Chrono
SA (COMOR)/DDS&T

COMOR-D-69/3

30 March 1964

MEMORANDUM FOR: Committee on Overhead Reconnaissance

SUBJECT: Summary of Results Obtained from Satellite SIGINT

Attached for the information of COMOR is a report on the above subject prepared by the SIGINT Working Group. It will be the subject of consideration by COMOR at the 2 April meeting.

James Q. Reber
Chairman
Committee on Overhead Reconnaissance

Attachment:
Subject Study

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4	DIA(Col. Ainsworth)
5	DIA(Maj. Shepherd)
6, 7, 8, 9	DIA TCO
10	OACSI TCO
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Summary of Results Obtained from Satellite SIGINT

Introduction

1. It is increasingly apparent that data collected by SIGINT satellites are of significant value, both qualitatively and quantitatively, to merit inviting to your attention at this time. The following sections of this paper are presented to summarize, utilizing specific examples, the contributions to the intelligence community made by the SIGINT satellite program.

General Search

2. The prime objective of the General Search portion of the SIGINT satellite program is to collect data on new or unusual signals, particularly those in developmental stages prior to operational deployment. POPPY vehicles have been highly successful in fulfilling this objective.

3. On 7 August 1961 POPPY provided the first, and to date the only intercept of the suspect ABM radar signal in the [redacted] range which possibility emanated from the Sary Shagan area. Despite the fact that numerous additional attempts have been made to intercept this signal, no further intercepts have occurred. NSA has assigned the [redacted] to this signal.

4. More recently in February 1963 POPPY [redacted] provided the first intercept of the [redacted] Signal which may be a new addition to the surface-to-air missile defenses of the USSR. [redacted] has a frequency of between 3,000 and 3,250 mc and a PRF of 2,000 pps. It is thought to be emanating from a tracking or guidance radar and may be related to the old SA-1 type system, although recently [redacted] is now being considered one of the prime candidates for the SA-3 system. Subsequent to the initial appearance of this emitter last February, numerous additional intercepts, apparently from the Moscow area, have been made by POPPY missions.

5. [redacted] was successful in intercepting the high interest Sary Shagan-related [redacted] emitter in September and

October of 1963. Additionally, POPPY [redacted] launched on 11 January 1964, has the frequency capability of collecting [redacted] and preliminary analysis indicates that it may already have done so on several occasions.

6. POPPY has also furnished unique information on an S-band signal which may emanate from a guidance/target tracking radar and which appears to be a variant of the [redacted] Numerous interesting, but apparently less significant than the foregoing signals, intercepts have been made by POPPY missions.

7. POPPY systems have a significant capability to produce ROB information. Analysis of data from five POPPY missions has yielded approximately 10,000 identified target emitters. From these, locations have been derived for approximately 1,000 emitters, about 300 of which were classified as new radar locations and inserted into the JCS SIOP.

8. To date data from POPPY missions has furnished significant information on TALL KING locations in the interior of the USSR, which would be virtually impossible to obtain using conventional collection methods. POPPY location of specific TALL KING sites provided guidance and the basis for confirmation of [redacted] intercept and location techniques, which in turn complements ESV reports of high interest signals from the Sary Shagan area (discussed below).

[redacted]

10. Of recent significance was furhter information on the possible SA-3 related [redacted] signal derived from [redacted] data.

Using parametric information provided by the initial POPPY intercepts, data from [redacted] was re-analyzed and found to contain at least two instances of [redacted] Derived locations indicate that one emitter was approximately 65 miles north of Moscow and the other about 235 miles north of Moscow. The ability to obtain additional results through re-analysis of [redacted] data, based on parameters furnished by other types of vehicles, is a significant example of how one portion of the SIGINT satellite program serves to complement another.

11. Finally, confirmation and/or identification of 66 TALL KING radar sites out of the 150 sites known or suspected in the Soviet Bloc on the periphery or in the interior has been derived from SIGINT satellite intercepts.

Directed Coverage

12. The secondary payload directed coverage missions designed for specific high priority targets have yielded especially valuable data and have great potential.

a. [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

b. COMINT

(1) To date on a mission designed for COMINT collection, the probable location of a [redacted] command data link emitter on Kildin Island computed from doppler measurements performed on [redacted] collected by the NEW JERSEY I vehicle on 1 August 1962 has been reported.

(2) Although the data quality is extremely poor, NSA is continuing analysis of data collected by NEW JERSEY II, Mission 7205, which was launched in January 1963, and it appears that there may be [redacted] intercepts of sufficient length and quality to provide a limited number of additional locations.

c. Radar

(1) Of high interest in the intelligence community at the present time is the ABM associated/satellite tracking [redacted] signal which has apparently been emitted from the Sary Shagan area. This signal was first intercepted by [redacted] on 28 October 1962 during valid ABM activity on the SSATC that involved a high altitude nuclear explosion. The WILD BILL, Mission 7216, which was configured especially

for this signal, was successful in intercepting [redacted] on 26 June 1963, also during valid ABM activity on the SSATC. Three subsequent intercepts were made in September and October by the POPPY General Search Vehicle, Mission [redacted] as previously mentioned, and two LONG JOHN vehicles designed for the [redacted] made three intercepts in November and five in December, producing high quality data. Numerous [redacted] intercepts of the same signals were accomplished during January and February of this year, utilizing the Naval Research Laboratory facility at the Chesapeake Bay Annex.

(2) Other significant contributions by directed coverage packages are in the 12.5 pps signal intercepted by the WILD BILL vehicle in June 1963 in conjunction with the first satellite [redacted] intercept, as well as the TALL KING locations produced from data collected by vehicles such as the TAKI, launched in December 1962.

Conclusions

13. SIGINT satellites have demonstrated an increasing responsiveness to the requirements for:

a. General Search Capability with:

(1) Long life;

(2) High probability of intercept;

(3) Broad Band Coverage over the spectrum, with frequency and parametric resolution as required;

b. ROB Capability.

c. Directed Coverage Capability.

14. From data thus far collected it has been possible to determine that there have been no apparent technological surprises

nor excursions into previously unused portions of the frequency spectrum. The data thus far collected from deep within the USSR has confirmed that the same equipments operationally deployed on the periphery are also noted throughout the interior, thus providing penetration aids programs with a factual rather than an estimated base. Knowledge of the location and operating characteristics of defensive radars employed is estimated to produce an attrition factor reduction of as much as 50 per cent for penetration forces.

15. On the basis of SIGINT satellite identified suspect areas, specific objectives have been generated into photographic missions, and as coordination techniques improve, it is anticipated that timely correlation of SIGINT and photography from all sources will be realized.

16. Finally, the potential of SIGINT satellite systems is demonstrably outstanding, and in time is expected to meet the most exacting requirements of the intelligence community.

17. Since the USSR is increasingly aware of peripheral collection efforts, the SIGINT satellite program will enhance the probability of intercept of electronic systems now suspected of being deactivated because of, or beyond the intercept range of, peripheral efforts.

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