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G-52/00022-61/jmc
18 January 1961

From: Technical Operations Group, Project GRAB
To: Director of Naval Intelligence

Subj: Status report on Project GRAB (U)

Encl: (1) NSA (COSA-5) Status Report on analysis program for Phase II dated 1 December 1960
(2) TOG comments

1. The Technical Operations Group of Project GRAB has carefully examined enclosure (1), visited the data processing and analysis operation at NSA (COSA-5), and submits the following overall report on the status of the project.

2. Summary. (For details, see enclosure (2))

a. Background. Project planning, technical feasibility and operational concept proved to be sound and practicable. Policy guidance and security control were adequate and effective. The TOG served as a simple and efficient coordinating mechanism, essential in so sensitive and complex an experiment. Existence of an in-house team with a space project capability has been demonstrated, utilizing existing field facilities with no increase in personnel. Cost of the satellite (less booster) and collection program through 1 December 1960 was approximately $1,100,000.

b. Analysis and Processing. Volume of data collected (four-fold greater than anticipated) taxed existing processing capability. Excellent promise is held for new techniques affording acceleration of analysis and capable of handling mass volumes of data. This technological breakthrough and experience gained will prove invaluable in future projects. Definitive results on data collected should be available by 1 March 1961.

c. Intelligence. The density of Soviet S-band equipment has been found to be surprisingly high overall. [redacted] and newer types of radars are in greater use than expected. The location of specific radars has been fixed to within [redacted] in two test cases. New equipments and functional irregularities of performance can be detected. Unidentified radar types have been found to be less numerous than anticipated. Verification of known radar types, including naval radar, has been accomplished.

d. Future Plans.

(1) The original concept of operations remains feasible; only minor changes are anticipated for May and subsequent 1961 operations.

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(2) Configuration of a new satellite encompassing an L-band collection capability is progressing satisfactorily and will be ready for launch in May. Hardware for additional spectrum coverage is under development.

(3) Sophistication of interrogation and collection capability designed to enhance the quality of new data collected has been programmed and will be available for future operations.

(4) Refinement of known techniques and continuing development of new concepts providing rapid read-out and analysis are continuing, with four major processing techniques simultaneously under test.

3. Conclusions.

a. A simple, inexpensive radar-intercept satellite has been flown over the Soviet Bloc, and its ability to collect signal data over a three-month period has been demonstrated in the first effort.

b. Techniques required for analysis of large volumes of electronic intercept data thus gathered are difficult, but problems in processing are being overcome.

c. Tentative intelligence results of importance have been derived, some being confirmations and some novel. Initial results will be ready for limited dissemination within six weeks.

d. Technical and intelligence results warrant implementation of current approved plans for GRAB satellites in the L and S-and-L bands for the period May-July 1961.

4. Recommendations.

a. That in future, operational security restrictions be modified slightly to permit the ELINT collection schedule to be completed faster.

b. That all agencies concerned continue to accord highest priority support to Project GRAB to ensure completion of intelligence production as soon as possible. In particular DIRNSA support is solicited for computer and other equipment time and for additional equipment and personnel as separately recommended by the Technical Operations Group.

c. That some suitable means of technical and intelligence coordination with SAMOS and similar reconnaissance satellite projects be effected.

d. That no raw data analysis or processing responsibility be delegated to another agency pending development of satisfactory techniques and necessary security controls.

e. That, when feasible, data on U. S. radars be collected to assist in the solution of analysis techniques.

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I - BACKGROUND

1. Concept of Operations. On the basis of experience gained to date it is judged that the planning, technical feasibility, and concept of operations under which Project GRAB was conducted were sound and adequate to the purpose to be achieved. Possibly some undue emphasis was placed upon security in the operational planning, a feature which can be adjusted in future plans; however, international conditions at the time were delicate and extreme caution was necessary. Other aspects of policy guidance and security control were highly satisfactory.

2. TOG Participation. The Technical Operations Group, which assisted the Project Director (RADM L. H. FROST and, after 15 September 1960, RADM V. L. LOWRANCE), has proved to be a simple and effective coordinating mechanism. Senior working level representatives from the Naval Research Laboratory, Naval Security Group, National Security Agency, and Office of Naval Intelligence possessed requisite freedom and authority, provided the important balance of technical and intelligence capabilities, and had the full support of their agency heads. Some such body is essential in a project so sensitive and complex.

3. Cost. Total cost of the satellite (less booster) and collection operations up to 1 December 1960 was approximately $1,100,000. Funds appropriated for continued Research and Development total $3,000,000. (See Future Plans.)

II - ANALYSIS AND PROCESSING

1. The volume of signal data is over four times anticipated. Furthermore, although high signal densities have been processed by purely manual techniques in prior collection efforts, there is a certain critical level in the use of such techniques beyond which human competence with existing tools becomes overloaded. In portions of these data, particularly those obtained while over the European land-mass, this high density occurs with this satellite. In our prior experience with crystal-video collection techniques, such volume was not reached; thus it is quite apparent that improvement achieved in this satellite program will be equally useful in other collection platforms to make the extraction of data more rapid, timely, and complete.

2. NSA's Status Report is encouraging as to the prospects of automation of the entire analytical process, or; at a minimum of the location and identification of the more common signal types, which comprise about 95% of the signals to date. We are not certain that such an optimistic picture is warranted, although with the number of approaches being attacked by NRL, NSA and CIA, multi-fold acceleration of analysis is inevitable.

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3. Certain processing techniques are being used currently which should permit at least data screening of all unusual signals from all previous missions, complete processing of every single signal on one mission, and an accurate density count on all missions by 1 March. With some automation break-through, more progress may be possible, but should not be counted upon by that date.

4. It is still considered premature to state specific requirements as to additional people and machines required, either for completion of current processing or handling of future data. In handling this material a number of new processing techniques have been developed which should serve to accelerate and make more accurate the processing of ELINT data from other sources.

III - INTELLIGENCE

1. The following are the principal intelligence conclusions derived from the data thus far:

a. Soviet radars are extremely powerful and numerous in S-band, their area or power concentration in this band exceeding that found over the U. S. Density is greatest in the Western USSR and decreases towards the East; no significant gaps in coverage or density are thus far evident over the USSR.

b. [redacted] are in extensive routine use in the USSR. Their radiated power appears greater than had been anticipated and they are used extensively on a grographic basis. Other newer types of Soviet radars are in greater use than was expected.

c. Capacity for location of radars has been demonstrated in several cases, and a predicted accuracy of location of about 50 miles has been verified on known unique Soviet Bloc equipment. New radar sites have been established as well in two test cases.

[redacted]

[redacted]

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2. There is a demonstrated capability that a satellite of this type can collect large amounts of data over wide areas on many types of equipment with a minimum security risk and at no risk to personnel. With greater life and improved processing techniques, together with better detailed knowledge on Soviet equipments, a simple earth satellite should be an even more powerful ELINT tool to provide warning of new equipments and deployment and insurance against technological surprise.

IV - FUTURE PLANS

1. Schedule. It is anticipated that testing of data analysis and processing techniques will be completed by 1 February 1961, and if this testing proves successful, by 1 March 1961, all of the standard types of radars (rotating emitters) will have been identified and generally located.

2. Authority has been granted and funds appropriated to launch an L-band ELINT package with a TRANSIT shot in May and a combined S-and-L band satellite in July, also on TRANSIT. Work is on schedule to date. Both these efforts are extensions of the original plans and contain no major changes of technique or equipment.

3. New Administration. Arrangements have been made to indoctrinate and brief responsible officials of the Kennedy Administration as they relieve. Requirements for increased clearances are expected.

V - FUTURE REPORTS

1. Future status reports on Project GRAB will be submitted as required, usually monthly.

Memorandum for the Sec Army SecNAV, SEC AF, DIRNSA 106654

19 JAN 1961

The field of intelligence collection, like various other parts of the Defense program, has become increasingly complex with the advent of our space capability. To provide an effective control over the reconnaissance satellite program, the Secretary of the Air Force has been directed to assume responsibility for this effort and to report on it directly to the Deputy Secretary of Defense.

At the same time, certain intelligence sources other than photographic reconnaissance have for some years been the subject of centralized management and control, not only within the Department of Defense, but for the U.S. Government as a whole. Under the terms of National Security Council Intelligence Directive No. 6, the fields of communications intelligence and electronics intelligence are managed and operated under the control of the Director, National Security Agency (NSA), on behalf of the Secretary of Defense as executive agent of the Government.

In order to maintain this centralized control in keeping with the intent of the NSC directive, it is essential that all elements of the Department of Defense engaged in the development of COMINT or ELINT applications of satellite vehicles, cooperate closely with the Director, NSA. The latter will be kept informed as early in the process of planning and development as is feasible, either directly or through the office of the Director of Defense Research and Engineering, under whose overall supervision the NSA Research and Development program operates, so that

determinations can be made at the effective moment. The Director, NSA, will in turn provide guidance concerning COMINT and ELINT requirements and will render technical assistance within his capability.

cc. [illegible] JCS

Deputy

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[Jon Potter reconstruction
Dec '97]

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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON 25, D. C.

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From: Director of Naval Intelligence
To: Director, Naval Research Laboratory

Subj: Special Project; assistance for

1. Reference is made to the special project in progress under my direction for which you and selected members of your staff have special clearances.

2. This project has reached an advanced stage and promises results which will have significant impact upon U.S. intelligence.

3. Target date for completion of research and testing of techniques is 1 January; initial results are scheduled for one month later, 1 March 1961.

4. From the outset the Countermeasures Branch of NRL has been making an outstanding contribution to development of both analysis and data processing techniques. It is requested that maximum effort be made to meet these requirements, details of which are available through the Technical Operations Group of the project.

5. I understand you and several members of your staff are being kept currently informed by Mr. Howard Lorenzen and his colleagues. The first formal status report on the project has just been completed; I will arrange that you see it, together with CNO action on it. You will be duly proud of the achievements of your personnel.

V. L. Lorenzen

V. L. LORENZEN

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Satellite Blow-Up 'Blown Up'

HAVANA (AP) Fragments of a space rocket launched from Cape Canaveral landed in Eastern Cuba yesterday, bringing charges of "a new provocation of imperialism" from the Cuban press.

The Cuban news agency said rocket debris rained on several settlements around Holguin, Cuba's third largest city, causing "loud explosions and great alarm."

A military headquarters spokesman at Holguin said some of the rocket fragments weighed as much as 40 pounds but caused no damage. He said they struck a hillside 10 miles from the center of the city at about 3 p.m.

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The rocket had been launched in an attempt to put two satellites in orbit but was destroyed in flight when a malfunction developed.

A Defense Dept. spokesman in Washington said he could not exclude the possibility that parts of the rocket might have struck Cuba as reported, adding: "We certainly are concerned about it and we are investigating it further."

Farmers at the scene reported the incident to authorities. They said no one was hurt by the fragments, which they said looked like pieces of a falling airplane as they came down.

Holguin lies near the north shore of Easternmost Oriente Province, roughly 500 miles from Havana.

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The descent of the rocket fragments first had been reported by a spokesman for the semiofficial newspaper Revolucion.

The incident seemed likely to provide ammunition for fresh attacks on the U. S. by Cuba in either the United Nations, or the Organization of American States, and possibly in both.

Castro's Cuban news agency quoted the U. S. State Dept. as saying the rocket was deliberately exploded while over Cuba.

A spokesman at Revolucion said markings on parts of the rocket clearly identified it with the U. S.

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Revolucion used banner headlines over the story and described the shower of fragments as a "new provocation of imperialism" and an example of how the Pentagon disregards the life and security of other people.

"The fall of this rocket on Cuba serves to demonstrate that these Yankees know the risks involved if rockets fall on their own territory and are firing them southward from Cape Canaveral without regard to whether steel and iron fragments fall on Cuba, Panama, Jamaica, Puerto Rico or even Brazil," the semi-official paper said.

"If the Yankee authorities persist in this type of tests they should aim their rockets in the direction of their own territory. The people of Cuba indignantly repudiate this aggression and will not forget it."