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5 MAY 1971

NATIONAL RECONNAISSANCE PROGRAM

Washington, D. C.

ExCom-M-25



NRP EXECUTIVE COMMITTEE

Minutes of Meeting Held April 23, 1971
Office of Deputy Secretary of Defense
Room 3E 928, The Pentagon
1:20 - 2:40 p.m.*

Members Present

Mr. David Packard Deputy Secretary of Defense
Mr. Richard Helms Director of Central Intelligence
Dr. Edward E. David, Jr. Science Advisor to the President

Others Present

Dr. John L. McLucas Director, National Reconnaissance
Office, Ex Officio
Dr. F. Robert Naka Secretary, NRP Executive Committee
and Deputy Director, NRO
Ex Officio

Dr. John S. Foster, Jr. DDR&E
Mr. Robert F. Froehlke ASD/A
Vice Adm. Noel Gayler Director, NSA
Lt. Gen. Donald V. Bennett Director, DIA
Dr. James R. Schlesinger Assistant Director, OMB
Mr. Carl E. Duckett DDS&T/CIA
Dr. John J. Martin Office of Pres. Sci. Advisor
NRO Comptroller

(Present for Ocean Surveillance Item Only)

Dr. Robert A. Frosch ASN (R&D)
Rear Adm. F. J. Harlfinger, II ACNO (Intel)
NRO Staff
SAFSP

*An Executive Session (from noon to 1:10 p.m. and attended by the three principals, Dr. McLucas, and Dr. Naka) was held prior to the regular meeting.

GAMBIT HEXAGON



EARPOP TAGBOARD IDEALIST

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Interim Systems for Crisis Photographic ReconnaissanceIssue

Should the NRO acquire an interim photographic reconnaissance system for crisis response prior to the introduction of EOI? If so, should the funds be obtained within the current NRP?

Electro-Optical Imaging SystemIssue

What EOI configuration(s) should be pursued and at what rate should the program proceed?

Discussion (Interim Systems and EOI)

Mr. Packard asked Dr. McLucas to introduce the subject. Dr. McLucas said we had reviewed a large number of approaches for crisis and interim reconnaissance and boiled it down to twelve different approaches. All of the possibilities were circulated in various papers prior to this meeting. He said the choices could be reduced to

- a. Continue to launch GAMBITS and HEXAGONS and phase into EOI without acquiring an interim system;
- b. In addition, to acquire FROG; or
- c. In addition, to acquire

The is cheaper but it offers less than FROG which has the advantages of being both an interim and a fall-back capability for EOI. However, it produces more of a budgetary problem. These costs were all illustrated with the agenda sent out yesterday.

Looking at the overall budget, we peaked in 1968 at about and have been driving it down since then. For FY 1972, we propose to go up a little above a level. Our customers would like to have the near-real-time capability; in addition, their other requirements tend to push the total budget to about the level which includes

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[REDACTED]

Mr. Packard then asked for comments around the table. Dr. Schlesinger said the FROG system is quite attractive in terms of near-term capabilities. Mr. Schultz had indicated in a letter to Mr. Packard that the President has expressed vigorously the desirability of NRT and that the President had wished to have this capability available during his second term in office.

General Bennett commented that there is a requirement now for some kind of interim system to provide us with the basic items of Soviet and Chinese deployments. He put a high priority on resolution and area coverage. He also felt that the interim solution should have growth potential such that it might become a candidate for the final solution. In his opinion, only FROG and [REDACTED] satisfied in general the several characteristics desired. Of the two, he favored FROG. At a later time he could see the possibility of competing EOI and FROG.

Mr. Froehlke agreed with General Bennett's conclusion on eliminating all systems but [REDACTED] and FROG. He asked Dr. McLucas how the choice of either [REDACTED] or FROG is affected by aircraft systems such as TAGBOARD and the SR-71. Dr. McLucas responded that if there were any aircraft capability at all then perhaps [REDACTED] would be more desirable because more vehicles could be bought for the same amount of money. Mr. Packard added that we have been through this argument several times. The likelihood of using the SR-71 and TAGBOARD in peacetime over the Soviet Union is very, very small and the chances of using them over China are good but becoming smaller. The SR-71 in particular is a good backup capability in a shooting situation.

Admiral Gayler said he had made a plea yesterday at the USIB for balance in considering these systems--at the risk of being repetitious for those who were there, he would try a short summary. Crisis management is often discussed as though photography were the article by which we manage and obtain our knowledge about crises. However, we ought remember that we do not meet crisis management and intelligence needs solely through photography but we should strive for a balanced program of photography and COMINT [REDACTED]

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[redacted] and some of the lower altitude systems, also). As a matter of background, Admiral Gayler presented figures which showed that in the satellite business projected through FY 1976, some 31 percent of the money is in SIGINT and the rest in PHOTINT--that breaks down to about 5.5 percent in COMINT, almost 12 percent in telemetry, and 13 percent in ELINT. That may be the right balance but it is interesting to reflect that one of the programs quite likely to give us predictive information on crises--unique information, not vulnerable to darkness and weather--has, at the present time, a pretty small piece of the pie. He felt we should be very careful about slowing down on SIGINT capabilities in order to accommodate photographic capabilities.

Dr. Schlesinger pointed out that he agrees with Admiral Gayler's breakdown of the NRO budget but in looking at the overall intelligence budget, between 60 and 65 percent of collection is in SIGINT. Admiral Gayler felt that it should be that way. However, there should be plans for moving more of the conventional collection techniques into satellites. The problem was not a simple one. General Bennett said DIA took a hasty look at this problem last year only in the area of strategic weapons in the Soviet Union. The greatest contribution came from PHOTINT, followed by HUMINT, with SIGINT third.

Dr. Foster felt that if the President and the ExCom felt an urgency to obtain an interim capability, then it was clear that one should be obtained. On the other hand, it seemed clear to him that ten years from now there would be an EOI system wired to a 2000 megabit, not a [redacted] relay system. Hence, he would make a strong plea to start a team to change the scale of the detectors. He was concerned that if we tried to nurse along the present system over a long period we may get stuck with the present scale, thus we would lose the time available to us for technological advancement.

Mr. Packard wanted to change the emphasis in the discussion. He said he was frankly very much impressed with the progress made on the EOI system. The men had done an excellent job, hence he did not want any decision made to acquire an interim system irrespective of any impact on EOI. He said he supported fully the properties of EOI, that it is the ultimate system we want. We should decide that now and not make a decision to acquire an interim system on the basis

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of coming back later to compare one against the other. He saw in EOI some problems of technology--it had a lot of new technology to assemble into a system and launch by 1975. He felt that to provide an extra year in the schedule would help in acquiring the system, so he wanted to make a firm commitment to EOI. The advantage he saw to acquiring FROG is that it could be a low-risk backup program to EOI while providing an interim capability. Although FROG was more expensive than [] it provided more capability.

He wanted to make it very clear to those working on EOI that we are fully behind them.

Dr. Foster asked that, assuming Dr. McLucas obtains the necessary data, would Mr. Packard assume an EOI system start would occur a year from now. Mr. Packard responded that he wanted the program people to produce a plan of action which would continue the program at about the same budget level as this year and extend the program for one year.

Mr. Duckett commented that we were not locked into the final design as Dr. Foster feared. We had left a great deal of margin in weights, slewing rates, and array configurations. We had even investigated the [] for [] for 1978. Dr. Foster rephrased his concern that a year's delay to launch the EOI system could well permit an advancement in the sensor technology. Mr. Duckett reassured Dr. Foster that the system had been designed with a great deal of flexibility, flexibility in the sensors for interchanging area coverage and resolution and the impact that any stabilization system might have. Mr. Packard added that it was a good program: The sensors were in modular form and the system was flexible. He felt the system could be built and that we should give it a go-ahead. We wanted the best system and were committed to EOI. Assuming no funding difficulties, we could keep the program going.

Dr. David said he could only second all the comments made so far. In the near term, the film readout system, FROG, seemed to be the correct approach. Acquiring FROG minimized risk and maximized capability. He felt that costs were quite within bounds. He hoped by the end of the year we would have more options to examine and felt the entire program was very exciting.

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Mr. Packard recommended that we go ahead with both programs. Specifically, that we are 100 percent behind EOI; we authorize Dr. McLucas to firm up costs and schedules on FROG and review these in a month to six weeks. If the programs become difficult to handle within the budget, perhaps we should have another meeting. Mr. Helms and Dr. David concurred.

Dr. McLucas continued, saying that he wanted to discuss the conclusion being reached. He pointed out that there was an area coverage problem on the EOI system when the ExCom met last time. [] had been introduced which improved the area stripping by a factor of two or three times. This decreased the strain on the system and gave it good degradation capability if we lost some control of the spacecraft. How this new capability impacts on the overall system depends on what decision is about to be reached. By deciding to proceed with FROG, certain assumptions are being made on what this does to the EOI schedule. The important options presented included various delays for EOI. The one that appealed to him was Mix 4 which called for an EOI go-ahead slip of roughly one year. This permitted holding the EOI budget in FY 1972 to []. This left enough money to proceed with other programs. He inquired if that were the decision.

Mr. Packard said the budget of [] was correct but he did not want the delay to apply to the go-ahead. He wanted a year's addition to the total time of the program.

Dr. McLucas felt that Mix 4 put a year's delay in the plan but not necessarily a year's delay in system availability. In fact, since the program would be done more deliberately, it might actually advance system availability. Whether the FY 1972 budget is [] would have to be worked out.

Dr. David inquired about a two-year delay and Mr. Packard responded that he did not want to consider it. Mr. Packard asked Dr. McLucas to work out the program for one year's delay. He added that the area coverage capability should be worked into the program. This decision would impact on the design of the sensor string and perhaps on the data handling, relay, and processing.

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Decision

Voted: FROG will be acquired for the interim photographic reconnaissance system for crisis reconnaissance. The impact on the NRP total funding should be minimized.

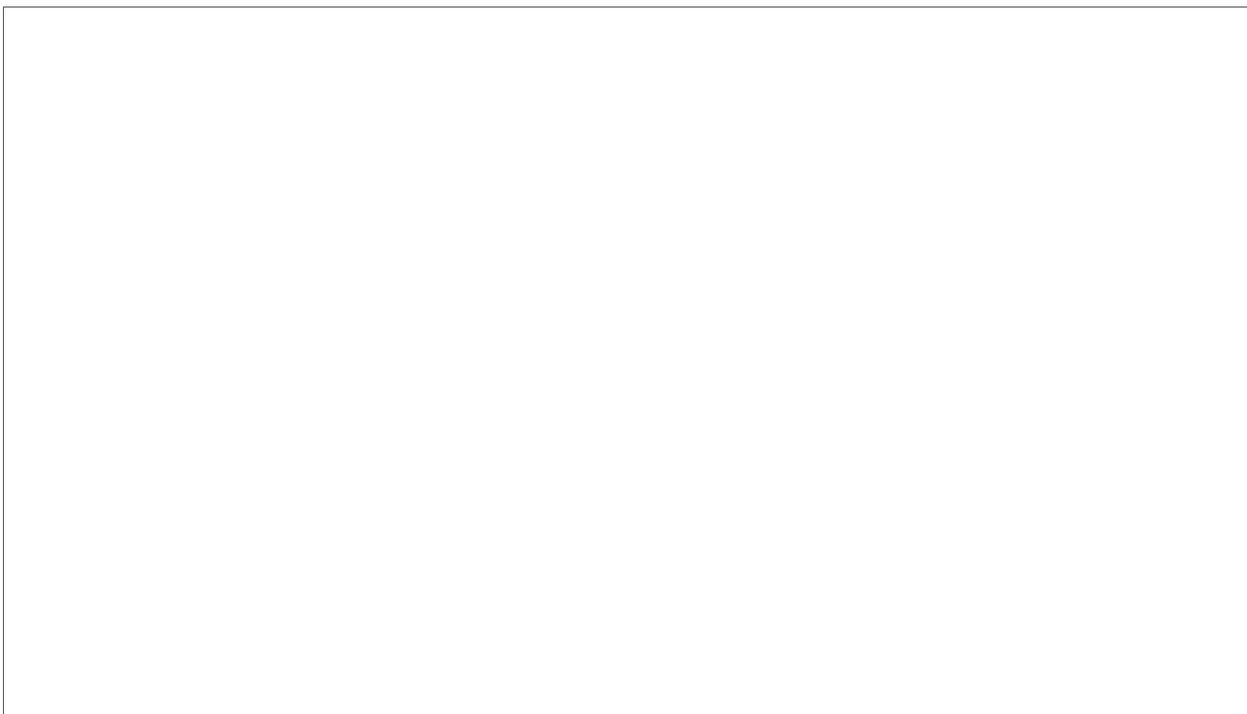
Voted: The date of first launch of EOI should be extended one year to early 1976.

Voted: The area coverage array should be included in the EOI system.

Action

The DNRO will produce firm bids, costs, and schedule for FROG in about six weeks. He will produce a new plan including costs and schedule for EOI in about six weeks. He will indicate the impact of these program changes on the total NRP budget.

The DNRO will include the area coverage configuration in the further development of EOI.

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As for HEXAGON, Dr. McLucas said the plan was to move the payload to Vandenberg on May 3 and launch on May 20. He did not know any reason as of today why that was not a feasible plan.

Dr. Naka continued that he had reviewed the program during the week. He said he had been concerned that after the shipment of the sensor subsystem from Perkin-Elmer to Lockheed on October 19 we had predicted a launch after four months. At the last ExCom he had pointed out that it was actually taking seven months. As evidence that the four-month estimate was overly optimistic, he pointed out that the plan for Vehicle 2 is six and a half months to launch after shipment from P-E. Today, the May 20 launch date looks comfortable because we delayed the HEXAGON launch from about May 10 by launching GAMBIT yesterday. Since we prefer to have only one photographic satellite in orbit at the time, we pushed the launch of HEXAGON downstream.

Although May 20 looks comfortable, it must be remembered that this is the first vehicle of a developmental system. Because it costs a great deal of money, we must be--and have been--extremely careful. The seven months have been consumed in making a great many tests and we did uncover mistakes such as improperly designed thermal blankets.

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Ocean SurveillanceDiscussion

Dr. McLucas introduced the subject by pointing out that we have been tasking some of the NRO assets against the Navy's ocean surveillance needs. FMSAC has sponsored some studies of Soviet tracking of our ships with their satellites and the Soviets may be ahead of us. Also as long as we continue to use HF communications on our ships, they will not really have much of a problem tracking us. In addition, Mr. Packard has been trying to have the Navy present a DCP covering a UHF satellite communications program to which everyone can agree, and which would reduce our dependence on HF.

Dr. McLucas continued that more could be done in ocean surveillance with the assets we already own. In addition through modifications of our current assets, we could do considerably better. Therefore, for the last year or so we have been in an experimental state to see how NRO assets could be used and to develop ideas on what ought to be done next. We have an agreement signed by the Navy and the NRO which he interpreted as meaning the NRO would try to satisfy Navy ocean surveillance needs with existing assets. The Navy would have the right to ask for a dedicated system if NRO assets did not satisfy their needs. In the meantime, the NRO would try to prove that it could satisfy the Navy. We have an agreement with the Navy that if ocean surveillance were discussed at the ExCom the Navy would be invited to be present. Hence, Dr. Frosch and Admiral Harlfinger, representing Admiral Zumwalt, have come to the meeting for this portion.

Dr. McLucas then introduced [redacted] USN, of the NRO Staff who briefed the ExCom on NRO activities on ocean surveillance.

Summary of Informational Briefing
on Ocean Surveillance

[redacted] opened his briefing by identifying the Navy focal point for ocean surveillance (using space systems). Captain Robert K. Geiger, USN, PM-16 (Space Project), is the responsible officer. Captain Geiger is also wearing an NRO hat as Director, Program C.

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The NRO (national) requirements and the Navy needs for ocean surveillance were identified. [redacted] emphasized that neither USIB nor Navy requirements are being met satisfactorily at present (probably less than 5 percent satisfied). The former are spelled out in USIB-S-10.9/20 of 29 June 1970 - the NRP Budget and Five-Year Plan. The latter needs have never been precisely defined by the Navy. However, a letter from Admiral Harlfinger identified a system of guidelines with position accuracy requirements ranging from [redacted] and time delays ranging from 15 minutes to 6 hours (the lower figures representing the most critical situation). The criticality was determined by a set of weighting factors which were derived from the following parameters:

- a. Own forces proximity to unfriendly or enemy forces,
- b. Geographic area,
- c. Political climate, and
- d. Importance of unfriendly or enemy vessel.

The major conclusions and recommendations of the Ocean Surveillance Subcommittee of the Defense Science Board (Herzfeld Committee) during the summer of 1970 were discussed insofar as they affected the Navy and the NRO jointly. The recommendations were

- a. Pursue the use of ELINT satellites as a source of ocean surveillance information.
- b. Investigate the use of high-altitude aircraft for ocean surveillance in the Mediterranean.
- c. Expand undersea (acoustic) surveillance capability using mobile or fixed sonobuoy arrays. Look into readout from satellites as well as from aircraft.

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In each of the above areas, [redacted] pointed out that studies, experiments, and formulation of design concepts are being carried out. The present operational ELINT satellites are being tasked in increasing amounts to perform an ocean surveillance function. The POPPY system is being augmented by placing additional computing facilities and personnel at the field sites. These are located at

[redacted] Recently, other NRO ELINT systems have been exercised in the TANGIBLE exercise off the California coast.

The NRO is making a loan to the Navy of the SENIOR LANCE U-2 during June and July 1971 for side-looking radar experiments in the Atlantic-Caribbean area.

The Navy (PM-16) and the CIA (OSP) have recently reached an agreement to conduct studies of using [redacted]

[redacted]

[redacted]

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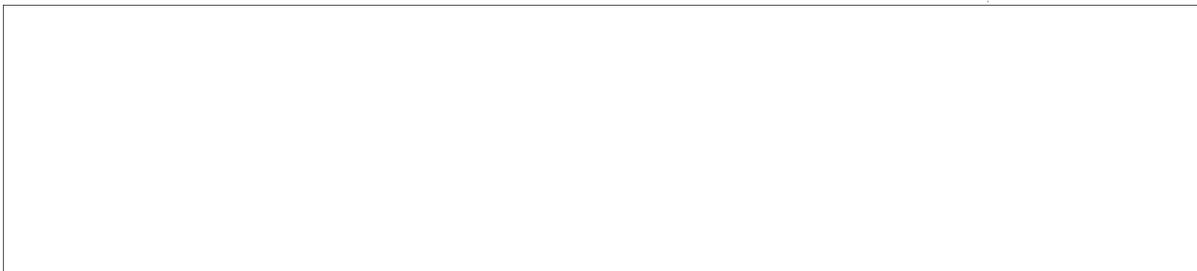
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The TANGIBLE exercise (part of the Navy ADMIXTURE exercise) was briefed by [redacted]. This exercise had as a goal the demonstration of STRAWMAN (REAPER/ THRESHER) and P-11 (TRIPOS/SOUSEA) capabilities against ship emitters. It was held off the coast of California during the last week of February 1971 and the first week of March. Several vu-graphs were shown demonstrating the capability of both these spacecraft to detect and geolocate the exercise ships. The advantages of the wide swath of the TRIPOS/SOUSEA was evident (1500 nm), compared with the 150-200 nm swath of the STRAWMAN payloads. Average time delay from emitted signals to receipt of ship locations at FOSIF (Treasure Island, California) was two hours and five minutes. This was comprised of 45 minutes from signal intercept by the satellite to read-in at the ground-based signal processor, 26 minutes to process, 20 minutes to analyze the data, and 26 minutes until receipt of the message at the FOSIF.

As for the issue: "Should the NRO SIGINT satellite program be modified to deliver tactical data to the Navy (and the Army and Air Force)?" the agreement signed on April 2, 1971 by CNO, ASN (R&D), and DNRO was discussed next. This agreement specified the use by the Navy to the maximum extent possible of existing systems for ocean surveillance. Additionally, the Navy agreed to utilize SAMSO and Aerospace to the maximum extent possible in the execution of ocean surveillance programs.

Discussion Continued

At the conclusion of the briefing, Mr. Packard inquired what the accuracy of the locations was. [redacted] responded that STRAWMAN accuracies were typically about [redacted] TRIPOS/SOUSEA would vary considerably, depending upon the position of the radar in the swath. It could be below [redacted] if so directed but typically it was from [redacted]. The correlation of SIGINT measurements with other data for this operation have not yet been produced by the Navy.

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Dr. Frosch continued that the satellite data were merged at Treasure Island with SOSUS data on surface ships and submarines as well as data from other sources. He felt that the integration of position data from all the sources had been well done.

Admiral Harlfinger, responding to a question from Mr. Packard, said that the SOSUS had worked very well. However, he said the fleets tried spoofing of both the satellites and the SOSUS so the final outcome was not yet known. As for the exercise, it would be well to point out that most of the elements were set up specifically for ADMIXTURE, including an analytical team at the FOSIF.

[redacted] noted that the satellite data near shore had correlation from shore-based surveillance aircraft. On the other hand, considerably further out at sea the satellite data were especially valuable. This experience will probably be true operationally in areas such as the Indian Ocean.

General Bennett wanted to have it noted that POPPY has other tactical applications such as those for EUCOM. Last September and October, the NRO SIGINT systems were tasked against exercise COMRADE-IN-ARMS. Here a number of shortcomings were high-lighted which enabled the NRO to respond better in the case of the TANGIBLE exercise. He felt that the NRO system could, and he hoped that it would, respond to the total military tactical needs rather than only for the Navy.

Mr. Packard felt that this was an excellent way to proceed: To find out what can be done, then decide what to do.

Admiral Gayler inquired who was investigating [redacted] for tactical applications. General Bennett responded that his office was investigating the problem and Dr. McLucas said his office was also. Admiral Gayler wanted it noted that there were two important parameters which needed to be considered--first, the duration

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of the signal and, second, the continuous character of observation--since the product of the two yielded the desired information.

The meeting was adjourned at 2:40 p.m.



F. Robert Naka
Secretary
NRP Executive Committee

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