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REPORT OF WORKING GROUP TO CONSIDER THE PROPOSAL OF THE NAVAL RESEARCH LABORATORY
FOR AN ELECTRONIC INTELLIGENCE SATELLITE

- References: (a) A Proposal for an Electronic Intelligence Satellite (G),
Countermeasures Branch, Radio Division, Naval Research Laboratory,
6 June 1958 (TOP SECRET)
- (b) Memorandum from OP-30G Representative to the Chairman,
ser G-52-00187 of 25 August 1958 (SECRET)
- (c) Memorandum for the Chief of Naval Operations (OP-922Y) from
Commander, National Technical Processing Center, of 20 August 1958
(TOP SECRET)
- (d) Special National Intelligence Estimate (SNIE) No. 100-6-58
"Implications of Certain U.S. Earth Satellite Programs" (G),
29 July 1958 (SECRET)

BRIEF OF PROPOSAL AND RECOMMENDATION

The Naval Research Laboratory, in reference (a), has made a proposal for an S-band electronic intelligence satellite which could fulfill a long-standing requirement for the collection of electronic intelligence from the interior and infrequently covered maritime regions of Russia. A Working Group composed of representatives of Navy agencies concerned with the design, use, and intelligence exploitation of such a satellite has unanimously agreed that the proposal is sound and worthy of sponsorship by the Office of Naval Intelligence. The remainder of the report discusses the various aspects of the feasibility of the proposal and the ELINT requirements it will meet, concluding ^{W/177} a detailed recommendation as to further sponsorship by ONI. A detailed technical discussion has not been included in this report because the basic proposal, as published by NRL, is relatively brief.

TECHNICAL FEASIBILITY

The NRL proposal is believed by the Working Group to be technically feasible. The program under which it was evolved is a Bureau of Aeronautics project for the development of microminiature electronic reconnaissance systems for use in manned or unmanned supersonic vehicles operating in the earth's atmosphere or outer space. In the initial phases of the program, involving an assessment of state-of-the-art developments, it became apparent that a simple, reliable system of the type proposed by NRL could be realized very quickly.

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All of the components of the proposed system are elements in existence that have generally been tried and proven in various operational complexes, i.e. Vanguard, and Explorer. The assembly of such units into the satellite configuration proposed poses no significant engineering problems which require long-term solution and development.

Technical Feasibility in View of the Air Force Reconnaissance Satellite Program WS-117L

The NRL proposal must be compared technically with the currently approved and implemented Air Force reconnaissance satellite program WS-117L now bearing the code name SENTRY. A survey of SENTRY has shown that it is a well-founded, valid, and technically feasible program, but it is currently faced with a reduction of funds and the earliest launching of a SENTRY vehicle carrying ELINT equipment is now scheduled for mid 1960. At that time it will cover the S and X bands and its primary function will be relatively precise location of signal sources; thus its operation, data storage and data handling requirements are extremely complex and expensive. On the other hand, the NRL proposed satellite could be launched 4 months after approval, it is relatively simple and inexpensive, and would provide coverage of the S-band on a signal density basis. Its output could greatly enhance the SENTRY program by providing one year of advance reconnaissance coverage which will indicate Soviet areas where refinements and augmented capability of the SENTRY system could most advantageously be employed. Thus, the significance of the NRL proposal is one which transcends Navy requirements and supports the national effort of readiness and defense. It in no way duplicates any other known program of the Department of Defense.

OPERATIONAL FEASIBILITY

The OP-300 representative on the Working Group has indicated in reference (b) that the operational requirements of the NRL proposal can be met as indicated by the following headings:

Collection

The Naval Security Group has [redacted] ELINT stations in operation which are available for collecting data transmitted from the satellite. They are located at [redacted] Trained personnel are available and operational priorities can be adjusted. Special antennas and receivers will be provided by the Naval Research Laboratory.

The services of other military stations and agencies should be requested. The availability of trained personnel and equipment at other stations is not known.

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The National Technical Processing Center (NTPC) has the facilities and trained personnel to process and report on the material received from the intercept stations. Realignment of priorities will be necessary in order to report expeditiously on material intercepted by the satellite. In addition to the foregoing statement by the OP-30G representative, the Commander, NTPC, has stated in reference (c) that: "As a result of NTPC experience with unattended, open receiver recordings, a factor of approximately 10 to 1 can be estimated as the ratio between analysis time and recording time. It is anticipated that the importance of any successful recordings from the satellite proposed by NRL would justify processing on a priority basis, and that information for guidance and re-direction of the program would be available within a few days after receipt of the first recordings."

Alerting

Orbital data and programming information can be provided by NTPC in coordination with the Naval Research Laboratory.

ELINT REQUIREMENTS WHICH THE NRL PROPOSAL COULD FULFILL

The Commander, NTPC, has indicated in reference (c) that ELINT information which the satellite could produce would be of value in meeting the following requirements, or goals of the ELINT program:

- a. Intelligence estimates of equipment density and disposition in the interior of the Soviet Bloc. Present sources of ELINT data of this type are limited in coverage and dissemination.
- b. Interception of signals from S-band emitters which have not been previously intercepted. It is well known that most of the Soviet research and development facilities are located beyond the intercept coverage of the present ELINT sites. Intercepts from these facilities are vitally needed to prevent technological surprise.
- c. As a quantitative check against other ELINT collection methods. An establishment of the total signal environment, even only in S-band, would allow a more realistic evaluation of our present collection efforts.
- d. The advancement of ELINT collection techniques. This proposed method of collection is unique and offers possibilities, through experience to be gained, of considerable advancement in collection methods such as unattended ground-based collection devices, NRRO, WS-117L and others.

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e. Providing, at an earlier date, an approximation of the problems which may be encountered later from larger ELINT satellite programs.

FISCAL CONSIDERATIONS

The fiscal requirements of the NRL proposal are relatively economical, since the \$250 thousand required to produce five fully instrumented vehicles and ground equipment has already been budgeted by the Bureau of Aeronautics. The only expenditure which would have to be approved by ARPA is that required for launching vehicle(s).

INTERNATIONAL IMPLICATIONS

The Working Group did not discuss international implications of reconnaissance satellites at length, since it was believed that such matters had previously been resolved in the planning for the SENTRY project. However, reference (d) is believed to represent the current, agreed position of the intelligence community in the matter.

RECOMMENDATIONS

Since the Working Group has unanimously agreed that the NRL proposal for an ELINT satellite is feasible on the basis of technical, operational, and fiscal considerations, it recommends:

- a. That the Director of Naval Intelligence recommend to OP-91 and ARPA that the Navy be permitted to place the NRL-designed satellite in orbit at the earliest possible date.
- b. That NRL personnel be requested to prepare an appropriate briefing on the proposal for presentation to the Chief of Naval Operations and ARPA.

Respectfully submitted,

Commander, USN
Chairman of the Working
Group to Consider NRL
Proposal for an Electronic
Intelligence Satellite

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