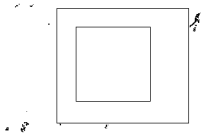

OFFICE OF THE SECRETARY OF DEFENSE

29 October 1975

Memo For Mr. James W. Plummer
Under Secretary of the Air Force

The attached is provided for your information.

Elmer T. Brooks
Lt Col, USAF
Military Assistant

Attachment

Copy furnished:
Dr. Albert Hall

POINTS

1. PAPER HAS MANY ERRORS IN FACT AND SOME OMISSIONS
2. MR PLUMMER SHOULD NOT BE PUT INTO A POSITION OF DEFENDING THE KENNEN DECISION PROCESS — HIS POSITION SHOULD BE ONE WHICH SUGGESTS THAT DURING HIS TENURE THE DECISION PROCESS HAS BEEN STRAIGHT FORWARD AND EFFECTIVE
3. MR PLUMMER SHOULD PRESENT THE THINKING WHICH PREVAILS WITH REGARD TO THE BASELINE PROGRAM AND DECISIONS
4. WE SHOULD ASK THE STAFF TO MAKE CORRECTIONS TO THE PAPER TO REFLECT OUR PLANNING, ETC.

United States Senate

SELECT COMMITTEE TO
STUDY GOVERNMENTAL OPERATIONS WITH
RESPECT TO INTELLIGENCE ACTIVITIES
(PURSUANT TO S. RES. 21, 94TH CONGRESS)
WASHINGTON, D.C. 20510

R-1671

~~TOP SECRET~~
BYEMAN

October 28, 1975

Mr. Carl Duckett
Deputy Director
Directorate of Science and Technology
Central Intelligence Agency
Washington, D. C.

Dear Carl:

As part of the Committee's study of how technical intelligence collection systems are developed and tasked, we are planning a hearing on November 6, 1975. One part of this session will be a discussion of how the Kennen satellite system was developed. Given your personal involvement in this decision, the Committee would like to invite you to begin this hearing with a statement on how the decision to develop Kennen was made.

The staff has prepared a paper on the basis of interviews with former and present staff members of COMIREX and the NRO. In preparation for your presentation to the Committee, we would like to arrange a convenient time next Thursday or Friday when you would be able to testify on the Kennen decision. In particular, we would like you to comment on the attached staff paper.

We hope you will participate in this hearing to help the Committee understand the complexities of the technical collection issues and to prepare its recommendations on the future role and responsibilities of a Congressional oversight committee.

Sincerely,

William G. Miller

William G. Miller
Staff Director

Enclosure

October 26, 1975

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TALENT KEYHOLE
BYEMAN

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Kennen Case Study

Next year the U. S. will deploy the near real-time photo satellite system at an estimated cost of more than [redacted] through 1980. As the single most costly intelligence collection program to date, the Kennen case illustrates how requirements for a complex technical collection system are developed.

Briefly:

-- Kennen grew out of a deeply felt community need for a crisis warning and management system following the Middle East War in 1967 and the Soviet invasion of Czechoslovakia in 1968.

-- The decision to deploy the CIA Kennen system and not the Air Force FROG system was ultimately made by the President. The Chairman of the Senate Appropriations Committee played a critical role prior to the executive decision.

-- [redacted]

-- The intelligence community may have underestimated the impact Kennen will have on the exploitation of the intelligence collected.

The legislative issues raised by this case include:

(1) What authority should the DCI have to set requirements for major technical collection systems? Should the DCI have final responsibility for setting the requirements and budget of the National Reconnaissance Program (NRP)?

(2) Should the DCI also be Director of the Central Intelligence Agency, given that his objectivity in determining which collections systems to buy is compromised by his also being head of an "interested" agency?

(3) Should the Congress be involved in deciding whether major technical collection systems are required and how much money they are worth? If so, when and through which Committee?

Questions

(1) What is the impetus for the development of Kennen? Did the technologists drive the buying of new collection systems or was there a real intelligence gap?

Although technologists such as Dr. Land, Dr. Garwin and Dr. Drell were deeply involved in critical phases of Kennen's development, Kennen was the product of a deeply felt need for an improved crisis management and warning system. Since the early 1960's, the intelligence community has repeatedly examined different technologies for a photo reconnaissance system to provide crisis warning intelligence. After the Cuban Missile Crisis, the community concluded that technology was not far enough advanced to make a significant contribution to U.S. intelligence performance in a crisis. Consequently, major impetus was given to the OXCART (A-11) manned aircraft to provide crisis reconnaissance.

After the 1967 Middle East War and the 1968 Soviet invasion of Czechoslovakia, the community undertook a review of the potential contribution of a warning and indications satellite. (During the 1968 Czech crisis, the U.S. had excellent photography of the Soviet build-up as early as 9 days before the invasion, but the pictures were in the satellite, unavailable to policymakers in Washington.)

The community's 1968 review concluded that such a satellite would be able to fill the recognized intelligence gap but would be prohibitively expensive unless developed as a multi-purpose system permitting a reduction or elimination of other photo-reconnaissance activities.

(2) How was the decision made to develop the Kennen satellite system and not the Air Force FROG satellite?

What was the role of the President, the DCI, the Secretary of Defense, and the Congress?

In response to the 1968 studies, technology programs were initiated by the CIA and Air Force elements of the National Reconnaissance Office (NRO) on competing satellite concepts:

(a) The Air Force element (NRO Program A) undertook to modify the existing Gambit high resolution satellite called Film Read-Out Gambit, or FROG.* The concept employed on-board equipment to develop film, scan it by laser, and return the information electronically to Earth. While the concept was not as technologically advanced as CIA's, it was quite challenging from an engineering standpoint. It required improvements in certain mechanical and electro-mechanical components to permit the satellite to remain in orbit up to six months.

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* The FROG concept reflected the more conservative technical approach of the Air Force NRO element. They were less adventurous than their CIA NRO counterparts who tried to push technology to the limits to achieve the desired ends.

(b) The CIA element (NRO Program B) undertook a technically challenging concept which pushed the state of the art in optics, and electronics. The CIA concept, which became Kennen, was based

[redacted]

Kennen was little more than a gleam in the technologist's eye in 1969, and the Air Force, the NRO, and others quite rightly saw Kennen as a high risk, challenging concept.

In March, 1969, the National Reconnaissance Office (NRO), which manages the satellite reconnaissance systems under the direction of the Under Secretary of the Air Force, concluded that the FROG system was the only alternative which offered a "sufficient degree of confidence to warrant proceeding with development of an operational system at this time."

However, the CIA felt that the NRO study did not fairly represent the potential value of electro-optical systems. Following objections from CIA and a staff member of the President's Scientific Advisory Council, the NRO issued a July addendum to the study estimating its performance and cost and reporting that a solid state electro-optical imaging system was technically feasible.

At about this time, a separate CIA study of the impact of the Near Real Time system on intelligence production concluded that the potential value of a multi-purpose Near Real Time Satellite System was sufficient to warrant the issuance of a formal USIB requirement for its development. A Near Real Time System would contribute to (a) analysis of crises and fast-breaking events; (b) strategic warning and indications; (c) target surveillance; (d) current intelligence reporting e.g., order of battle; (e) support of military operating forces including tactical operations; (f) monitoring strategic arms limitations agreements.

The study also stated that a Near Real Time System could also satisfy a significant segment of USIB surveillance and search requirements and therefore should afford substantial savings through reductions and elimination of the older Hexagon and Gambit systems.

In May 1969 the Deputy Secretary of Defense, David Packard, sent a letter to the Director of the NRO, the Director of the CIA, and the President's Science Advisory Council, asking for a study of what actions should be taken leading to the development of [redacted] Read-Out System. Packard suggested that the study address:

(1) the value of a [redacted] satellite system for indications, warning, and day-to-day intelligence;

(2) the relative contribution of alternative satellite systems in terms of area coverage, target frequency and resolution;

(3) the status of the technology and the effect of potential developments on our ability to provide attractive systems with Near Real Time Capability;

(4) the cost of alternative [redacted] Systems.

In June Director Helms advised Packard that COMIREX and CIA studies were underway and that until a more concrete definition of a Near Real Time System were developed, "it will be difficult to assign closely drawn value and cost trade-offs to alternative [redacted] systems and to determine their effect on the total mix of satellite photography."

Despite a good deal of uncertainty about the competing concepts, on 11 June 1969, a special USIB meeting reviewed and approved requirements for a Near Real Time System; at the end of July the EX COM of the National Reconnaissance Program (NRP) initiated advanced technology work on the competing Air Force and CIA concepts.

In 1970, the NRO studied intelligence requirements for crisis review imagery in the near term and concluded that an interim imagery satellite would be a valuable complement to the projected mix of systems prior to the time when a full-scale [redacted] System would be available. USIB asked the NRO to review its conclusions and identify the technical options and characteristics of such a system. Without responding to USIB and following an April 1971 meeting of the NRO EX COM the Director of the NRO, John McLucas, decided to go ahead with the Air Force FROG laser film scan system as an interim system.

The President's Science Advisor, Ed David, strongly supported the interim Air Force system. He did not share CIA's optimism about the Kennon electro-optical technology and wanted to delay it until the concepts could be thoroughly proven. Deputy Secre-

tary of Defense David Packard apparently favored the Kennen concept privately but kept his own counsel. He was concerned about delays in the existing Hexagon program, he worried that Kennen's high cost might lead to its termination; and he did not want to push the Kennen technology too fast. CIA Director Helms strongly supported going ahead with the Kennen system. He was particularly influenced by the Czechoslovak crisis in 1968 and the need for a crisis warning satellite which could return photographic intelligence in near real time. He even believed, along with Dr. Land, that with more resources Kennen's development could be accelerated.

During the summer of 1971, David Packard and Carl Duckett met with William Woodruff, then senior staff assistant to Senator Ellender, Chairman of the Senate Appropriations Committee. Woodruff wanted an honest evaluation of the FROG and Kennen systems. The projected cost of each of the systems were similar: $700 million for FROG and [redacted] for Kennen, but if both were deployed the cost would be prohibitively expensive. Following these discussions, Senator Ellender informed the Director of Central Intelligence that the Senate would not appropriate more than [redacted] a year for development of a new [redacted] satellite system. In effect, the letter forced the Administration to dispense with the fiction that it could support two programs for the same purpose, i.e., FROG as an interim system plus Kennen as the ultimate [redacted] satellite.

With the NRP EX COM (Ed David, David Packard, Richard Helms) still divided in July 1971, Helms proposed to Packard that the issue be referred to the White House for resolution. However, Secretary

Laird directed that the dispute be referred to him as provided in the 1965 Charter of the NRO. Laird's request represented the first time the Secretary of Defense had attempted to enforce the provision of the NRO Charter. At that point, the NRO staff began drafting a letter from Laird to the President giving the differing views of the EX COM members. Everyone agreed that Kennen was the ultimate satellite system of the future. At issue was how soon it should be deployed: Helms favored 1974; Packard and David sometime after 1976. More importantly, however, was the question of whether the interim FROG system should also be deployed. David argued yes; Helms and Packard no.

Worried that Laird would rule in favor of the FROG system, Helms finessed Laird's request to resolve the dispute and sent a paper outlining his views to Kissinger in the White House. Subsequently on 17 August 1971, Laird submitted a single page memorandum to the President outlining the views of the EX COM members and recommending against the interim FROG system.

With the issue before Kissinger, Duckett suggested that the dispute be reviewed by two "relatively unbiased technical experts" Sidney Drell and Richard Garwin. Both were CIA consultants as well

as consultants to PSAC. They both strongly supported Kennen and recommended against an interim system. Subsequently, Kissinger issued a memorandum terminating the FROG system and directing full-scale development of Kennen.

(3) What is the current status of the Kennen program and why are the anticipated reductions in existing satellite systems not going to be realized?

The Kennen development program is nearing completion. Ground testing of software, data management systems, and the Kennen hardware has taken place. Photo-interpreters are being trained. The Kennen relay satellites will be launched this spring, and the first imaging satellite will be launched in October 1976.

However, in addition to Kennen, current plans call for two Gambit (high resolution) satellites per year through 1980. Two Hexagon (search) satellites per year are projected through 1977 and a single Hexagon annually thereafter. Whether Gambit or Hexagon might be terminated in the late 1970's remains an open question.

The early COMIREX studies all took the position that Kennen's high cost could not be justified solely by its production of crisis intelligence. They called for a multi-purpose system that would reduce or eliminate older photographic systems. In fact, it was considered that Kennen might permit termination of both Hexagon and Gambit,* thereby reducing the annual costs of the photo reconnaissance

*Special provisions were incorporated in Kennen's requirements that permit it to approach Gambit's high resolution and to give an area search capability through its "stripping mode."

program by at least $100 million annually. Now the only reduction projected from the oepration of Kennen will be cutting back from two Hexagons to one per year after 1977. However, the savings of about $70 million annually is more than offset by the cost of improvements planned for the remaining Hexagons and the cost of Kennen, estimated at [redacted] per year. The result is not a savings but an increase of [redacted] per year in the cost of photo reconnaissance.

A recent NRO-USIB satellite Resolution Study shows that from the standpoint of useful intelligence to the photo-interpreter, Kennen approximates Gambit's current performance. Gambit's very best pictures is somewhat better than Kennen's in resolution [redacted] but Kennen pictures are more uniform in quality. Kennen will produce an equal or greater number of high resolution (better than [redacted] pictures than Gambit over the course of a year. NPIC studies have identified few examples in which an occasional top quality Gambit photo would provide an important advantage in intelligence value. Though this is a controversial question in the community because of its programmatic implications, the NRO study data show that the two systems have similar performance. If improvements in Gambit are postulated by 1978 (e.g. to [redacted] resolution), it will

have an advantage in terms of numbers of high resolution images. Whether the intelligence content is substantially greater is another question. Whether the U.S. should spend $900 million over the next five years maintaining Gambit for these uncertain advantages is certainly open to question.

The NRO is maintaining Hexagon because of its extensive area search capability and perceived requirements for improved mapping, charting, and geodetic data needed for U.S. limited nuclear options. The case for maintaining Hexagon is stronger than with Gambit. Kennen's photography, [redacted] it can take a monoscopic panoramic shot of areas of [redacted] or so. It's substitution for Hexagon requires that photointerpreters build up a "mosaic" of small area images over a period of time. Thus it would require some retraining and reorienting of current PI search practices. The NRO-USIB Search Performance Study con-

[redacted]

At issue is why it is so difficult to eliminate older systems. Are there organizational arrangements which would provide better ways to avoid collection duplication triggered by bureaucratic momentum or marginal requirements? Is Kennen's unique contribution in crisis

warning and management worth the additional [redacted] a year?

(4) How well prepared is the intelligence community to exploit the massive amounts of intelligence which will be produced by the new Kennen system?

In this area, a good deal of planning is underway. But even the most optimistic people acknowledge that real problems will appear when Kennen comes on line on top of the undiminished workload associated with the current two systems. [redacted]

This contrasts with the current film return systems which together produce about 60,000 pictures per year. Even granting that a PI may not need to expend as much time per picture (when he has time sequenced repetitive photography of many targets), it seems inconceivable that such a workload can be overlaid onto existing programs without a major increase in resources. While some small increases in PI numbers are planned, they seem out of proportion to the likely workload.

Has the intelligence community underestimated the impact of Kennen on its operations and exploitation? Are collectors out of step with the analysts and exploiters of intelligence? Have organizational factors in the community impeded recognition of Kennen's impact?

Conclusions

(1) Requirements for major collection systems were formulated in an ad hoc, informal way. Many different players, including consumers and outsiders, were involved. The formal USIB system of stating "requirements" through its Committee structure was used for record purposes, but the important decisions were taken outside formal channels.

(2) The DCI tried to protect his choice of a satellite system by sidestepping Laird and taking the decision directly to the President. As it turned out, it probably was not necessary. However, the objectivity of his role was seriously questioned by the fact that he was also Director of the CIA and the competition was between CIA and Air Force systems.

(3) Congressional involvement in the Kennen decision was unusual. First, it occurred prior to the White House decision and was an important catalyst in sharpening the choice between two competing systems. No one really believed the U.S. could afford to develop two separate crisis photo reconnaissance systems in the 1970's, but it took Congressional intervention to force recognition of the issue. Nevertheless, it may not provide a good model for Congressional oversight. Congressional intervention was most casual, and Ellender's letter was sent without consultation with other members of his committee.