINT OVERHEAD RECONNAISSANCE SUBCOMMITTEE

MEMORANDUM FOR: THE CHAIRMAN, SIGINT COMMITTEE

SUBJECT: Consideration of ARROYO

- REFERENCES:
- (a) USIB-SC-10.9/38, 27 February 1970, Subject: USIB Guidance for the FY 71 NRP
  - (b) USIB-S-10.9/8, 14 October 1968, Subject: Current Requirements for Overhead Collection and for the Processing of Communications Intelligence Signals
  - (c) USIB-S-10.9/7, 22 July 1968, Subject: Mission Objectives for Unassigned Reconnaissance Satellites

1. Reference a. directed the SORS to study the advisability of completing ARROYO for COMINT mapping. In the course of this study, the SORS reviewed references b. and c. and the capabilities of the ARROYO payload which were described by the NRO Member, SORS.

2. Reference b. indicates the USIB approved need for information on the [redacted] of known Soviet and Communist Chinese communications systems in the 60-4000 MHz frequency range. In the context of this paper, this information is considered to be COMINT mapping data. Reference b. states the requirement for the content of these systems to

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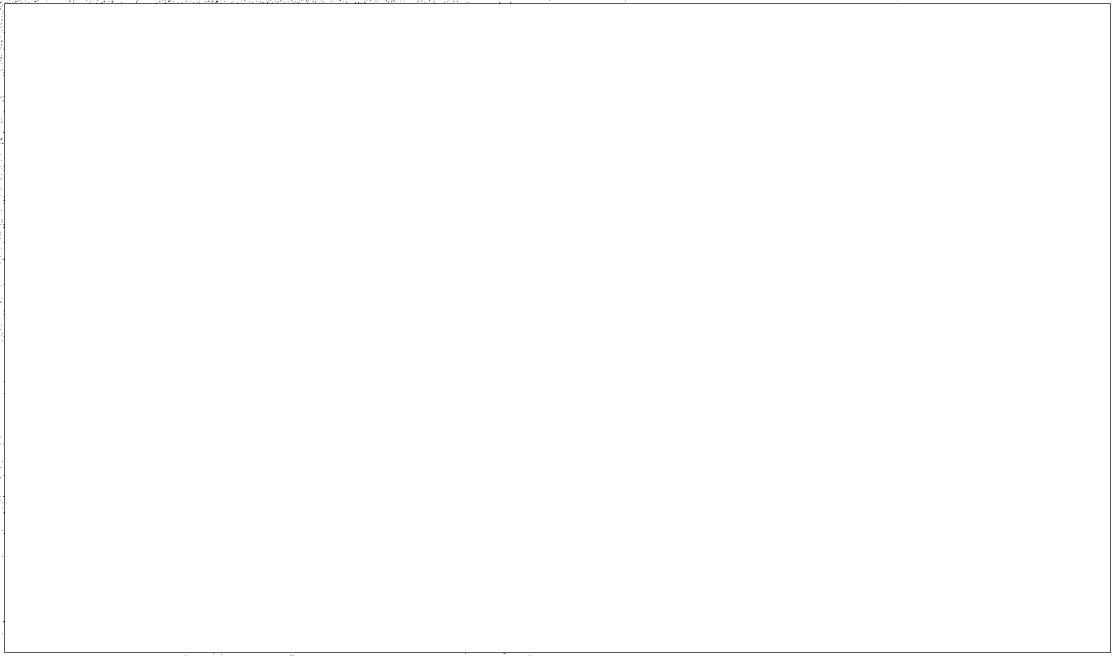
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be sampled in order to identify users and to determine the nature/volume, significance and degree of exploitability of the transmitted traffic. These requirements are also stated in reference c. The SORS finds that the need for COMINT mapping is still valid. COMINT mapping data are primarily used to assist in defining emitter beam patterns to aid in the further [redacted] These data are also used to identify precise emitter locations which may be used for strike planning against command and control communications facilities and to aid in determining command and control facility relationships.

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3. The SORS studied the following factors regarding COMINT mapping:



c. Current data on the approximately 3000 known and estimated locations of [redacted] emitters indicates that only approximately 10% of these can be intercepted because of the limited accessibility provided by the programmed [redacted]

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[redacted] emitters is much more limited, it is similarly expected that a relatively small percentage of

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these emitters will be accessible to the programmed

[redacted]

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[redacted]

It is important to associate an emitter or communications link to a high interest intelligence target/area and precise emitter location is therefore required.

4. The SORS has been advised by the NRO Member that ARROYO can determine the frequency, location, [redacted]

[redacted]

There will not be any recording of the content of the data sampled; an on-board processor will reduce the intercept data to digital form and no textual recovery would be possible. ARROYO should provide accurate locations, in addition to the technical parameters noted above, of most target Soviet and CHICOM communications emitters including those which are not accessible to the [redacted]

It is highly desirable to enlarge the data base on the locations and frequencies of Soviet and CHICOM communications emitters in order to contribute significantly to enhanced collection by future COMINT collection programs and for other intelligence needs.

5. The presently inadequate data base for locations of target Soviet and CHICOM communications emitters creates a difficult problem for their photographic exploitation.

[redacted]

use. KH-4 resolution does not permit the identification of these target communications systems. Locational information from ARROYO should assist in KH-8 and KH-9 photographic exploitation to determine the precise locations of [redacted]

[redacted]

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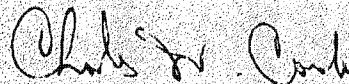
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6. The NRO Member has advised SORS that a few million dollars (less than five million) of NRP programmed funds would be used to complete the ARROYO Program. The NSA Member has advised the SORS that resources for processing ARROYO data do not appear at the present time to compete with those related to the processing of other SIGINT satellite collection systems. The NSA Member has further advised the SORS that contractual processing costs for ARROYO data will be less than one million dollars and are included in the figure provided for the NRP programmed funds for completing the ARROYO Program.

7. The SORS concludes that ARROYO payload will provide COMINT mapping information that will:

- a. Better  and other collection systems.
- b. Provide an improved basis for the evaluation of previously
- c. Contribute to a better understanding of the Soviet/CHICOM communications capabilities.
- d. Define precise locations which can be used in strike planning against command and control facilities and to assist in determining their relationships.
- e. Assist in the more efficient utilization of satellite-acquired photography by better defining areas for PI exploitation for location of communications links and their supporting units or facilities.

\*\* 8. In view of the foregoing considerations, it is recommended that the ARROYO Program be completed, as presently scheduled, without any impact on programmed systems for collection against higher priority intelligence needs.



CHARLES W. COOK  
CHAIRMAN

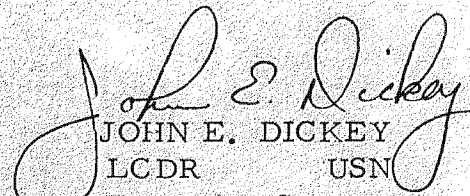
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\*\*The Army Member, SORS, reserves the Army's position on this recommendation.

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JOINTLYCopy No. 44 of 60BYE-043-70  
USIB-SC-10. 9/41  
20 March 1970  
Special Limited DistributionUNITED STATES INTELLIGENCE BOARD  
SIGINT COMMITTEEMEMORANDUM FOR MEMBERS OF THE SIGINT COMMITTEESubject: Consideration of ARROYO  
Reference: USIB-SC-10. 9/40, BYE-039-70, 11 March 1970,  
Special Limited DistributionEnclosed herewith is a record of the discussion on the subject  
which took place at the 179th SIGINT Committee Meeting held on  
17 March 1970.  
JOHN E. DICKEY  
LCDR USN  
Executive SecretaryEnclosure  
a/s

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BYE-043-70  
USIB-SC-10.9/41  
17 March 1970

Consideration of ARROYO (Restricted Session)

Reference: USIB-SC-10.9/40, BYE-039-70, 11 March 1970,  
Special Limited Distribution

1. After the Army representative withdrew his reservation, the Members agreed to the content and recommendations of the SORS paper.
2. Subsequent discussion resulted in agreement that the Chairman forward the study with the recommendation for continuance of the ARROYO for COMINT mapping to the Director, National Reconnaissance Office.

DECISION

3. The Chairman forward a memorandum to the Director, NRO.

SECRETARY'S NOTE:

The Chairman forwarded the memorandum to the Director, NRO on 20 March 1970. A copy of the memorandum was also forwarded to USIB for information as USIB-S-10.9/19, 20 March 1970, BYE-042-70.

SECRETARY'S NOTE:

USIB Guidance for the National Reconnaissance Program (NRP) for FY 71  
References: a. USIB-SC-10.9/38, BYE-033-70, 27 February 1970,  
Special Limited Distribution  
b. USIB-S-10.9/18, BYE-034-70, 2 March 1970

As of 13 March 1970, the United States Intelligence Board approved the recommendation by the Chairman, SIGINT Committee in reference b. that a statement of priority intelligence needs for FY 71 be forwarded to the Director, NRO as guidance on SIGINT reconnaissance requirements for the FY 1971 NRP. The report was forwarded to the Director, NRO for information and guidance on 16 March 1970.

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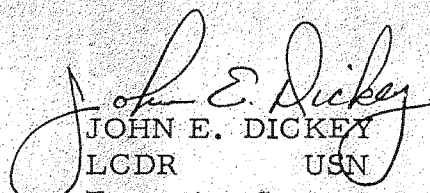
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USIB-SC-10. 9/42  
20 March 1970

UNITED STATES INTELLIGENCE BOARD  
SIGINT COMMITTEE

MEMORANDUM FOR MEMBERS OF THE SIGINT COMMITTEE

Subject: Consideration of ARROYO  
Reference: USIB-SC-10. 9/40, BYE-039-70, 11 March 1970,  
Special Limited Distribution

The attached memorandum from the Chairman, SIGINT Committee to the Director, National Reconnaissance Office, forwarding the results of the SIGINT Committee deliberations on the subject (the reference) is herewith provided to the Members for information and record purposes.

  
JOHN E. DICKEY  
LCDR USN  
Executive Secretary

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**UNITED STATES INTELLIGENCE BOARD**  
**SIGINT COMMITTEE**  
**OFFICE OF THE CHAIRMAN**

Attachment to  
USIB-SC-10. 9/42  
BYE-044-70  
20 March 1970

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MEMORANDUM FOR DIRECTOR, NATIONAL RECONNAISSANCE OFFICE

SUBJECT: Consideration of ARROYO

REFERENCES: a. Executive Secretary USIB letter ser  
BYE-034-70/a of 16 March 1970  
b. USIB-S-10. 9/8, 14 October 1968, BYE-231-68  
c. Director, National Reconnaissance Office  
letter of 20 February 1970, BYE-12664-70

1. During the preparation of the USIB Guidance for the National Reconnaissance Program (NRP) for FY 71 (forwarded to you by reference a) the SIGINT Committee considered and affirmed the advisability of including the USIB requirement (reference b) for COMINT mapping. In preparation of that guidance the Committee recognized that it should take into consideration programmed payloads designed to meet the COMINT mapping requirement. In doing so the Committee also reviewed the questions raised by General Allen in his memorandum to Dr. Cook, Chairman, SORS (reference c).

2. Reference b indicates the USIB approved need for information on the location, [redacted] operating frequency [redacted] of known Soviet and Communist Chinese communications systems in the 60-4000 MHz frequency range. In the context of this paper, this information is considered to be COMINT mapping data. Reference b states the requirement for the content of these systems to be sampled in order to identify users and to determine the nature/volume, significance and degree of exploitability of the transmitted traffic. These requirements are also stated in reference c. The SIGINT Committee finds that the need for COMINT mapping is still valid. COMINT mapping data are primarily used to assist in defining emitter

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[redacted] to aid in the further [redacted]

These data are also used to identify precise emitter locations which may be used for strike planning against command and control communications facilities and to aid in determining command and control facility relationships.

3. The SIGINT Committee studied the following factors regarding COMINT mapping:

a. A survey of western USSR communications is currently being conducted by [redacted]

[redacted]

c. Current data on the approximately 3000 known and estimated locations of [redacted] indicates that only approximately 10% of these can be intercepted because of the limited accessibility provided by the programmed [redacted] and [redacted]. While our knowledge of the deployment of [redacted] emitters is much more limited, it is similarly expected that a relatively small percentage of these emitters will be accessible to the programmed [redacted]

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Thus, considerably more information is needed about the location of Soviet and CHICOM communications emitters than can be acquired by the [redacted]. It is important to associate an emitter or communications link to a high interest intelligence target/area and precise emitter location is therefore required.

4. We have been advised by the NRO Member that ARROYO can determine the frequency, location, [redacted]

There will not be any recording of the content of the data sampled; an on-board processor will reduce the intercept data to digital form and no textual recovery would be possible. ARROYO should provide accurate locations, in addition to the technical parameters noted above, of most target Soviet and CHICOM communications emitters including those which [redacted]. It is highly desirable to enlarge the data base on the locations and frequencies of Soviet and CHICOM communications emitters in order to contribute significantly to enhanced collection by future COMINT collection programs and for other intelligence needs.

5. The presently inadequate data base for locations of target Soviet and CHICOM communications emitters creates a difficult problem for their photographic exploitation. [redacted]

[redacted] does not permit the identification of these target communications systems. Locational information from ARROYO should assist in KH-8 and KH-9 photographic exploitation to determine the precise locations of [redacted]

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*K. J. [unclear]*  
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SORS 10./143  
13 August 1971

UNITED STATES INTELLIGENCE BOARD  
SIGINT COMMITTEE  
SIGINT OVERHEAD RECONNAISSANCE SUBCOMMITTEE

MEMORANDUM FOR: THE DIRECTOR, NATIONAL RECONNAISSANCE OFFICE  
THE DIRECTOR, NATIONAL SECURITY AGENCY

SUBJECT: Mission Guidance for ARROYO - Mission 7337

The SIGINT OVERHEAD RECONNAISSANCE SUBCOMMITTEE (SORS) recommends the following mission guidance for ARROYO - Mission 7337:

1. Conduct collection operations in the 1200-2200 and 3400-3900 MHz frequency bands to acquire data on the location, operating frequency, [redacted] of Soviet, CHICOM [redacted]

USSR

[redacted]

Communist China

Southeast Asia

North Korea

[redacted]

Europe

[redacted]

Middle East

[redacted]

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2. While collecting in the above areas, special emphasis should be given to the following locations and emitters:

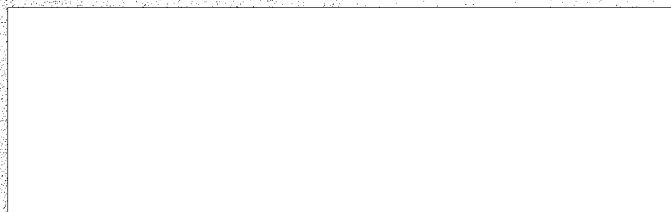
Sary Shagan -

Communist China -

Moscow Area

Northern Fleet Missile Test Range Area

3. Processing of data collection by this mission should be accomplished as expeditiously as possible.



EXECUTIVE SECRETARY  
SIGINT OVERHEAD RECONNAISSANCE SUBCOMMITTEE

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