Description of document:	**National Reconnaissance Office: A History of Satellite Reconnaissance, Vol. IIIB, Robert Perry, November 1973**
Released date:	11-January-2008
Posted date:	06-February-2008
Source of document:	National Reconnaissance Office MS&O/Information Access and Release Team 14675 Lee Road Chantilly, VA 20151-1715 Fax: 703-227-9198 Online form: http://www.nro.gov/foia/RequestInput.aspx
Note:	Later less redacted release of this item available here.

NATIONAL RECONNAISSANCE OFFICE
14675 Lee Road
Chantilly, VA 20151-1715

11 January 2008

Case Number E01-0001

Per your of 1 January 2008, you have withdrawn your appeal to the ISCAP for the Perry History Volumes III a and b. The National Reconnaissance Office (NRO) has reviewed the enclosed document under the provisions of Executive Order 12958. The deleted portions of the text remain classified per Executive Order 12958, section 1.5 (c).

If you have any questions, please call me at (703) 227-9128 and reference NRO case number E01-0001.

Linda S. Hathaway
Chief, Information Access and
Release Team

Enclosure:
Perry History Volumes III 3 A&B

A HISTORY OF SATELLITE RECONNAISSANCE

VOLUME IIIB - [redacted]

by

Robert Perry

S

November 1973

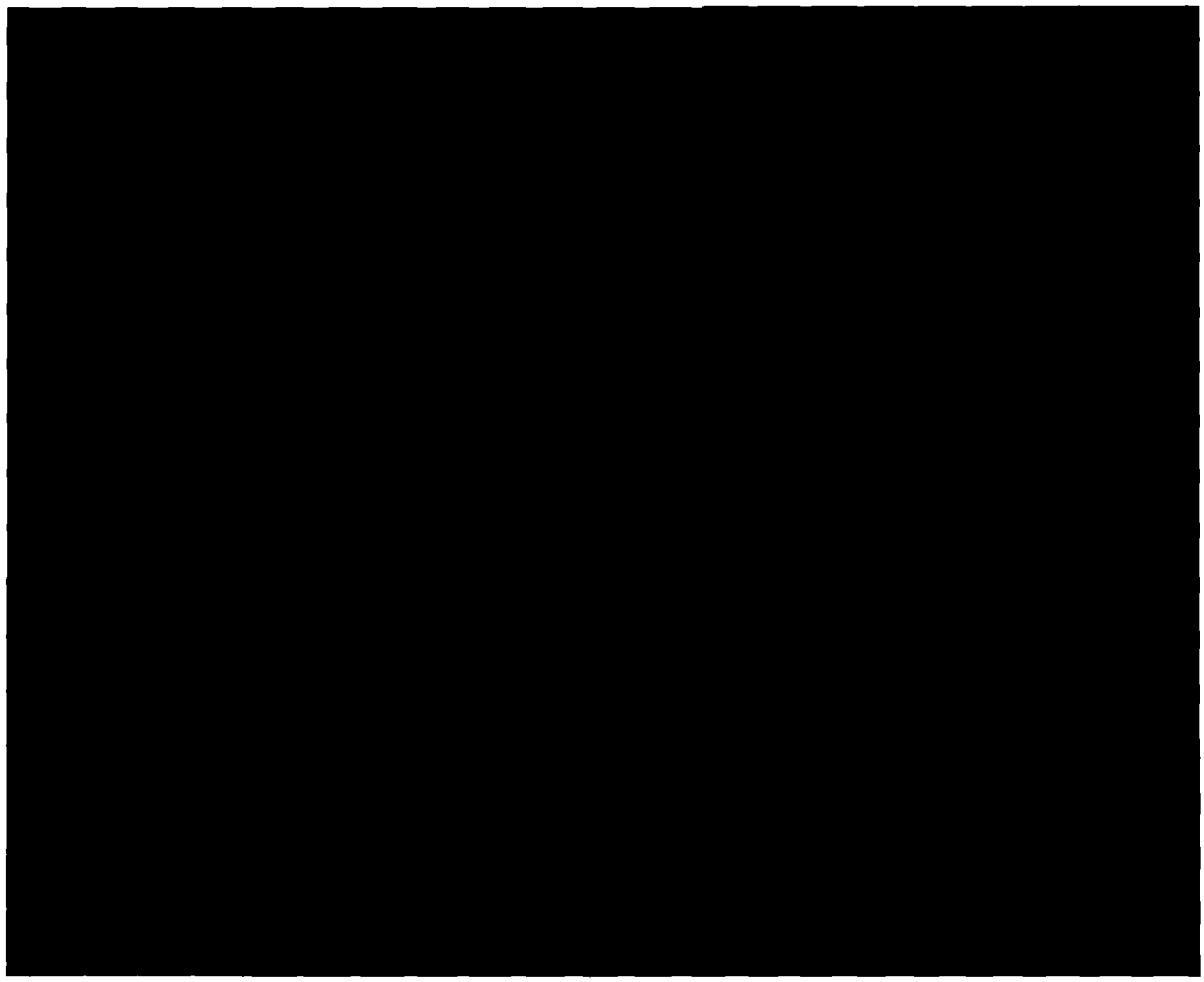
Volume IIIB consists of 152 pages. Copy 3 of 5 copies

PREFACE TO VOLUME IIIB

This portion of A History of Satellite Reconnaissance covers the period [redacted] before April 1966 as well as the development and early operational missions of that system. At the time this preface was written, in November 1973, the agreed terminal point was July 1973. [redacted] in July 1973. It seems reasonable to assume that at some later time the subsequent flight and developmental history of the system will be completed, but that must for the moment be treated as conjecture rather than promise.

The author's research for this volume was supported by [redacted], at the time of writing a consultant with Technology Service Corporation, of Santa Monica, California. The history was prepared under terms of a contract between the Directorate of Special Projects (Program A) of the National Reconnaissance Office and Technology Service Corporation.

[redacted]



As written, this account is academically defective in that the author had no access to CIA sources. Nevertheless, the principal aspects of the total program appear to have been thoroughly documented in "Program A" records (kept in the El Segundo,

California, offices of the NRO's Directorate of Special Projects) and in policy documents filed in the offices of the NRO staff (in suite 4C1000 of the Pentagon). To the author, therefore, it seems unlikely that any subsequent expansion or enlargement of the manuscript will cause significant alteration of either the recorded sequence of events or the interpretations attached to them.

As with earlier program history contained in this set of volumes, there is no reasonable prospect of understanding the course of events in one system program without taking account of developments elsewhere in the National Reconnaissance Program. Thus from time to time it is essential to discuss events in such programs as Corona, [redacted] Samos, and [redacted]--and to consider in the broad the plans and policies adopted by the Director of the National Reconnaissance Program, the Director of the Central Intelligence Agency, the United States Intelligence Board, the Executive Committee for the National Reconnaissance Program, and the several other officials, boards, panels, and agencies which influenced the establishment, growth, [redacted]. Many of the events so mentioned have been described in greater detail in other volumes of this history: Corona, Samos, and [redacted], for instance, are the subjects of Volumes I, IIA, IIB, and IIIA of this set of reconnaissance program histories. Readers concerned about background

and detail that involved those programs [redacted] should consult those other volumes.

In the interests of avoiding repetition, most interactions between [redacted] and other programs have only been summarized here. Such summaries have been included, even if occasionally repetitious of earlier volumes, in the expectation that some readers will want to have within one set of covers reasonably complete information on [redacted] alone. This volume has therefore been constructed so that it will stand alone, without recourse to other sources, although in some instances it will be necessary to consult those other sources in order to acquire a full understanding of incidents and events mentioned casually here.

The close[redacted] is the principal justification for making histories of those programs Volume IIIA and IIIB of the complete set. Keeping them physically separate from one another has an additional advantage: should it later prove feasible and appropriate to do so, each volume can be extended to include the later histories of those programs without forcing revision of these chapters and pages.

Finally, it is essential to acknowledge the very considerable assistance of Colonel Frank S. Buzard in providing detail and background

information and in clarifying both technical and management matters that for one reason or another were either casually explained or ignored in the voluminous documentation [redacted]

The source notes that follow the text do not adequately credit the comments, additions of detail, and explanations of confusing events that he provided throughout the period of background research for this volume and--most particularly--upon reviewing the initial draft. This acknowledgement must serve as the author's apology for that shortcoming of the manuscript.

CONTENTS

XV [redacted] - ORIGINS AND INITIAL OPERATIONS

Introduction and Background

[redacted]

. was preceded by an extended period of technological rummaging about in the requirements for a new search system--a replacement for Corona and for the failed Samos E-6. [redacted]

Corona, it will be recalled, had never been intended to serve as more than an interim search system, a temporary and presumably inferior predecessor to other and more capable systems to be developed during the late 1950s and early 1960s. But by 1961 several of the planned successor reconnaissance satellite programs were in technical and financial difficulties while Corona was becoming an operationally effective and generally reliable search system with considerable potential for growth. How that potential should be exploited, and to what extent Corona might be utilized in the place of other and less

attractive reconnaissance satellite systems, had become of considerable interest to the intelligence community by 1962; the composite issue of what system, if any, should eventually replace Corona, involved questions of institutional prerogatives, camera and space vehicle technology, and national requirements for overflight photography that were not acted upon [redacted].

Once the dual-camera, stereo-capable Corona-Mural system had been proved technically feasible, it was inevitable that a still better system based on Corona concepts and hardware would be proposed. In March 1962, the CIA endorsed an Itek proposal to develop what came to be called the M-2 search system (for Corona-Mural-2). It involved the substitution of a single 40-inch f3.5 lens and a dual-platen film system for the dual-camera Corona-Mural then in use. The estimated cost of design and manufacture seemed acceptable in that the system promised to return broad-area photography with resolution of about four or five feet for considerably less than would be expended in obtaining such performance from alternative systems then proposed or in development.

The M-2 proposal was formally presented for NRO review on 24 July 1962. Six months earlier, in December 1961, the E-5 surveillance system being developed under the aegis of the original Samos

program had been severely cut back, and in July 1962 a programming error had caused the last of the E-5 recovery capsules to stabilize in a high orbit where it would remain until decay and reentry "somewhere east of Africa" more than a year later. Lanyard, a relatively inexpensive composite of E-5 camera technology and Corona vehicles, was making reasonable progress toward a scheduled first launch in December 1962, but like E-5 [redacted], Lanyard was predominantly a surveillance system.* [redacted]

Corona, E-5, and Lanyard were Itek camera developments. The need and real potential for Corona improvement was still uncertain. E-5 had been cancelled, and Lanyard was a dubious prospect. Corona, and to some extent Lanyard, represented the only satellite reconnaissance programs under CIA control. The various Samos efforts (by 1963 reduced solely to an E-6 effort with a record of five successive mission failures and a most unpromising future), [redacted], were under the cognizance of the NRO's Directorate of Special Projects, on the West Coast. If E-6 could be

*
E-5 and Lanyard were intended to be surveillance systems, and [redacted]. But because only the latter became operationally available, it served as and often was [redacted].

made to work, [redacted] neither Itek nor the CIA could be sure of a continuing direct role in the development and operation of reconnaissance satellites.

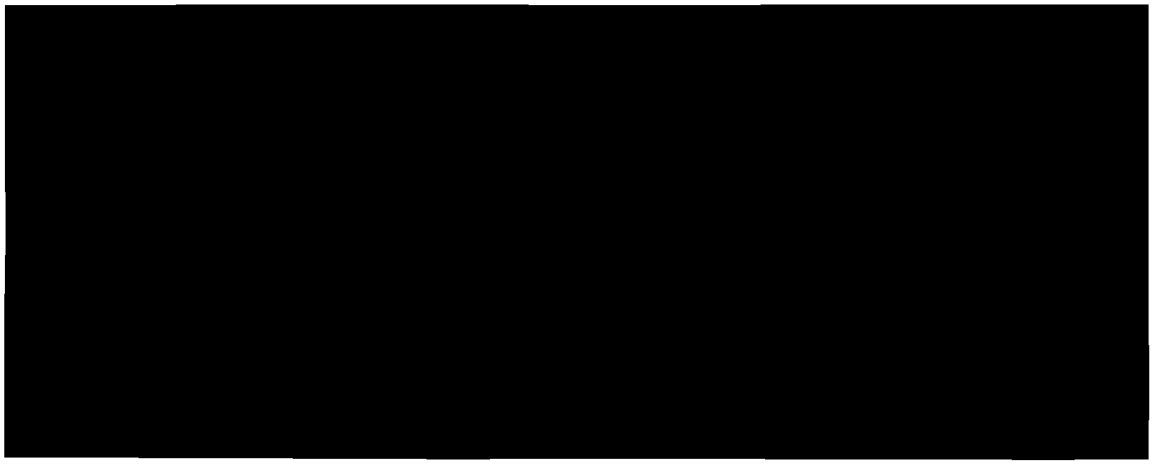
That circumstance was well appreciated by the Department of Defense, the CIA, and all of the participating contractors. Although interagency working level relationships had been outstandingly effective during the earlier days of Corona operations, they were less so by 1963; the CIA and DOD participants in Corona were by then engaged in organizational skirmishing that was within two years to become a source of major concern to cabinet-level DOD and CIA officials.

Operating-level difficulties were paralleled by institutional conflicts at the NRO level, where they would contribute to the 1963 resignation of the CIA's designate as deputy director of the NRO (Herbert Scoville) and the later departures of an NRO director (Dr. Brockway McMillan), his CIA opposite (Dr. A. D. Wheelon), and several lesser officials. Although a variety of questions involving funding responsibilities, program management authority, and organizational prerogatives (as well as some personal differences) influenced events, a central theme in the whole period between 1962 and 1966 was the selection of a new search-mode reconnaissance satellite.

When the M-2 proposal first was formally presented to NRO program reviewers in 1962, the E-6 "successor system" originally intended to provide better search coverage capability than Corona was entering its yet-to-be-acknowledged final decline. E-6, carrying two 36-inch focal length cameras, could in several respects provide nominally better coverage than Corona, but by late 1962 a series of sequentially introduced Corona improvements had made the E-6 relatively less attractive. Then the first two attempts to operate E-6 on orbit ended in recovery failure; perhaps as important, they had been accompanied by serious camera system malfunctions. In July and August 1962, the third and fourth E-6 missions also ended in failure. In October, E-6 seemed so little promising that Major General R. E. Greer (NRO Director of Special Projects) and Dr. J. V. Charyk (then NRO director) decided to suspend plans for the purchase of operationally configured systems. The fifth E-6 sank in the Pacific in November 1962, damaged by reentry heating. Although there were indications of acceptable on-orbit camera operation before the reentry sequence began, by that time the potential advantages of E-6 over Corona-Mural had all but disappeared. The older system was returning film images with resolutions on the order of 13 feet. Even if E-6 could

do better--still not at all certain--and could provide broader coverage because of greater film capacity, the Corona system had reliability attractions that E-6 seemed to lack. Notwithstanding determined efforts to diagnose and correct the defects E-6 had displayed in five successive mission failures, there was no real assurance that the system could be made to work. In January 1963, therefore, Charyk cancelled the E-6 program.[1]

The still undetermined future of Corona M-2 was clouded, during the late months of 1962, by the emergence of another Corona variant, the dual-capsule Corona-J system. Although not formally approved for development until October of that year, Corona-J had actually entered a phase of engineering design in July, with a first launch scheduled for May of 1963. (Because of problems mostly external to Corona-J, actual first launch did not occur until August 1963.) Another objection to proceeding with M-2 was the proposed development of an "improved" and re-engineered E-6 utilizing proven components in place of many troublesome elements of the original. Yet another was the lack of a stated requirement for a relatively high resolution search system, although the requirements that had warranted a 1961 start on E-6 development still remained to be satisfied.



[redacted]

Such requirements uncertainties were passed on to the Purcell Panel, a special reconnaissance study group established by John A. McCone, Director of Central Intelligence, in the Spring of 1963.*

[redacted]

Rather than to focus immediately on development of a new system, the NRO was urged to concentrate on improving the average quality of returns from Corona. The Purcell Panel made a number of specific suggestions for lines of research that promised to lead in that direction. But the panel suggested that

---

* The "Purcell Panel," headed by E. M. Purcell, included A. F. Donovan, E. G. Fubini, R. L. Garwin, E. H. Land, D. P. Ling, A. C. Lundahl, J. G. Baker, and H. C. Yutzy--perhaps the most distinguished group of authorities on reconnaissance, space, and photography ever to be collected in one study group. Many of the

a new system, though ultimately needed, was for the moment a lesser requirement.

The Purcell Panel report had several interesting repercussions, some of them delayed rather than immediate. One that was to become important somewhat later involved interpretation of the qualifications in the "not a wise investment" judgment. The CIA ultimately argued that the panel had endorsed development of a [redacted] The NRO's special projects directorate tended to emphasize the panel's view that [redacted] But in any event, the panel plainly had refused to accept the findings of an earlier study group organized by Greer, at Charyk's direction, in April 1963. Concerned with the broad issue of what should be developed in the way of [redacted]

"Purcell Panel" members subsequently became members of the "Land Panel," which between 1965 and 1972 operated as the principal advisor for reconnaissance matters to the President's Scientific Advisory Group and the President's Science Advisor.

(It is worth recalling that by early 1963 the E-1, E-2, E-5 and E-6 had all been cancelled, Lanyard was in some early difficulty, [redacted] The interest of the "Ad Hoc Group" in sponsoring parallel programs and in delaying a system choice until one or the other had demonstrated its capability for effective orbital operations becomes readily understandable in that light. So does the Purcell Panel conclusion: invest first in improved Corona quality; Corona works now. High-risk technology was in disfavor in the summer of 1963.)

The new NRO director, Dr. Brockway McMillan, ordered cancellation of M-2 work at Itek in July 1963.* Itek's efforts were to be principally focused on improving Corona product quality. To that end, General Greer's directorate made a number of specific suggestions for detail changes. CIA technical specialists in reconnaissance, now concentrated under Dr. Wheelon, concluded that the proposals

---

* Nonetheless, the elements of M-2 reappeared, in proposal form, at frequent intervals in later years, not finally disappearing until the availability of an operational [redacted] In subsequent incarnations the basic M-2 was given several transitory names, Corona J-4 being the best known.

were inadequate, so in October 1963 Wheelon called into being a new special study group--the Drell-Chapman Committee--"to explore the whole range of engineering and physical limitations on satellite photography. . ." The group, acting under a loose charter proposed by John McCone in conversation with Roswell Gilpatric (Deputy Secretary of Defense), was to be concerned not merely with Corona improvements, but also with standards and needs for new systems.

Predictably, McMillan had pronounced objections to such proceedings. He did not learn of the committee until after it had been established, he felt that its "charter" was far too broad (USIB and the NRO were nominally responsible for generating and validating requirements), and he preferred to spend NRO study funds elsewhere. McMillan also protested that Wheelon had no official role in the satellite reconnaissance program.

McCone named Wheelon his "monitor for NRO matters" three days later, and Wheelon promptly declared his intention of ". . . get[ting] the CIA into the satellite business in a contributing, not just a bureaucratic way."

[redacted]

[redacted] The Drell-Chapman Committee had been critical of progress in Corona improvement; in time, that criticism was to lead to the modifications incorporated in the Corona J-3 configuration, a remarkable improvement over the original Corona-Mural. But Corona J-3 still was only a proposal, and in any case there was agreement that no Corona redesign with less scope than the M-2 undertaking could substantially improve Corona's resolution capability. Camera specialists then believed that if resolution much better than 7 or 8 feet for about half of the returned film were wanted, refinement of the original Corona would not be sufficient.*

Two events followed in close order. On 18 November 1963, the NRO's West Coast directorate [redacted]

*

Consistent, rather than occasional, resolution of 7 to 10 feet was the Corona goal defined by the Purcell and Drell-Chapman recommendations and ultimately incorporated in the Corona J-3 program. The assumption that Corona could not generate photography with 4- to 5-foot resolutions, however much the system was modified, later proved to be incorrect. Corona J-3 ultimately provided "best resolution" of 4.5 feet.

[redacted] That action was the somewhat delayed response to the Purcell Panel findings of June 1963. [redacted] undertaken on the West Coast following the cancellation of Samos E-6, earlier that year. Not quite two months later the CIA separately authorized [redacted] The CIA action was a delayed response to the Drell-Chapman Committee findings of late 1963, but it indirectly represented a continuation of the search system research approach embodied in the M-2 studies undertaken by the CIA in an effort to find a feasible improvement mode for Corona-Mural. [redacted]

The CIA's intentions were generally known to the NRO staff in December 1963, somewhat before [redacted]. The probability that Greer's NRO group and Wheelon's CIA group would emerge from their respective study programs with competing proposals for a new search system caused some concern among program monitors

high in Department of Defense ranks. (The NRO charter then in effect included no provision for anything resembling the NRP Executive Committee of later years; the Director of the NRO was responsible directly to the Secretary of Defense, CIA participation being assured by the assignment of individuals to various NRO posts--including that of deputy director.) Earlier in 1963, Dr. Eugene G. Fubini, then serving as a senior technical advisor to the Deputy Secretary of Defense, had begun acting as a defense department spokesman in NRO matters. (In the Charyk era no such intermediary function had existed, Charyk having such an effective relationship with Secretary Robert S. McNamara that it was not needed.) Fubini had by late 1963 assumed the role of a mediator in the increasingly acrimonious contacts between McMillan and Wheelon.* In December, speaking with the implied authority of Cyrus Vance, newly appointed Deputy Secretary of Defense, Fubini proposed to McCone that the CIA assign total Corona responsibility to the NRO in return for a free hand in the

---

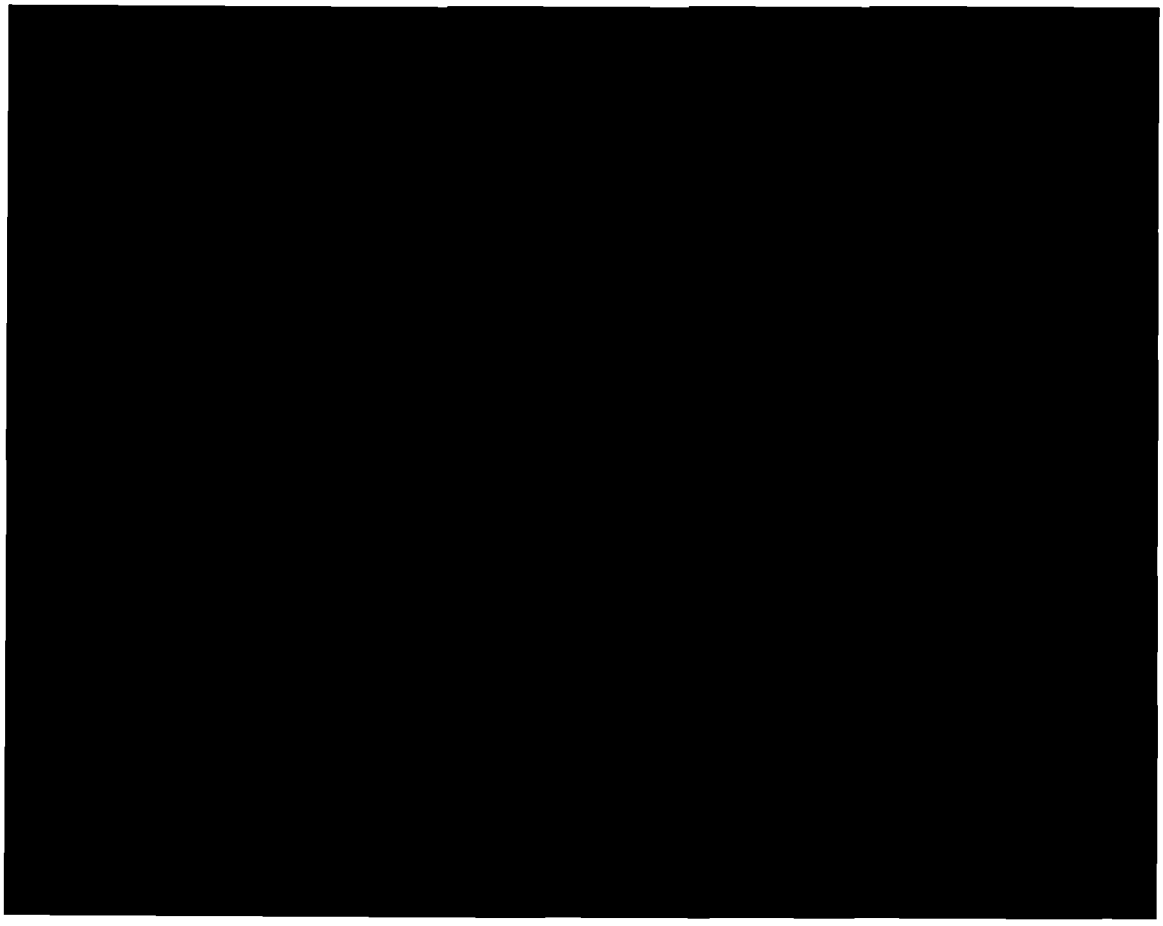
* The principal source of CIA-NRO contention in 1963 was Corona management responsibility and authority. McMillan wanted to concentrate all Corona authority under a jointly staffed West Coast project office reporting to the Director, Program A (then Greer, later Brigadier General John L. Martin, Jr.). Wheelon, firmly supported by CIA Director John A. McCone, argued that CIA control of Corona should be enlarged rather than curtailed. The issue is discussed in greater detail in the first volume of this history.

development of a new search system. McMillan apparently was unaware of the offer until McCone indirectly passed it along. He rejected the compromise out of hand, insisting that the NRO had to have full authority to control Corona and that a new search system could not be arbitrarily assigned to any organization. The disagreement thus expressed persisted into 1965. McMillan's efforts to resolve the issue by obtaining directive support either from McNamara or from the White House were unavailing. The President's Foreign Intelligence Advisory Board recommended strengthening McMillan's hand during a May 1964 meeting, but the draft Presidential directive sent forward in consequence of that meeting was never signed. (The 1964 election played some part in delaying a resolution of the several controversies that afflicted the NRO, the search system requirement, and the Corona program from May through November.)

The net effect was that by January 1964 the CIA had undertaken to sponsor studies [redacted] and the NRO's Special Projects Directorate (Program A) had begun to support a different set of studies oriented toward a different kind of search system, [redacted]. A secondary

consequence was that the authority of the Director, NRO, either to control or to monitor the program of the CIA-sponsored effort had been successfully denied. McMillan certainly knew of the CIA's internal studies and of their general import. It does not appear that he learned of the existence of the funded studies by [redacted] until the spring of 1964, five months after their inception.[3]

Evolution of a System



*

To that time the only film-carrying reentry bodies to be recovered by the United States were variants on the original Corona capsule of 1958 vintage. Both E-5 and E-6 had used "large" capsules intended for recovery from the sea rather than aircatch. E-5 had faults other than in its recovery system, but that too may have been faulty--no capsules were ever recovered for examination. E-6 had been cancelled solely on the evidence of five recovery failures, and two were clearly the consequence of poor capsule design. Mercury and Gemini, NASA's man-carrying orbital systems, provided evidence that bigness was not an impossible constraint; the Mercury capsule was not unlike that tested with the E-5, for instance. But all concerned acknowledged that single "big" recovery bodies were difficult to develop, and recovery was the crucial element in any reconnaissance system of the 1960s.

While such arrangements were being made, other events occurred that were to have a considerable influence on later developments. For one, Wheelon and McCone separately proposed to McMillan and Vance respectively that CIA responsibility for both [redacted] --be formally confirmed. In the

meantime, the CIA provided scant data on the status of or plans for [redacted] and forbade [redacted] contractors to release information about their progress to any agency other than the CIA. CIA proposed to establish an internal project office initially composed of [redacted]

That procedure, and particularly the withholding of [redacted] information from McMillan's staff, was a particular irritant to the NRO. It was not, however, unprecedented. In 1963, while questions about the desirability of starting Corona M-2 development were being considered, Greer and Charyk had attempted and very nearly carried off a similar coup. [redacted] When E-6 was cancelled on 31 January 1963, they very circumspectly let contracts covering the study and initial development phases of [redacted] Scoville, directing CIA

reconnaissance activities at that time, had harshly questioned both the technical feasibility of a [redacted] and the motives that underlay its proposal. [redacted] In the face of Scoville's opposition, Charyk in mid-February 1963 formally disapproved [redacted]

Whether Scoville and the CIA ever learned the details of the effort remains uncertain. [redacted]

[redacted]

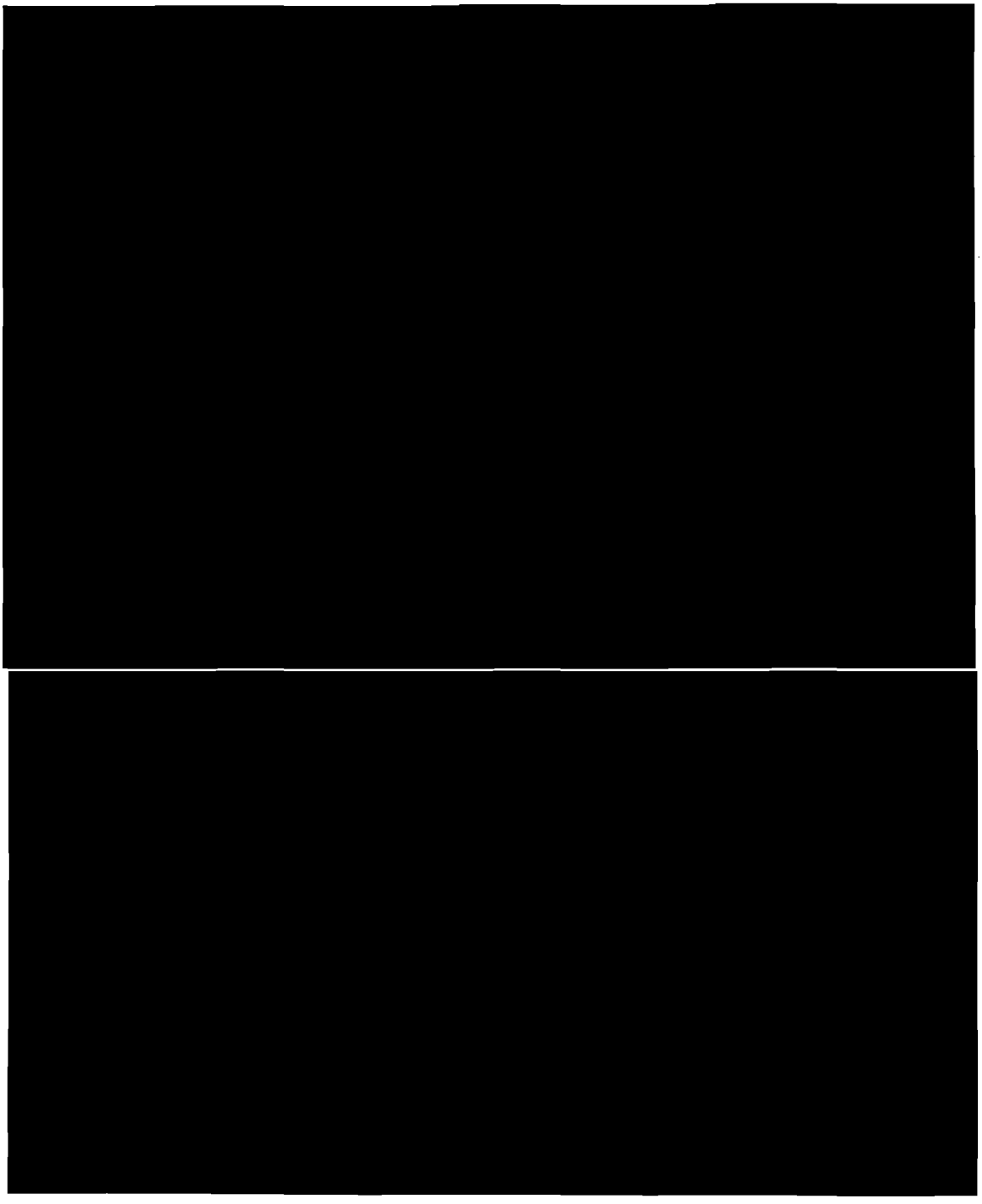
[redacted]

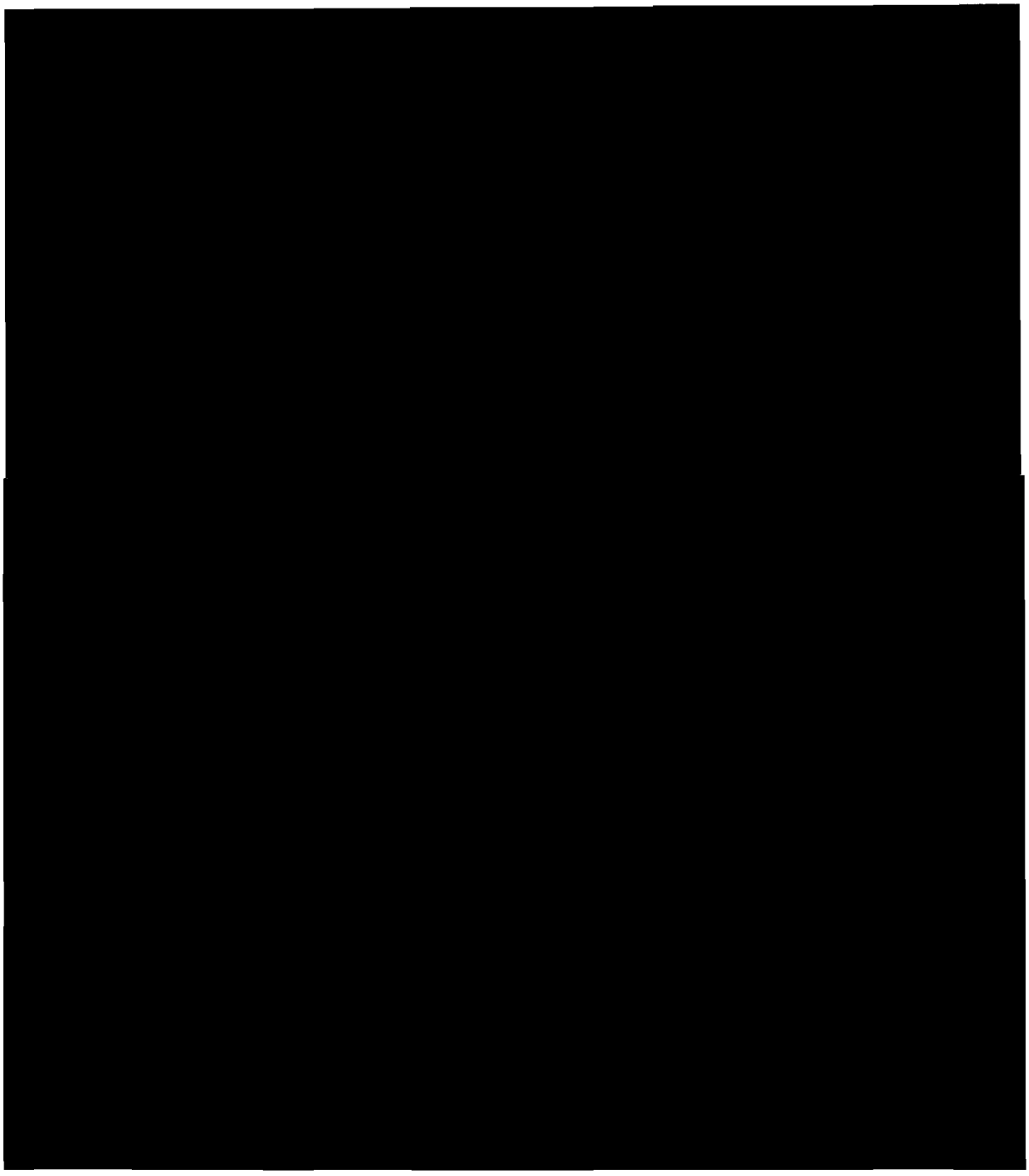
The replacement of Charyk by McMillan in the Spring of 1963 and the difficulty of obtaining funds to proceed from [redacted]

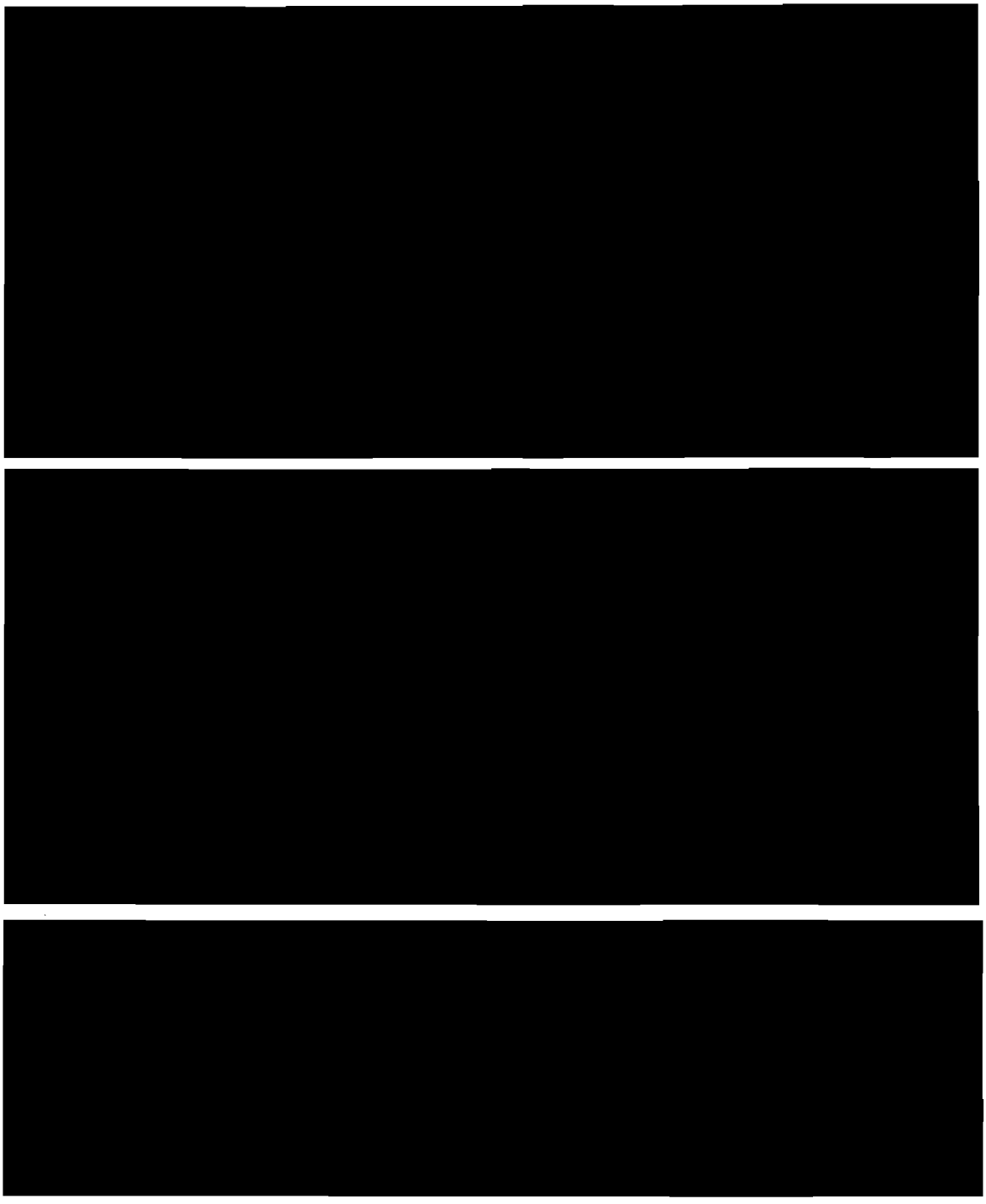
[redacted]

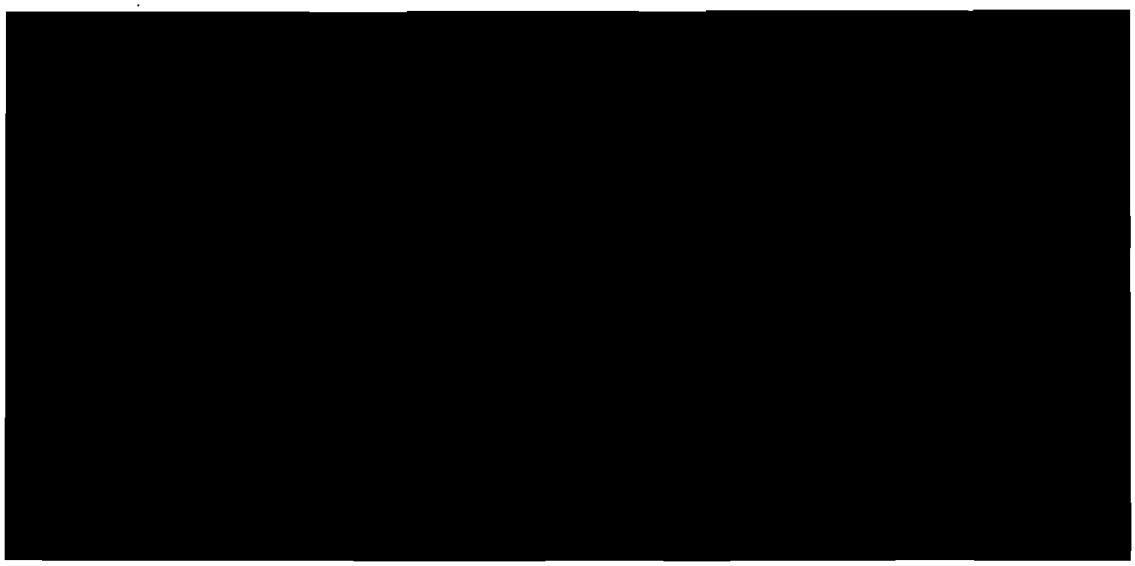
The Agency's subsequent denial [redacted] information to McMillan and the NRO staff may not have been entirely motivated by the Charyk-Greer ploy of 1963, but there was implied jusitification for Wheelon's actions in the earlier Charyk-Greer maneuver.

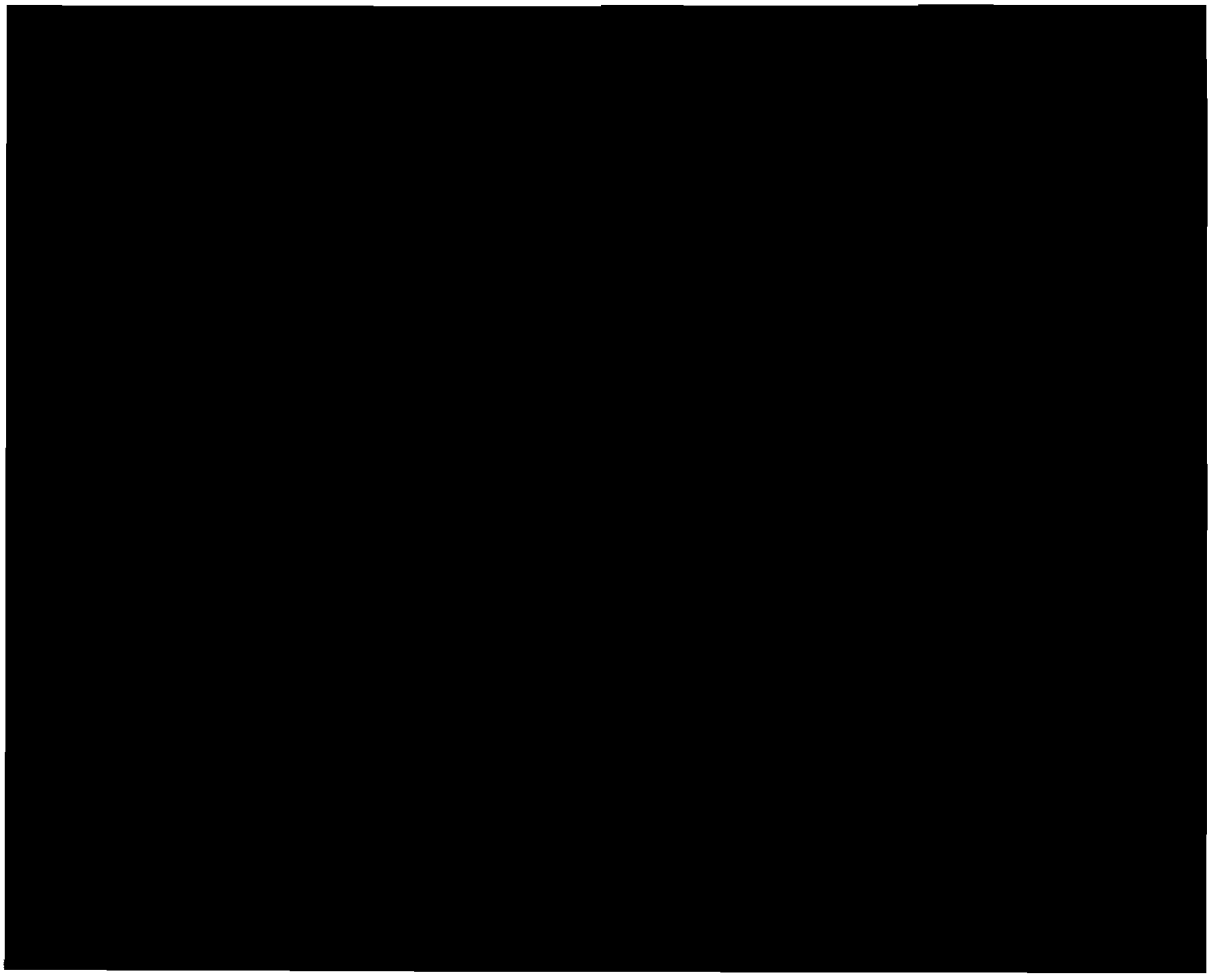
[redacted]











[redacted]

Perhaps most important, it exacerbated the already disharmonious relationships between the CIA and the NRO and sharpened the existing antagonism between McMillan and Wheelon. [redacted]

[redacted]

[redacted]

[redacted] Vice Admiral W. F. Raborn, who had succeeded McCone as CIA director in April, proposed to Vance in June that no action be taken [redacted] until the basic issue of NRO reorganization had been resolved. The NRO charter of 1963 was by mid-1965 being honored chiefly in the breach. Extensive readjustments of responsibility and authority in program management, funding control, operation of on-orbit satellites, and the program decision process had been proposed in the interim. But however sweeping the reorganization, it was unlikely to result in a working relationship that could accommodate both Wheelon and McMillan. As early as February 1965, [redacted] the deputy NRO director had resigned in frustration; a senior CIA employee assigned to the NRO, he found himself so thoroughly distrusted by both staffs that he was almost totally ineffective. [redacted]

[redacted], the definition of a new NRO charter without inputs from the NRO, and the virtual collapse of communications between McMillan and Wheelon, the principal managers of the National Reconnaissance Program, had their inevitable effect early in July. McMillan privately advised the NRO staff that he planned to resign his post and return to private industry. His decision apparently was precipitated by the failure of a final effort to force a decision [redacted] Raborn balked, and was backed by the Land Panel's judgment* that as yet insufficient data were available to support [redacted]

*

The Land Panel, headed by Dr. Edwin Land, was created at the direction of the Special Assistant to the President for Science and Technology, Dr. Donald F. Hornig, early in July 1965. Its charter extended to "an overview of the NRP," but initially it was concerned with the technology of, requirements for, and status of search and search-surveillance systems in development or proposed for development. The group first met on 21 July 1965 and continued to meet at irregular intervals until President Nixon abolished the office of science advisor in early 1973. The panel provided specialized technical support to Hornig and his successors, operating in some respects as a counterpart (or counterweight) to the NRO and CIA technical staffs that supported the DOD and CIA members of the NRP Executive Committee. Generally, however, the Land Panel evaluated proposals, studies, and programs rather than generating them, as was the case for the CIA and NRO special staff groups.

Although McMillan did not officially depart until 30 September, his chosen successor, Dr. Alexander H. Flax, Assistant Secretary of the Air Force (Research and Development), began to act as NRO director in July, formally exercising authority in McMillan's absence and informally monitoring NRO affairs throughout the transition period.* On 11 August 1965, the NRO charter of 1963 was supplanted by a new document that significantly altered earlier arrangements. The chief innovation was the creation of a three-member Executive Committee for the National Reconnaissance Program, composed of the Deputy Secretary of Defense, the Director of Central Intelligence, and the President's Science Advisor. The NRO director was to be a non-voting member. The committee acquired much of the executive authority previously assigned to (though not always exercised by) the Director, NRO, including program and budget approval. If the NRO Director had until then nominally possessed the authority to select and fund a new search and surveillance satellite system program, that was no longer the case. The NRP Executive Committee would thereafter make such decisions; the NRO director would oversee their execution.[10]

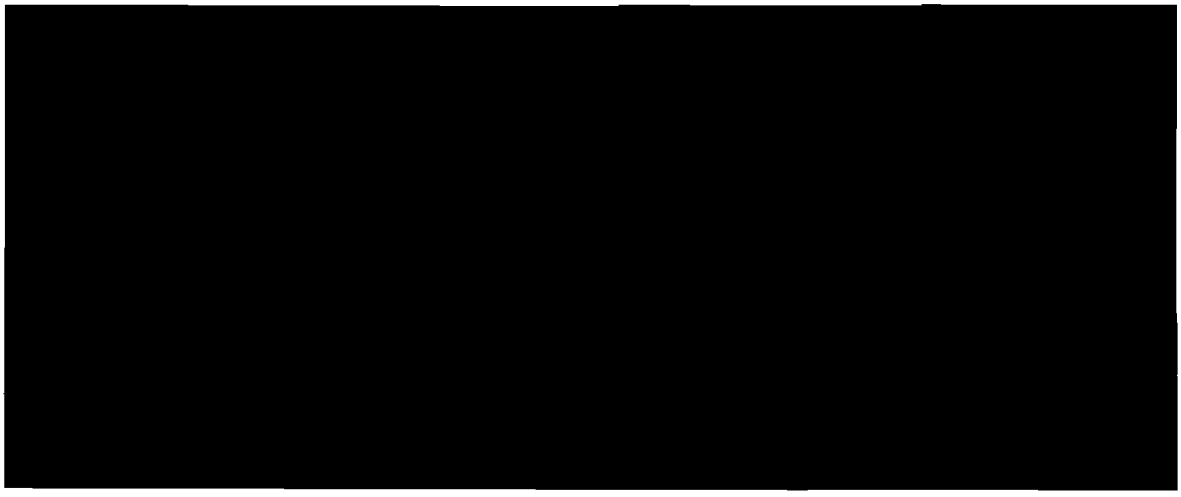
---

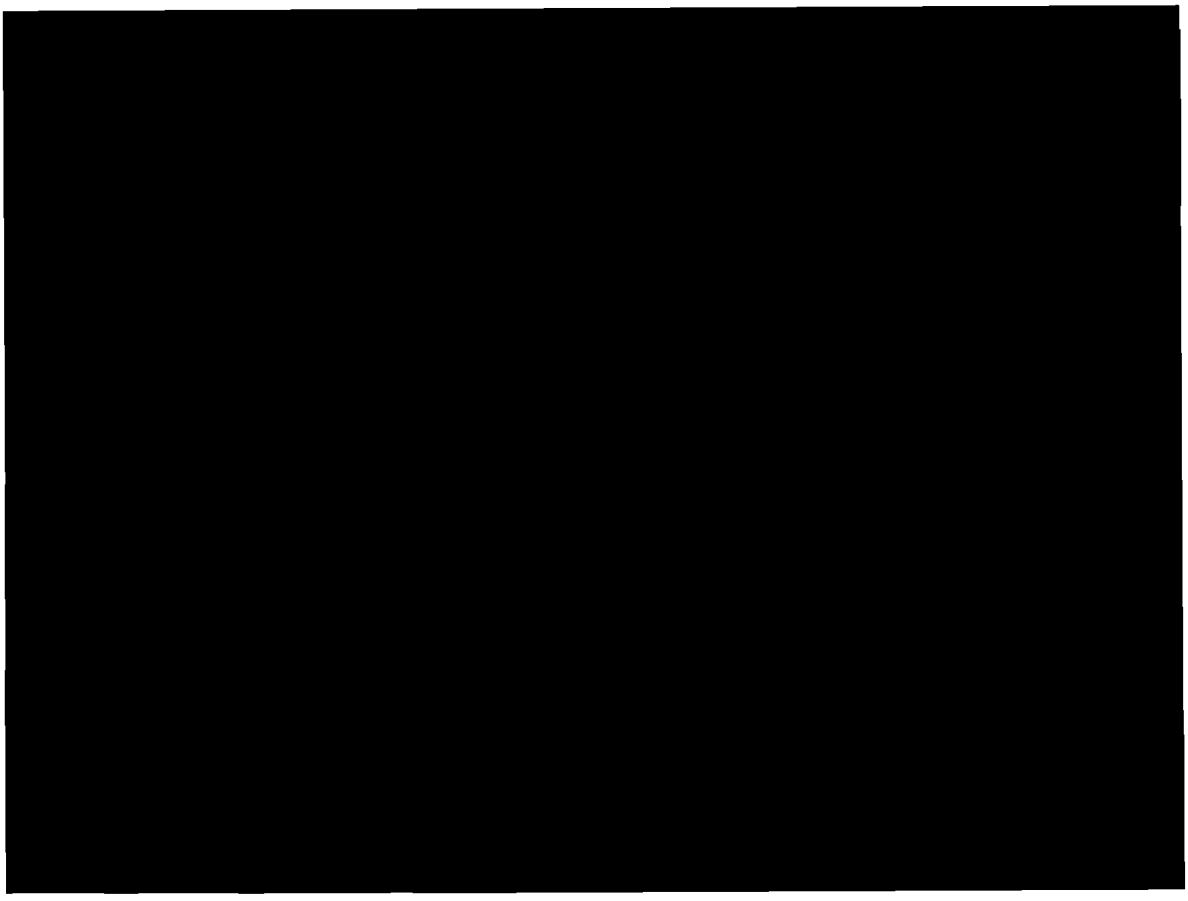
* Among other personnel changes in the satellite reconnaissance program in the late months of 1965 were Major General Robert E. Greer's retirement, in July, and Dr. Albert D. Wheelon's resignation, informally announced in October.

■

The program proposal that went to the Land Panel late in July from McMillan was paralleled by a program summary prepared by the [redacted] project group. After having weighed the evidence, the Land Panel advised Dr. Hornig that "there is no technical basis for selecting for development at this time [redacted], nor does the Panel see any urgency for making a selection now rather than, say, three months from now." Hornig advised Vance, therefore, [redacted]

Vance subsequently ruled that in the interim all effort was to be concentrated on the [redacted]





McMillan's proposal went to Secretary of Defense Robert S. McNamara on 30 August; on 22 September McNamara authorized

*

The NRO was involved in the Lunar Survey program because the readout camera being carried was a modest improvement of the Samos E-1 camera of 1960. Use of the E-1 camera and readout system was an economical means of performing the survey mission, the alternative being to develop a comparable camera system using NASA funds. In order to keep the nature and capability of earlier reconnaissance camera development secret, however, it was necessary to provide the E-1 through clandestine channels--which meant NRO control of the production process.

[redacted]

[redacted] and October of that year, when Flax officially succeeded McMillan as Director of the National Reconnaissance Office, [redacted]. The Land Panel and the NRP Executive Committee had come into being; both were to be dominant influences in the eventual selection of a design and a system contractor. McCone, McMillan, Wheelon, Greer, and several lesser figures [redacted] had left government service or moved to assignments remote from satellite reconnaissance. [redacted]

[redacted]

[redacted]

On 6 October 1965, the Executive Committee for the National Reconnaissance Program held its initial meeting. The first order of business was the search [redacted]. Colonel David L. Carter, for the NRO, and L. C. Dirks, for the CIA, briefed the committee [redacted]

Dr. Flax, charged by McNamara and Vance with reconciling the differences among the principals in the search [redacted] controversy, presented to the Committee a comprehensive plan for

proceeding toward system selection in an orderly fashion, one that would overcome the earlier tendency to use [redacted] as devices in an institutional squabble. Flax had early concluded that the requirement approved by the USIB the preceding year was inappropriate in that it specified technical capability rather than an intelligence objective. He proposed, therefore, to create a technical task group composed of representatives from the CIA [redacted] and Special Projects [redacted] elements of the NRO. The task group, he suggested, would "prepare a statement of system operational requirements, . . . recommend the selection of a system configuration, . . . formulate plans for contractor selection, and . . . recommend a program plan including a schedule." Flax also advised the Committee that he intended to establish a separate task group to "define the project management structure"--which meant, in practical terms, to decide what roles the CIA and Special Projects groups would play in the eventual development of the chosen system.

Flax had prepared his ground carefully. None of the Committee principals was surprised by the carefully constructed proposal for proceeding. All had seen the material beforehand. Without much discussion, the Executive Committee endorsed the Flax plan and for the first time in two years the search [redacted] had reasonable coherence.[15]

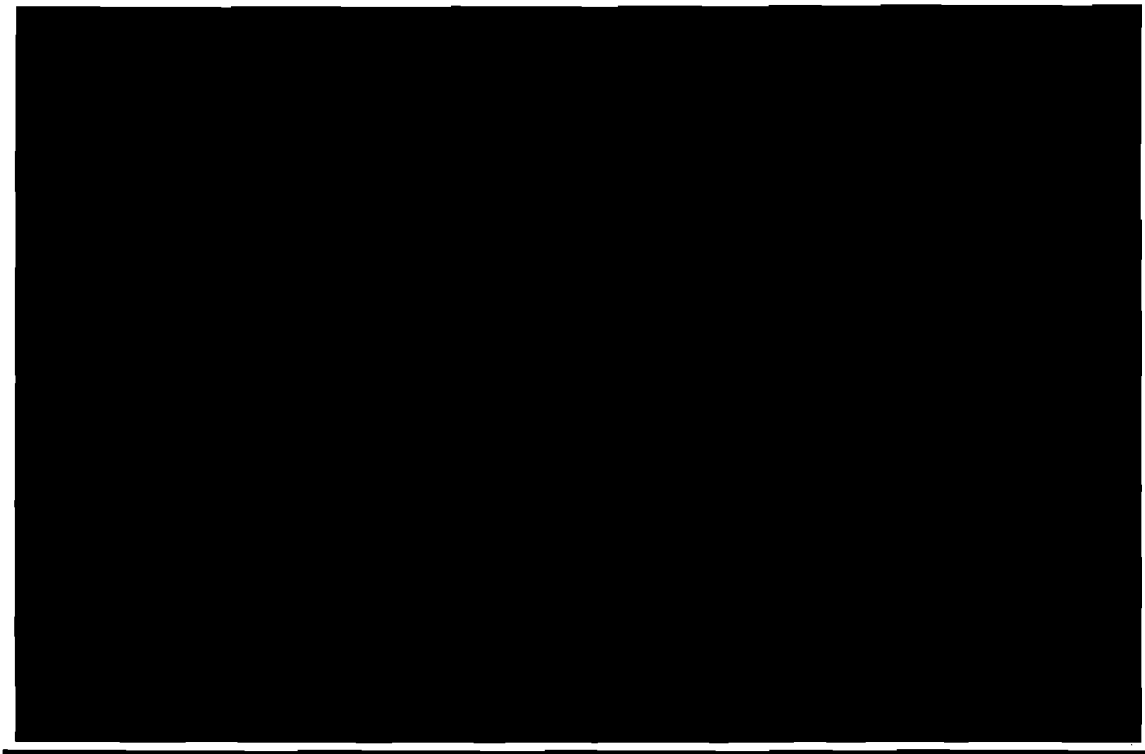
During its second meeting, in mid-November, the Executive Committee turned its chief attention to the many other problems of national reconnaissance. The search system requirement received brief but pointed attention. [redacted] reported somewhat ominously that the Bureau of the Budget might well take "an adverse view" of the development proposal on grounds of cost. Cyrus Vance, the chairman, asked for a formal statement of the Bureau's views--particularly relevant because, owing to the various delays in the search system program, it now appeared that Corona operations would have to be extended [redacted]

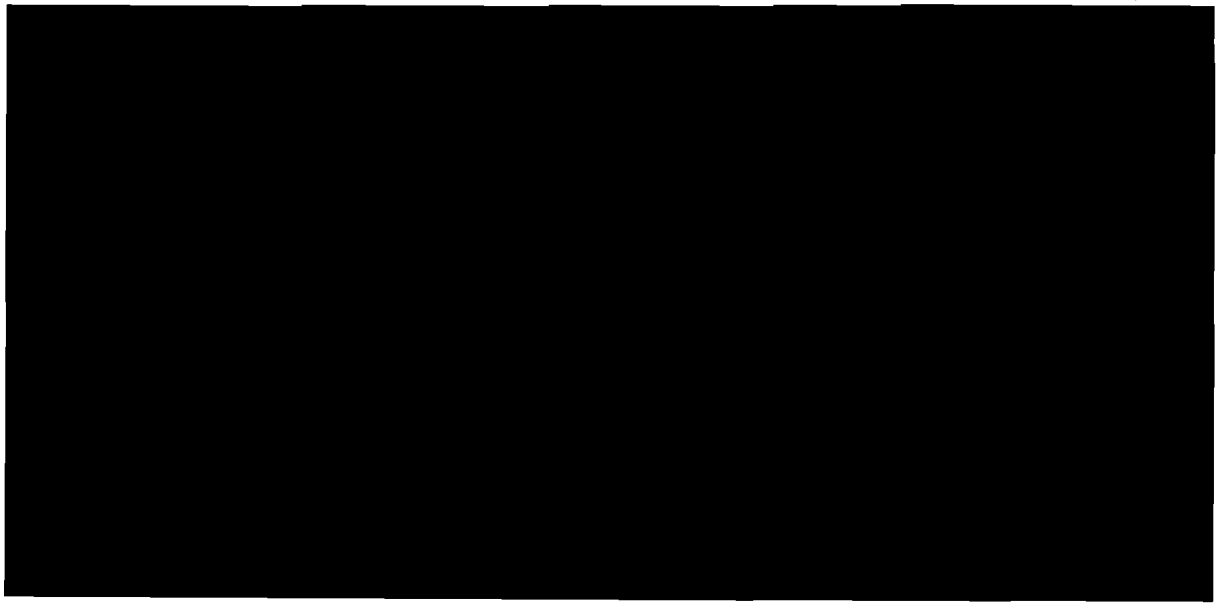
In the meantime, Flax had issued instructions for the deliberative evaluation of search [redacted] proposals. He named the chief of the NRO staff, Brigadier General J. T. Stewart, to chair a management evaluations committee that included John McMahon of the CIA and Colonel Paul Heran of the NRO's Directorate of Special Projects. Carter, Dirks, and Colonel W. G. King (NRO Special Projects) were appointed to a technical task definition group. With interesting

promptitude, Carter issued a preliminary paper describing the search requirement [redacted] (Both had long been in preparation, of course.) The concept included use of a

[redacted]

[redacted]





[redacted]

[redacted]

The main elements of Flax's proposal were a plan for source selection and a management plan. For the first of those, little that was controversial remained for decision, and in other than a casual way the NRP Executive Committee did not look into its details. The management plan, however, specified the organizational arrangement to be honored during the development of the system and thus encompassed all of the highly controversial aspects of CIA-NRO relationships that had troubled the National Reconnaissance Program for more than three years. Even in its draft form, as circulated for comment, it had evoked strong reactions from both CIA and NRO spokesmen. The original proposal, as worked out in advance of the 15 October 1965 establishment of the task group on management, had represented a skillful compromise of organizational prerogatives. There was no longer any doubt that the CIA would exercise responsibility for the

[redacted]

That much had been implied in the compromise arrangements of August 1965. [redacted]

[redacted]

[redacted]

General Martin, who had been NRO staff director during much of the period when divided responsibilities and ill-defined command lines had made chaos of Corona management, argued that a combined program office was essential, that co-project-leader arrangements could never be made to work. Supported by most of the NRO staff and his own West Coast group, he held out for assigning [redacted]

That Solomonian edict was one of the few of the Flax proposals that occasioned arguments during the Executive Committee meeting of 26 April 1966, where final decisions were confirmed. John J. Crowley, the CIA's principal agent for sensor development, [redacted]

[redacted] Crowley contended, with Admiral Raborn's backing, that so extending the CIA's responsibilities would reduce the amount of interagency interface required for program management "and thereby markedly improve the possibilities of satisfactory performance within the time limits of the program."

Only one other difference of viewpoint surfaced during the Executive Committee meeting. Dr. Flax had provided that both the Special Projects Directorate and the CIA project office were to be authorized to issue program access clearances, and that each would honor without question the need-to-know determinations of the other. The CIA asked for a veto; Flax responded that his object was "to eliminate the use of security as a means of frustrating . . . legitimate access to information. . ."

The three principals of the Executive Committee met privately and alone after the briefings and discussions had ended. Vance, the chairman, advised Flax as soon as the three-man group had completed its deliberations that the [redacted]

[redacted]

[redacted]

None of the many principals ever expressed regret.[22]

[redacted] Program Onset to First Flight

The situation [redacted] and the pattern of program development as anticipated at the time of program go-ahead were fairly represented by the several papers Dr. Flax submitted on 22 April, and which the NRP Executive Committee approved for action during its 26 April meeting.

[redacted]

Although Brockway McMillan, Flax's predecessor as NRO director,

had endorsed and attempted to secure [redacted] Flax wisely ignored all such considerations in his 22 April resume. The major problem of the moment, as Flax saw it, [redacted], the NRO's Directorate of Special Projects, the NRO's staff, and the CIA's Directorate of Science and Technology). [redacted] There was general agreement among USIB, NRO, and CIA authorities that what was wanted was [redacted]

[redacted]

Flax had designed the management mode[redacted] to comply with the provisions of the 11 August 1965 NRO charter and related agreements between the CIA and the Department of Defense. That essentially meant that the CIA would retain responsibility for [redacted], and the NRO's Special Projects directorate (in Los Angeles) for [redacted]

Given those fundamentals, Flax proposed to distribute [redacted]

[redacted]

[redacted]

[redacted], two days after Flax received formal notification that his proposal had been approved as submitted. (Some minor points of disagreement on security arrangements remained for clarification, but that did not constitute a significant problem.) Apart from

---

* [redacted]

the set of papers submitted to the Executive Committee, the 28 April directives included directions for the [redacted]

[redacted]

[redacted]

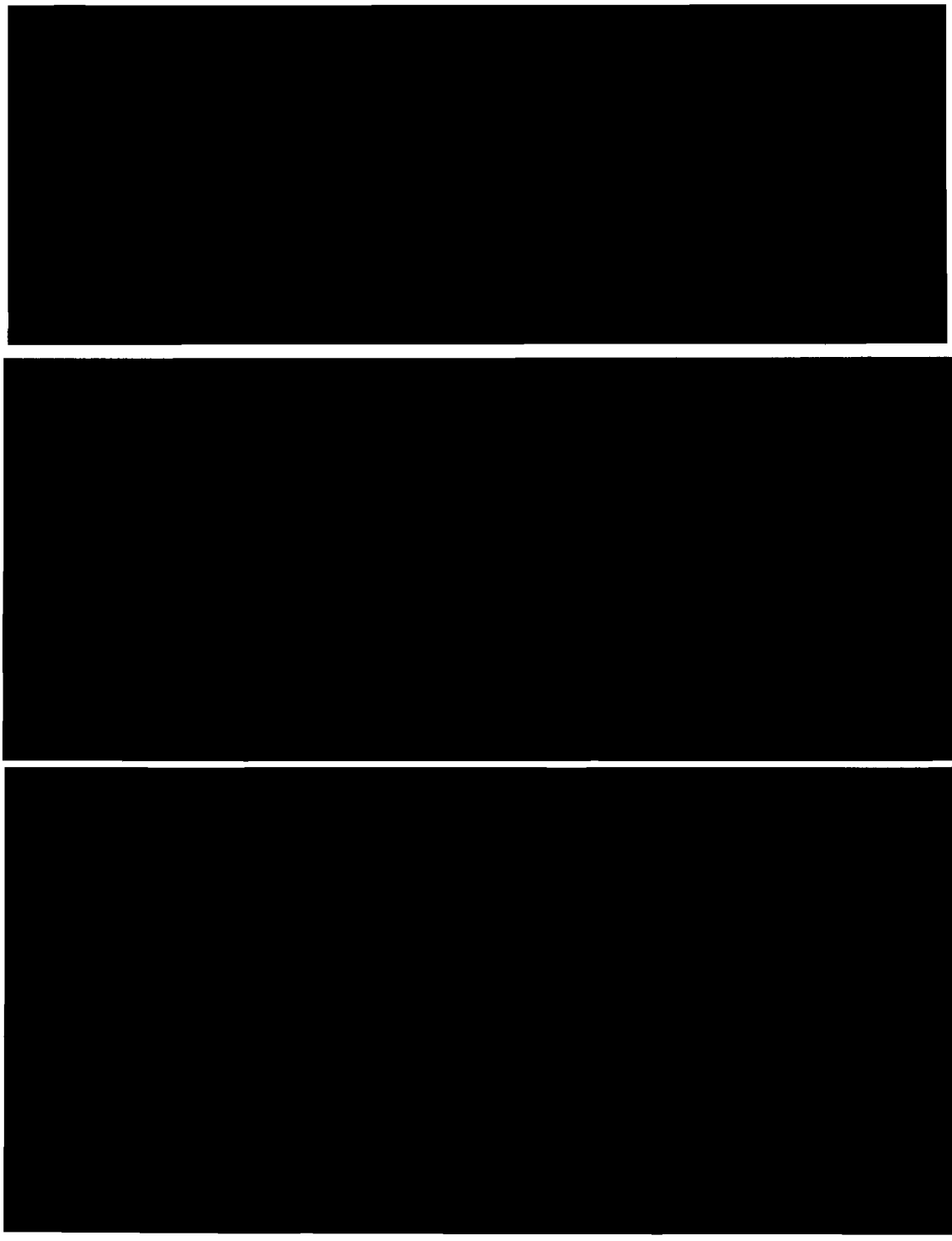
[redacted]

[redacted]

*

[redacted]

[redacted] existing Corona program office, [redacted] the Corona chief. [redacted] experienced Corona people [redacted] there seemed little doubt that Corona would [redacted] experience with Corona [redacted]



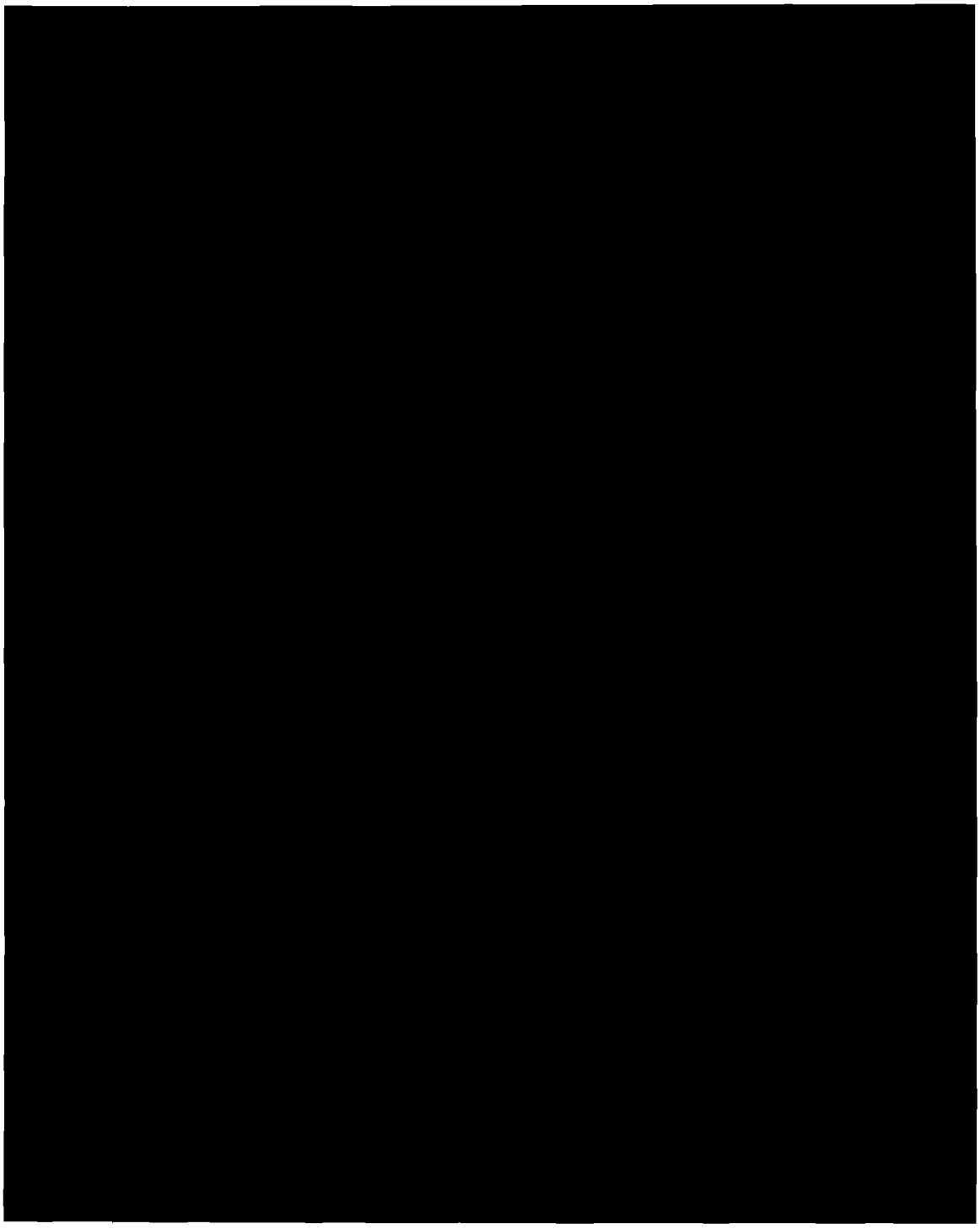
[redacted]

[redacted] but Flax decided to postpone a final decision until booster

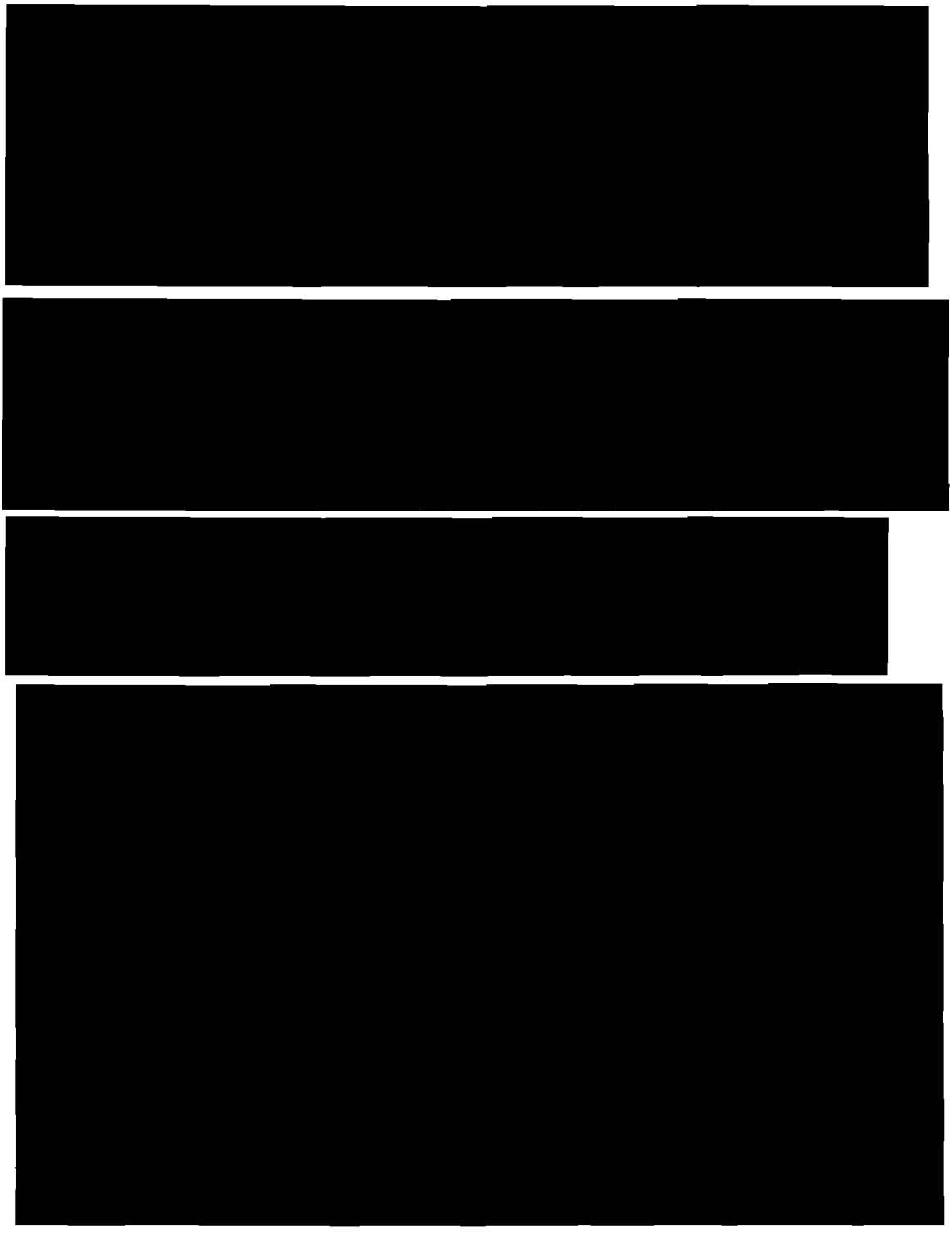
[redacted]

[redacted]

[redacted]



[redacted]



[redacted]

[redacted] in his role as Assistant Secretary of the Air Force for Research and Development, Flax had recently seen [redacted]

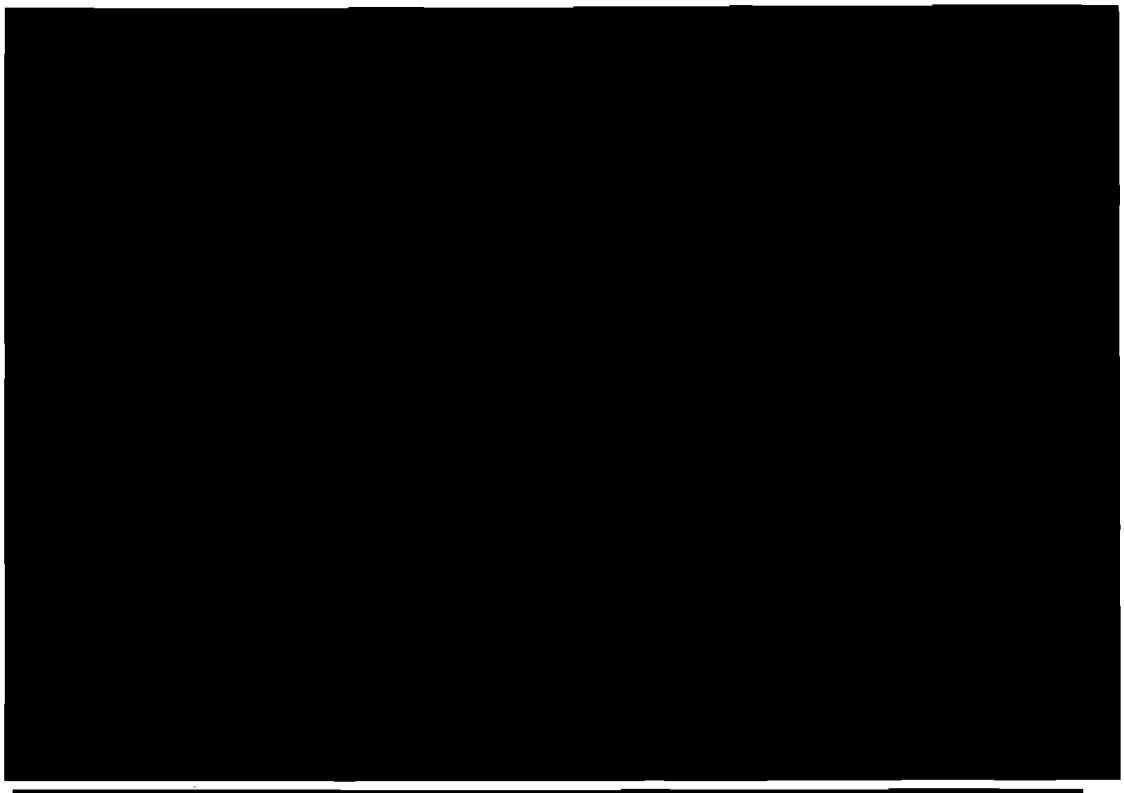
[redacted]

[redacted]

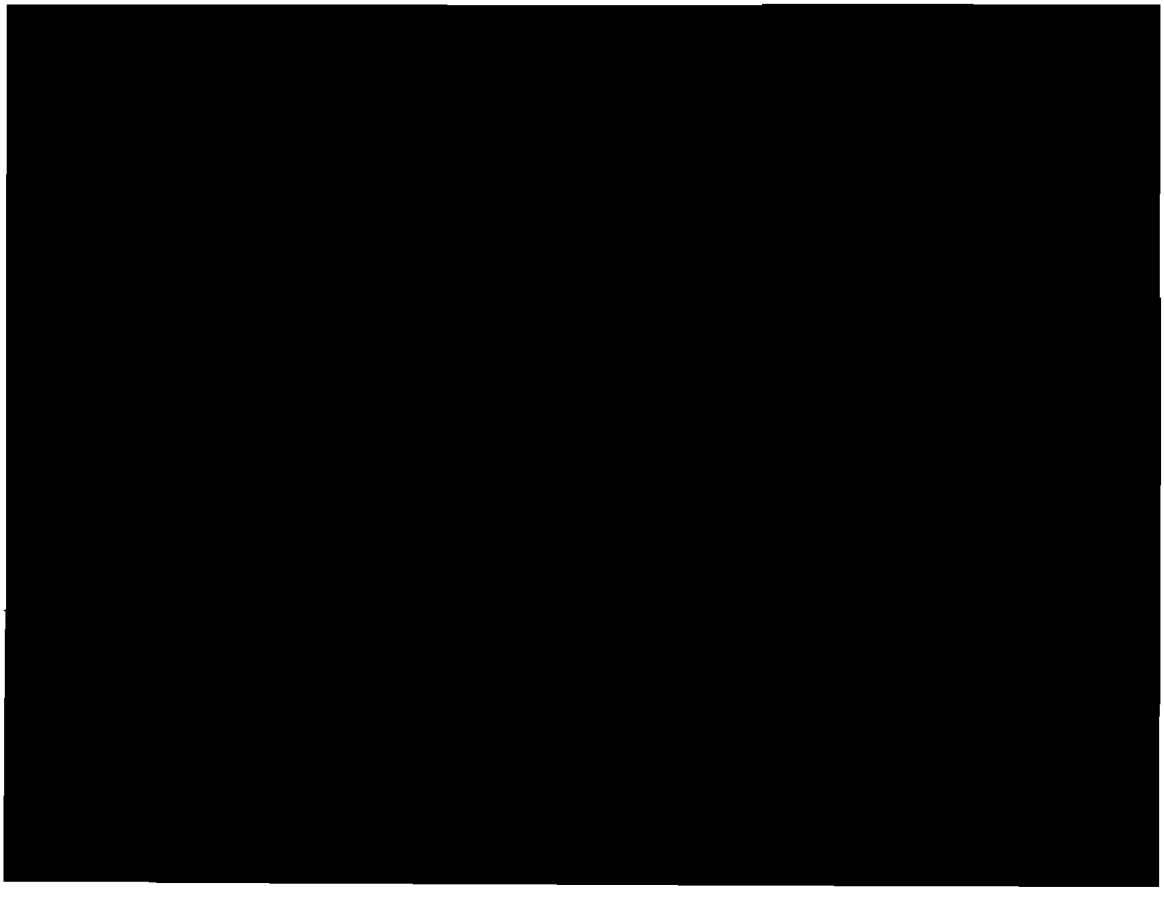
[redacted]

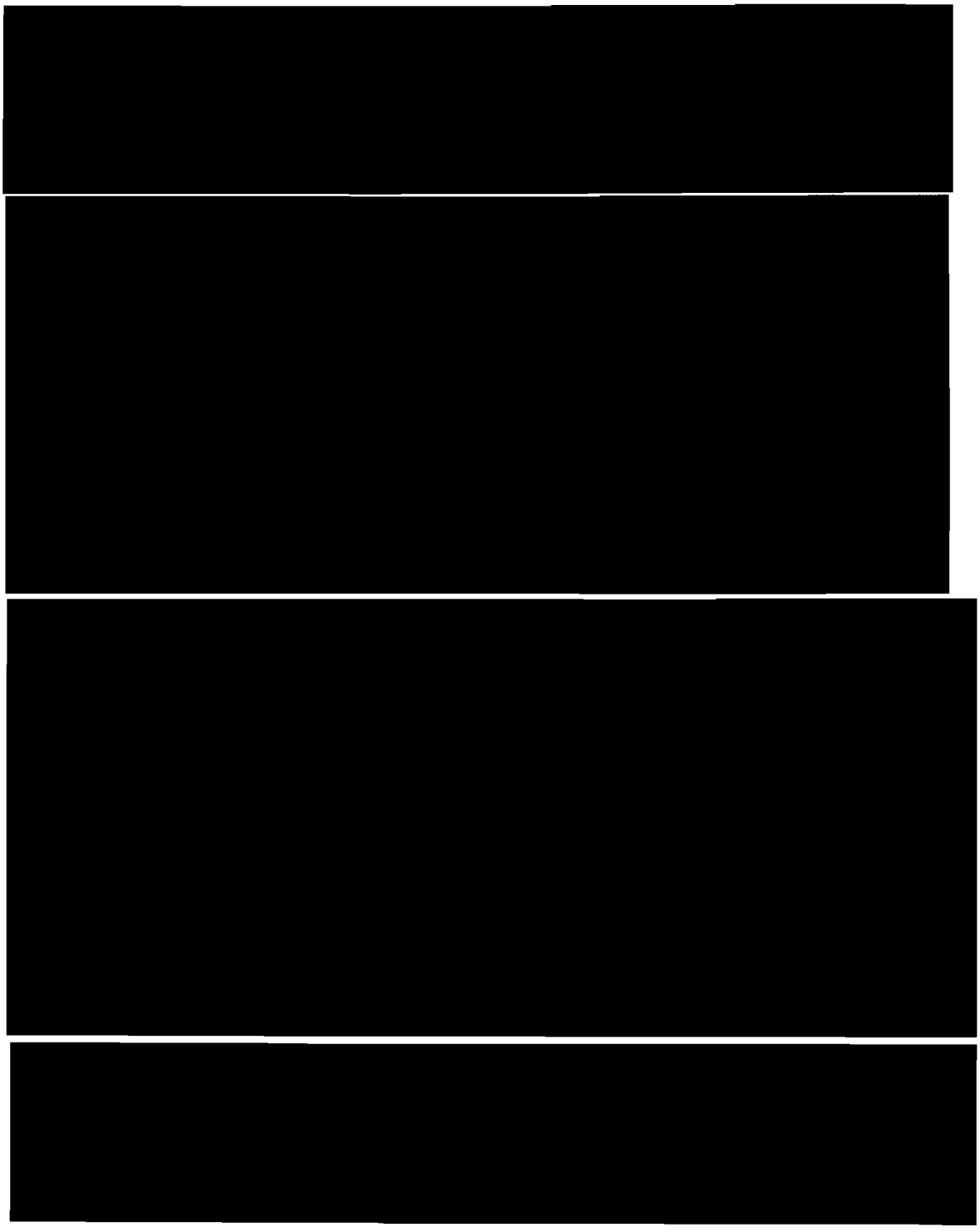
when the United States Intelligence Board decided to give the question formal consideration. [redacted] so the USIB endorsed that course in December 1966.[29]

[redacted]



[redacted]





[redacted] the Directorate of Defense Research and Engineering formally urged that a [redacted]

*

Although the Directorate of Defense Research and Engineering participated in general discussions of the National Reconnaissance Program at the Executive Committee level, Foster had no vote in program decisions and little influence on most. [redacted]

When the Argon program first was approved, in 1958, the Directorate of Defense Research and Engineering inherited from the Advanced Research Projects Agency both a sponsorship function and an active voice in mapping program decisions--reflected in the composition of the configuration control board for Argon. Argon had long since passed from the scene, but Army interests still were represented by the Directorate of Defense Research and

[redacted]

Again, a final decision was put off.

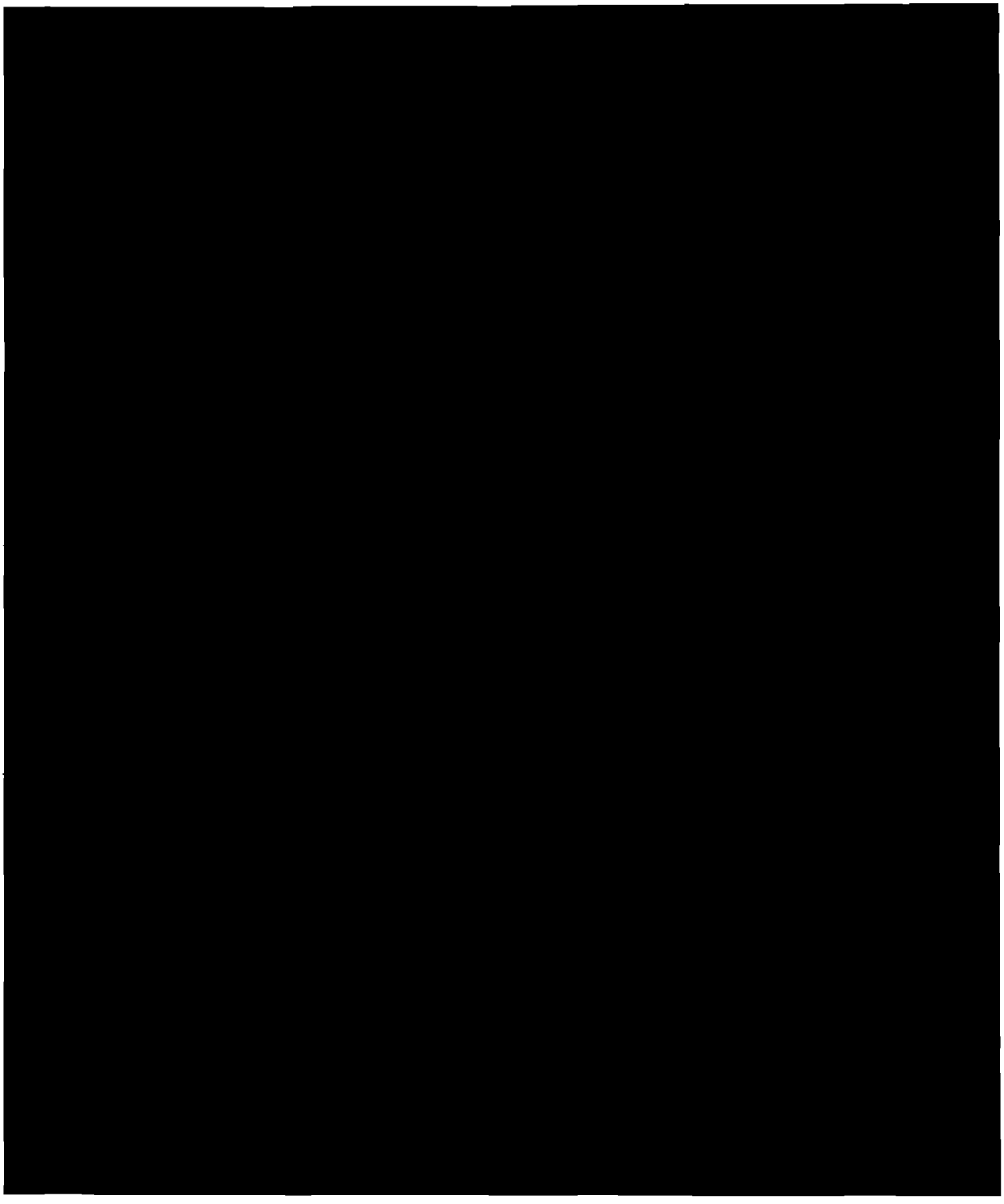
[redacted]

Engineering whenever mapping programs were considered. Thus Foster was in one sense a spokesman for Army viewpoints. His access to and influence with the upper echelons of the Department of Defense made that an important consideration in decisions on new stellar-indexing and mapping systems.

[redacted]

Deputy Secretary of Defense Paul Nitze, Chairman of the NRP Executive Committee, had become receptive to John Foster's advocacy of a

[redacted]



[redacted]

In May, Dr. Flax settled the who-does-what argument over [redacted]

[redacted]

[redacted]

[redacted]

In the growing national uproar over the costly IndoChina War, defense budgets were becoming tighter; one consequence was that the development of expensive new satellite reconnaissance systems was becoming increasingly dependent on finding the necessary money within ceiling-limited NRP budgets.

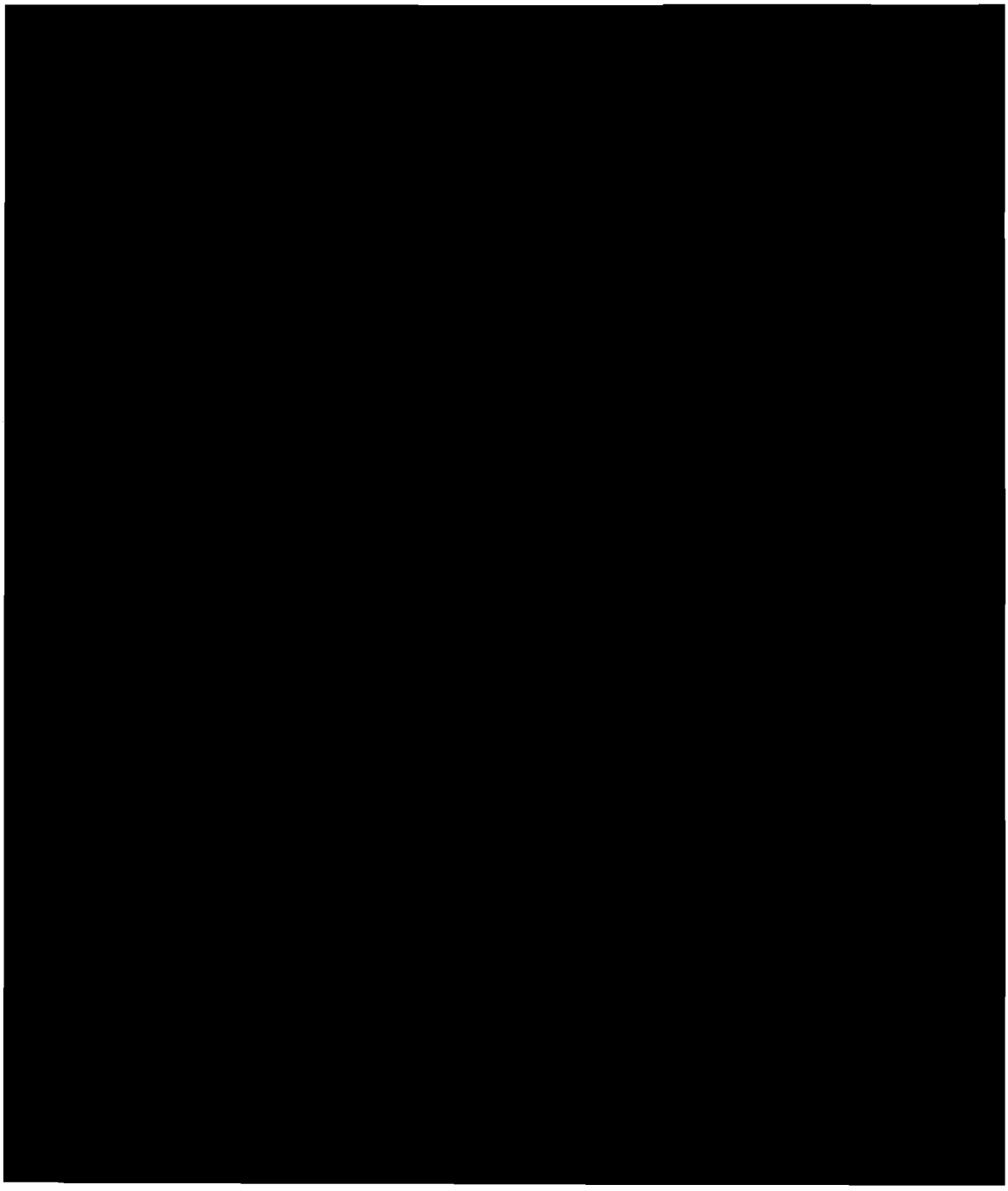
[redacted]

[redacted]

The opening of Strategic Arms Limitations Talks (SALT) with the Soviet Union further complicated orderly consideration of the [redacted] Progress in the arts of satellite reconnaissance had been so rapid in the mid-1960s that it was no longer essential to couple arms limitations to the on-site inspection of strategic weapons stockpiles and installations. The Soviet Union had consistently refused that concession; pre-1968 efforts to agree on means of verifying compliance with arms limitations agreements had grounded on the inspection issue. Although neither the Soviets nor the Americans was fully prepared to specify that all needed verification and inspection could be performed by means of cameras in orbit, de facto acceptance of that premise was evident after 1968.

Once the means had been agreed upon, however informally, the details became all important. On the American side (and conceivably on the Soviet side as well), the scope and detail of coverage required to

confirm compliance with arms agreements were contentious issues.



[redacted]

Such issues began to concern the NRP Executive Committee during the summer of 1968. Late in that summer, Deputy Secretary of Defense Paul Nitze, [redacted] in a SALT-agreement verification setting, instructed Dr. John Foster, Director of Defense Research and Engineering, to undertake a comprehensive evaluation of [redacted] Similar studies had been completed and reported to the Executive Committee at intervals since 1964 (although only lately had SALT been of real concern), but most had been undertaken by one or another of the several participants in the satellite reconnaissance effort (the CIA, the NRO, NPIC, DIA, and the NSA had all participated or contributed at one time or another), and Nitze wanted a fresh and entirely independent viewpoint.[34]

[redacted]

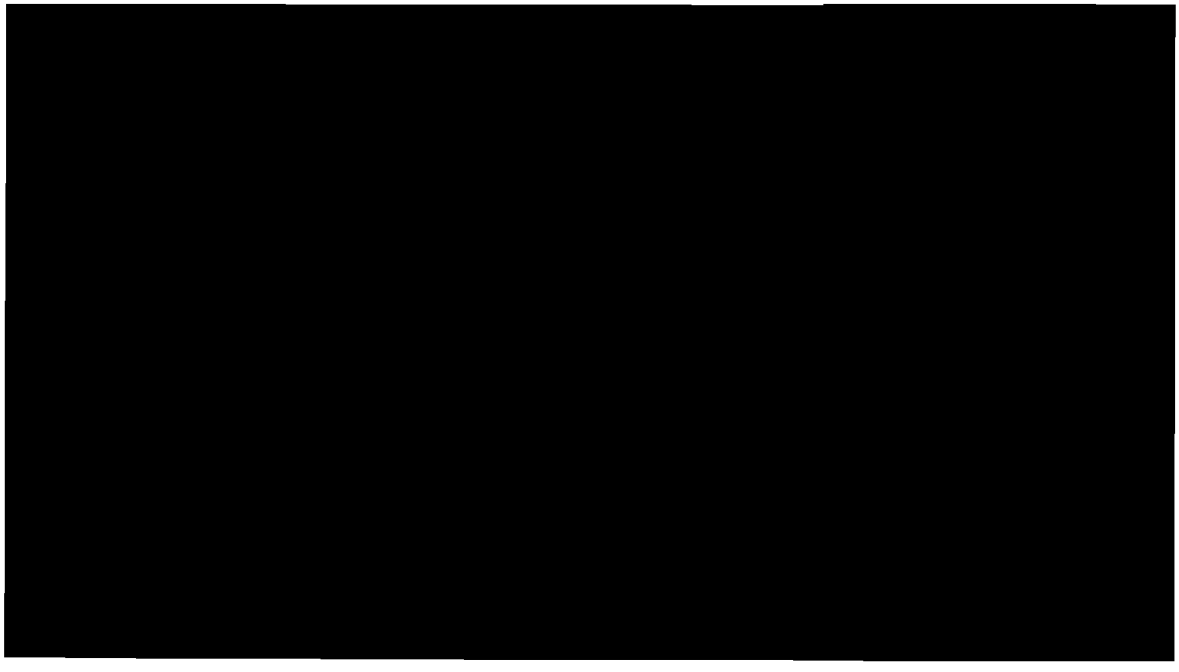
[redacted] At that point in the discussions, the Bureau of the Budget revived an earlier suggestion that [redacted] and an improved Corona (presumably some variant of what was generally known as the Corona J-4 proposal) would satisfy the requirement at a cost perhaps [redacted] The CIA, DIA, NPIC, and NRO responded in concert that without a complete redesign [redacted] Corona could never provide search resolutions much [redacted]

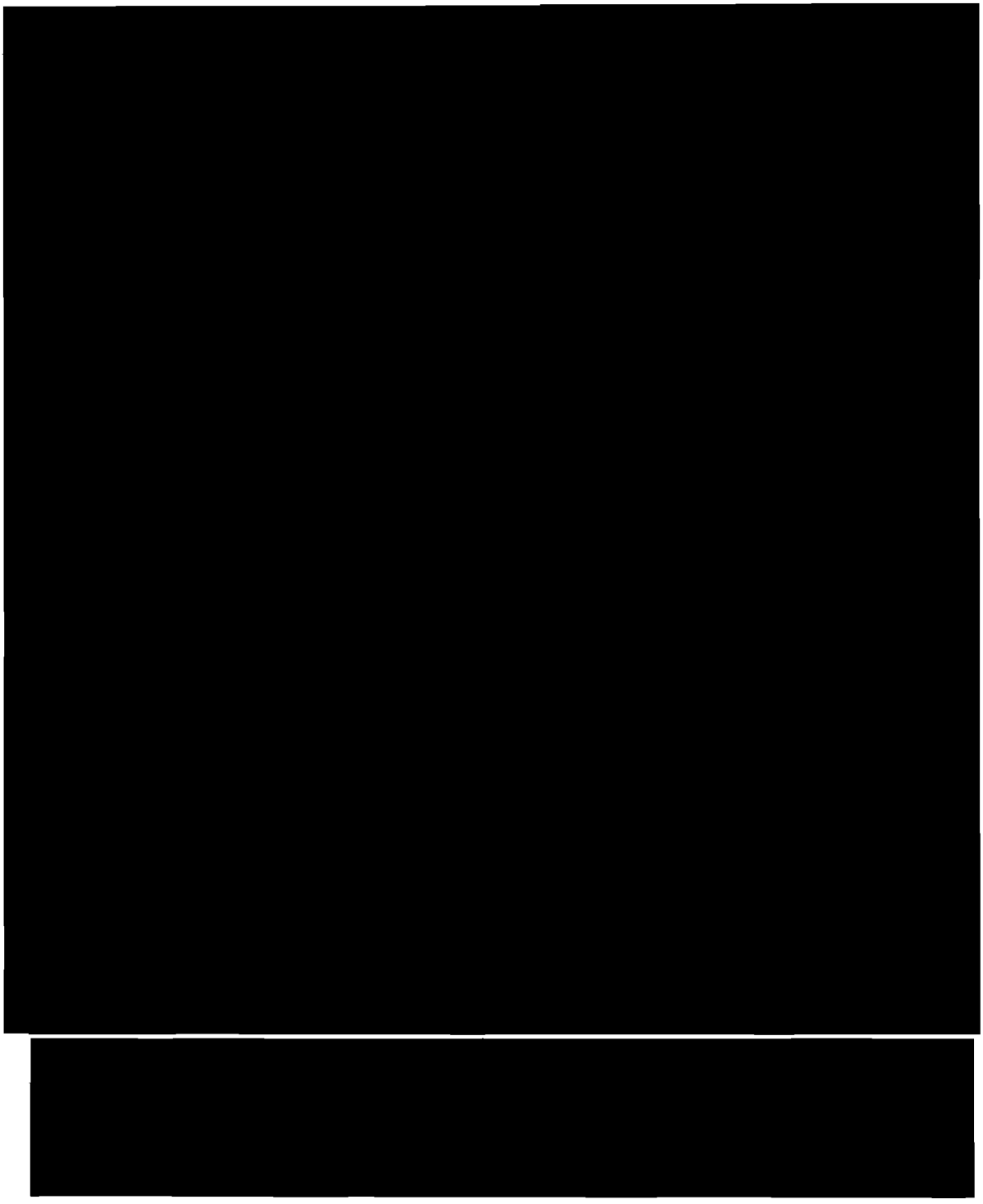
In November 1968 the American electorate chose Richard M. Nixon to succeed Lyndon B. Johnson as President. Nixon appointees took office in January 1969. Foster and Richard Helms, Director of Central Intelligence, were among the few senior officials to carry over from one administration to the other. Nitze was succeeded by David Packard as Deputy Secretary of Defense, and Clark Clifford,

President Johnson's last Secretary of Defense, by Melvin Laird. Clifford had delegated responsibility for virtually all matters concerned with the National Reconnaissance Program to Nitze; Laird did the same for Packard, but kept closer tabs on NRP policy decisions than had Clifford. Laird's instructions from President Nixon were to reduce defense expenditures below the levels proposed by the Johnson Administration, and he did not propose to exempt the NRP from funding cutbacks. The new Director of the Bureau of the Budget, Robert P. Mayo, had received similar instructions: he found a ready advocacy of NRP funding cuts embedded in the permanent staff of the bureau.

[redacted]

[redacted]





[redacted]

President Nixon was sufficiently intrigued by the potential of the readout system Dr. Land advocated to make that capability the principal reconnaissance satellite objective of his administration.

[redacted]

Proposals for extending Corona production and even for stockpiling Coronas against some future need [redacted] gained an occasional hearing thereafter, but never again did they have high-level support. The National Aeronautics and Space Administration wanted Corona for possible use in Earth Resources Survey assignments and the Department of State urged retention of Corona

capability against crisis reconnaissance needs, but NASA was unable to finance continued Corona production and [redacted] Corona in a crisis reconnaissance assignment. Enough Corona systems had been ordered to protect against a [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Corona had nearly been cancelled after a first year of flight experience dominated by mission failures, and all other photo-satellites of the 1960s had eventually succumbed to one or another of several

[redacted]

major flaws. [redacted]

[redacted] Colonel Buzard later summed up the program office viewpoint with the phrase, "if a thing is not worth doing at all, why do it well?" Nevertheless, such problems hinted at real slippages to come.

[redacted]

[redacted]

[redacted] in June 1969 Dr. McLucas* assigned to his principal deputy, Dr. F. Robert Naka, the task of [redacted]

*Dr. J. L. McLucas succeeded Flax as Director, National Reconnaissance Office, in April 1969.

[redacted]. Naka's evaluation,* forwarded to members of the NRP Executive Committee on 20 June, contained carefully qualified expressions of caution.

[redacted] Naka estimated the degree of confidence the NRO should have that the [redacted] An unavoidable parallel issue was whether Corona vehicles additional to those then on order should be purchased [redacted] Naka [redacted]

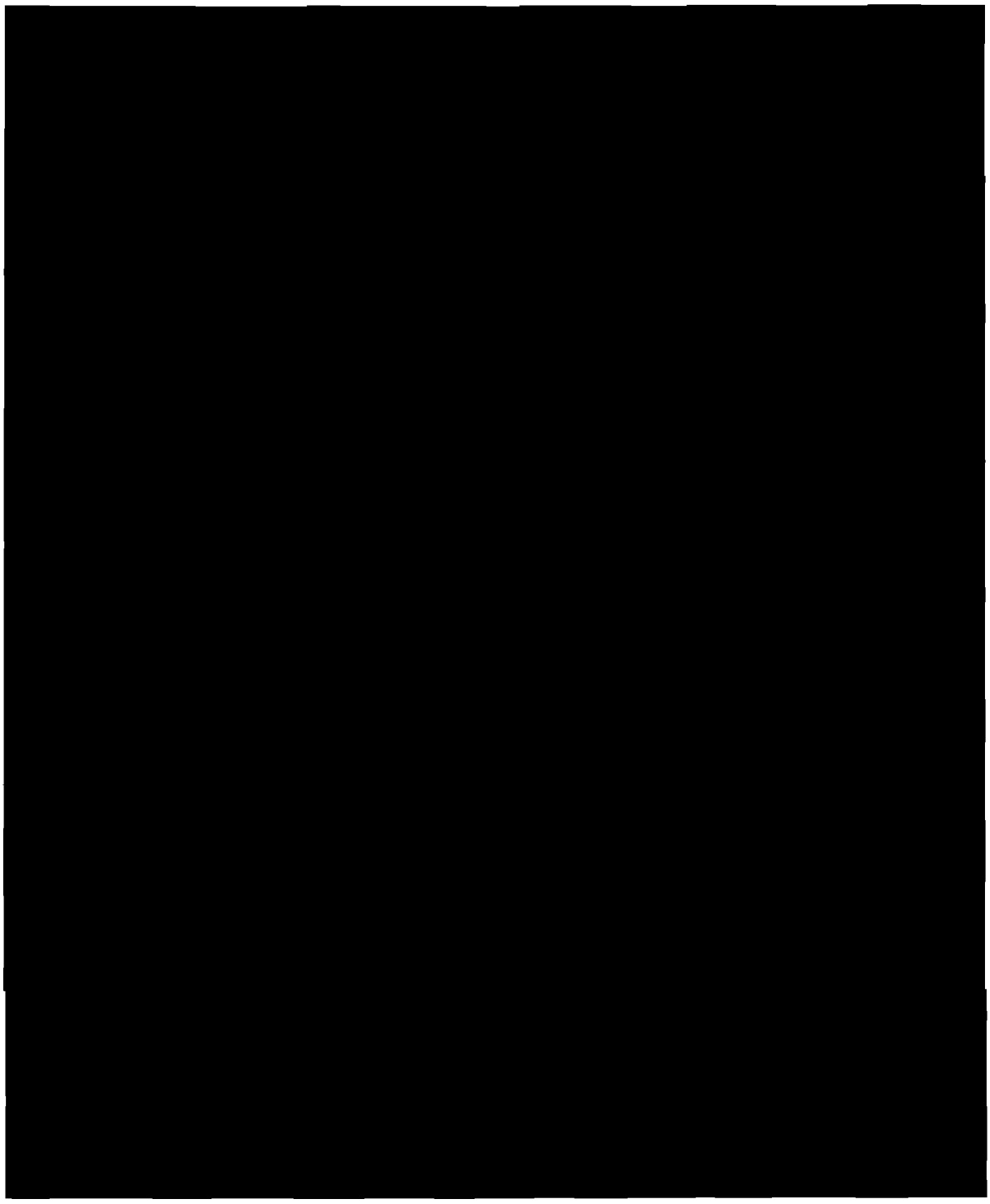
---

* Dr. Naka [redacted] Although preliminary findings were forwarded to the Executive Committee in June, formal reports seem not to have been prepared until September 1969.

[redacted] Given those odds, he suggested that the 12 Coronas programmed for launch at about two-month intervals between June 1970 and July 1971 should be rescheduled [redacted] Naka also cautioned that the need for more Coronas should be reassessed in December 1969.[41]

The Naka report, standing alone, was cause for mild uneasiness. [redacted] Part of the difficulty arose from the necessity of diverting defense dollars to the increasingly costly IndoChina War; another part derived from President Nixon's assignment of a high priority to the

effort to develop a near-real-time readout system for reconnaissance satellite applications--the target date being 1976. [redacted] David Packard, chairman of the Executive Committee, asked flatly on 8 August 1969 whether there was agreement in the Committee [redacted]



[redacted]

chiefly Corona systems. Corona J-3 [redacted], and by 1969 there was no reasonable possibility of developing an improved Corona [redacted] Indeed, within a few months it would become impossible to order additional Corona J-3 systems [redacted] the lead time for Corona was 18 to 24 months, which meant that systems ordered in December 1969 could not be delivered sooner than June 1971. [redacted] and buy Corona vehicles [redacted] The Executive Committee had little choice.

Concern did not vanish, nor did the Committee lose sight of the problem. In October 1969, Dr. Naka again [redacted] he recommended that the decision

on an additional Corona buy be postponed until January 1970. [redacted], so the Committee somewhat reluctantly decided to forego the option of ordering more Corona vehicles.[43]

Dr. Naka's report did not stand alone and unsupported--or [redacted] Brigadier General W. G. King (who in August 1969 had succeeded Major General John L. Martin, Jr., as NRO head of Program A, the Directorate of Special Projects) convened a special meeting [redacted]

[redacted]

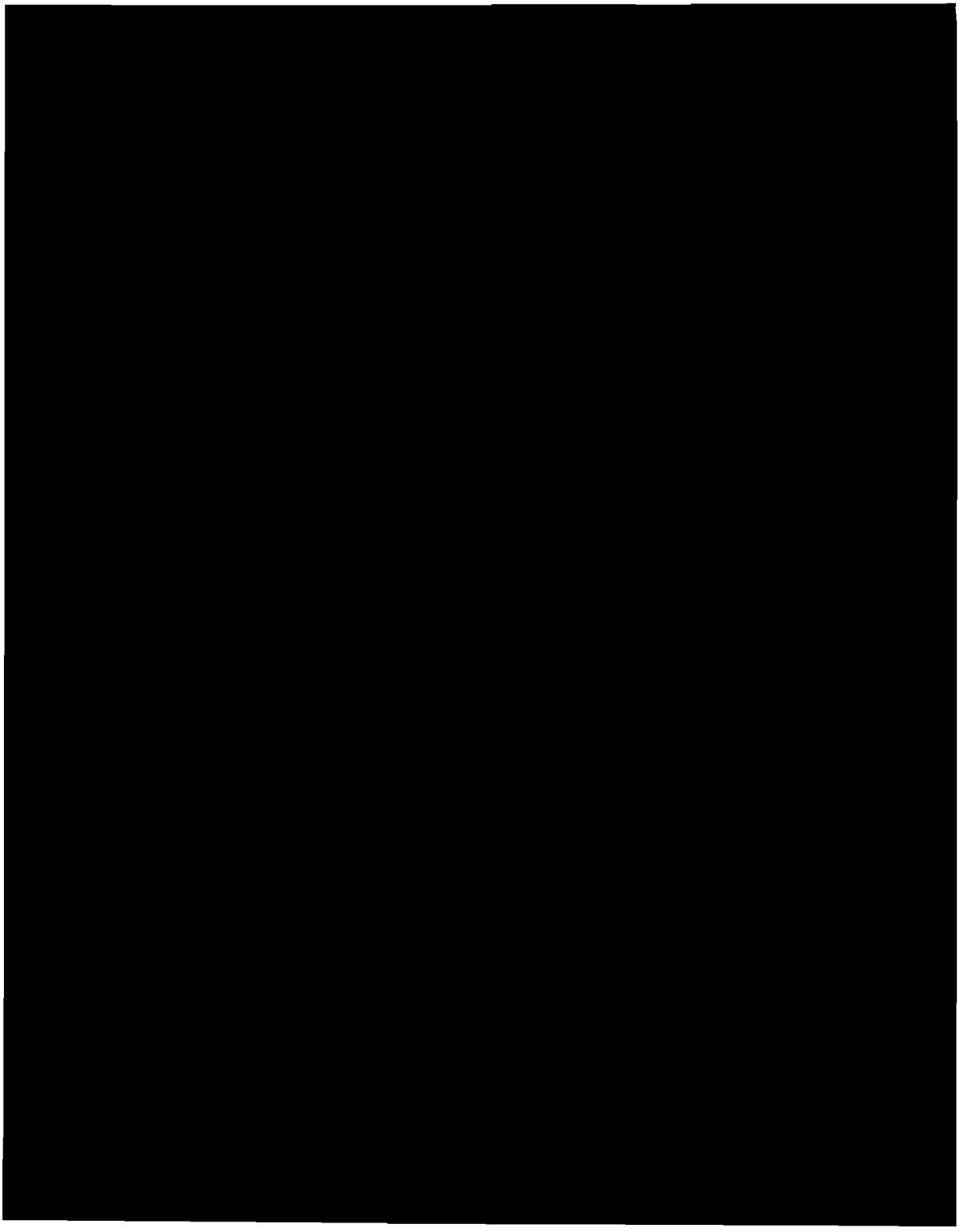
A decade still earlier, he had been called on to rescue the Snark missile system after it had experienced a 300 percent cost overrun, a five-year availability slippage, and a succession of incredible technical shortfalls. He had performed admirably in both assignments. (NB: General Martin's departure was a routine reassignment after seven years with the NRO.)

[redacted]

In early July 1970, Dr. McLucas was able to report to the NRP Executive Committee that notwithstanding ". . . [redacted]

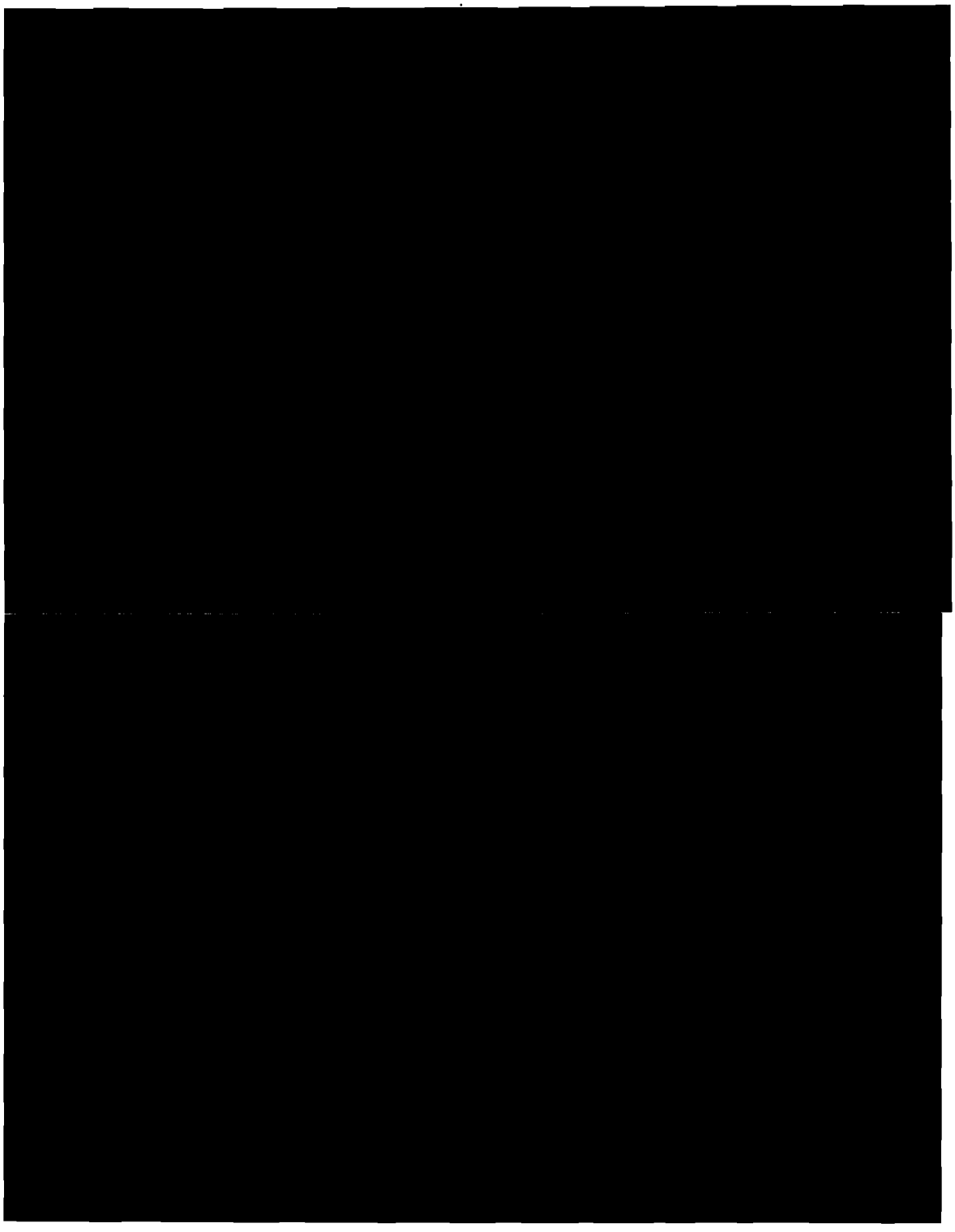
[redacted]

Unhappily, even while Dr. McLucas was assembling his report to the Executive Committee [redacted]



[redacted] the NRP Executive Committee met on 17 July, [redacted]. J. R. Schlesinger, then acting Deputy Director of the Office of Manpower and Budget, promptly resurrected the proposal to buy Corona systems [redacted] Dr. Naka, whose committee had recommended bypassing that option six months earlier, explained that the last chance to order Corona systems had lapsed the previous February. [redacted] and Corona launches continued at their planned rate, [redacted] Corona systems could be delivered. [redacted]

[redacted]



[redacted]

[redacted]

of Corona,

[redacted]

as no more than Corona

[redacted]

Corona

[redacted]

Corona-scope search capability,

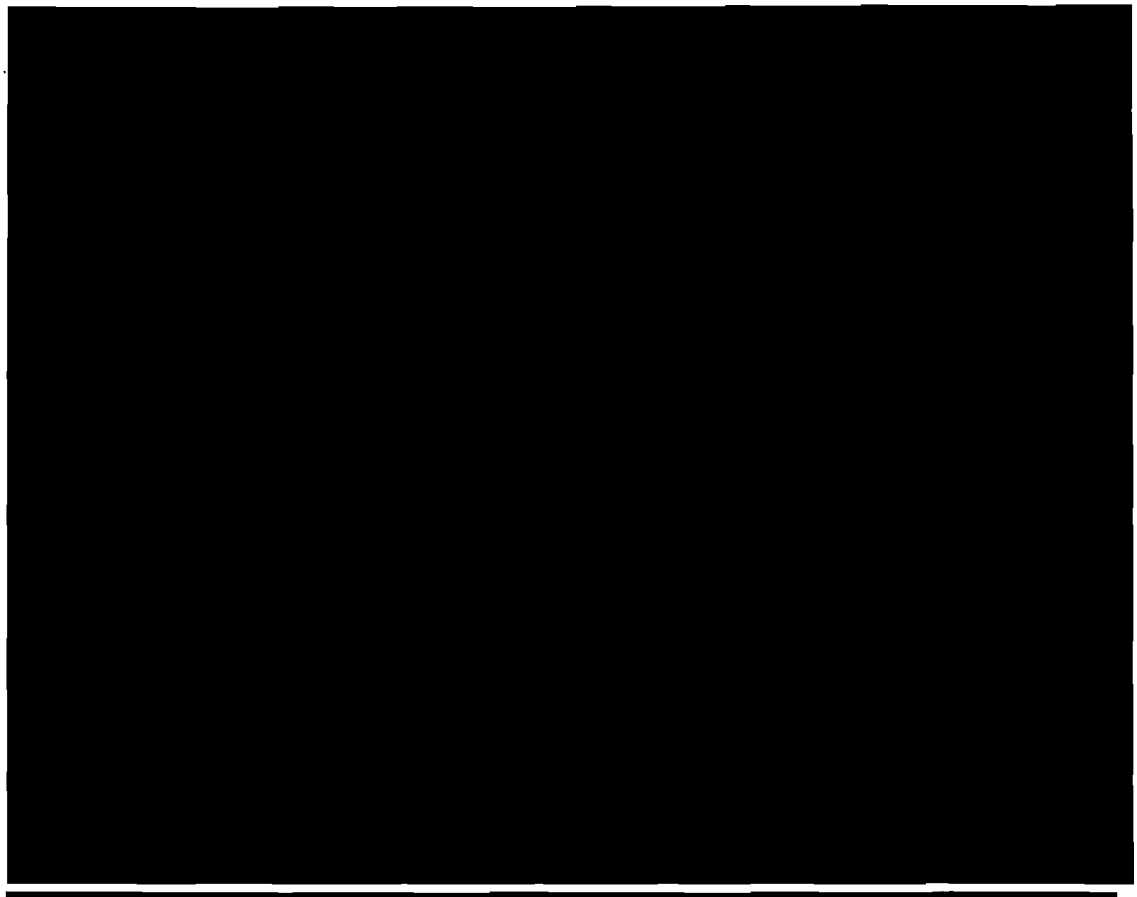
[redacted]

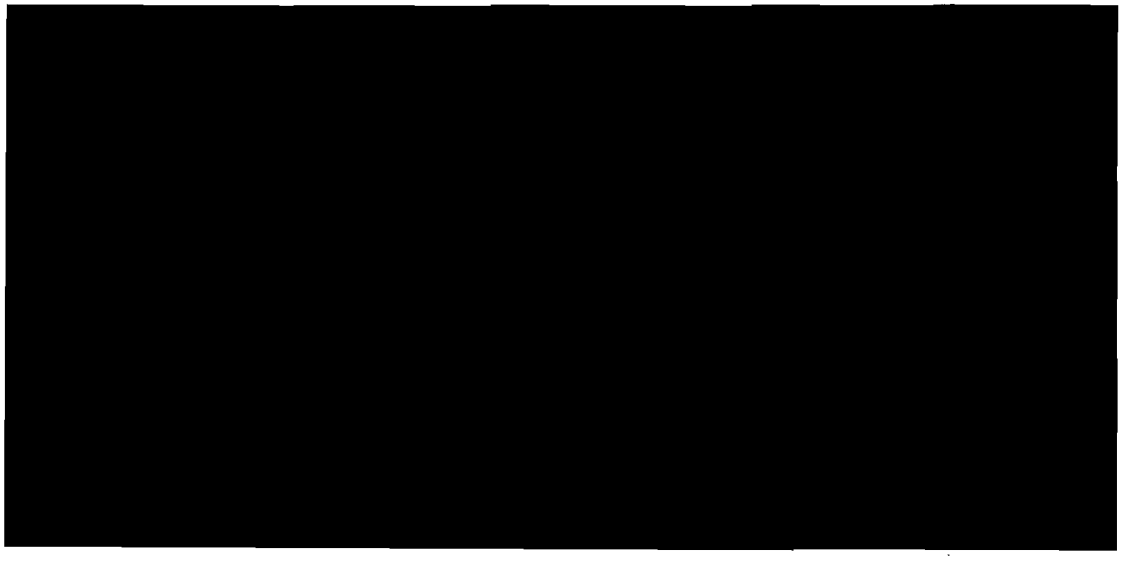
Corona (small lots of Coronas would

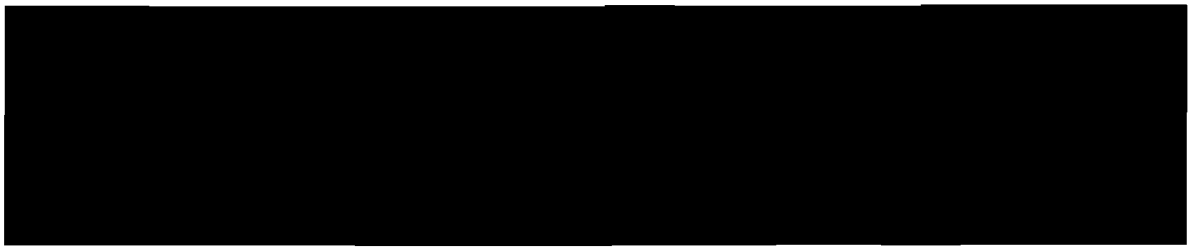
cost about $20 million a system),

[redacted]

[redacted]







[redacted]

[redacted]

[redacted]

[redacted]

* (Acronyms and organizational abbreviations generally have not been used on these pages, except for such often-used sets of initials as NRO, NRP, USAF, and CIA. The following brief summary of operational program participants and their responsibilities is so dominated by organizations known almost exclusively by their abbreviations that it is not feasible to continue that felicitous practice, however desirable. Some acronyms are so well entrenched in conversational usage in the intelligence community that even constant users have to stop and rummage through their memories when asked to provide the full [redacted] The reader baffled or infuriated by bureaucratic fondness for acronyms and their verbalization may pass by this section without appreciably weakening

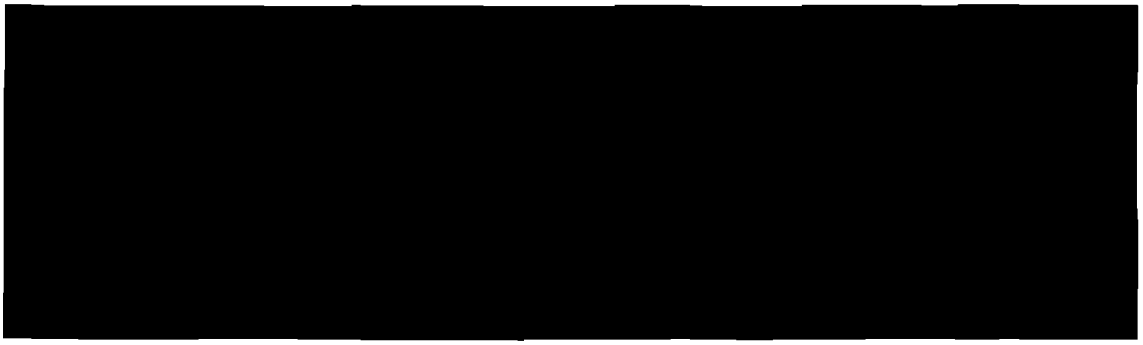
[redacted] The acronyms alone were enough to engage the attention of a trained philologist.

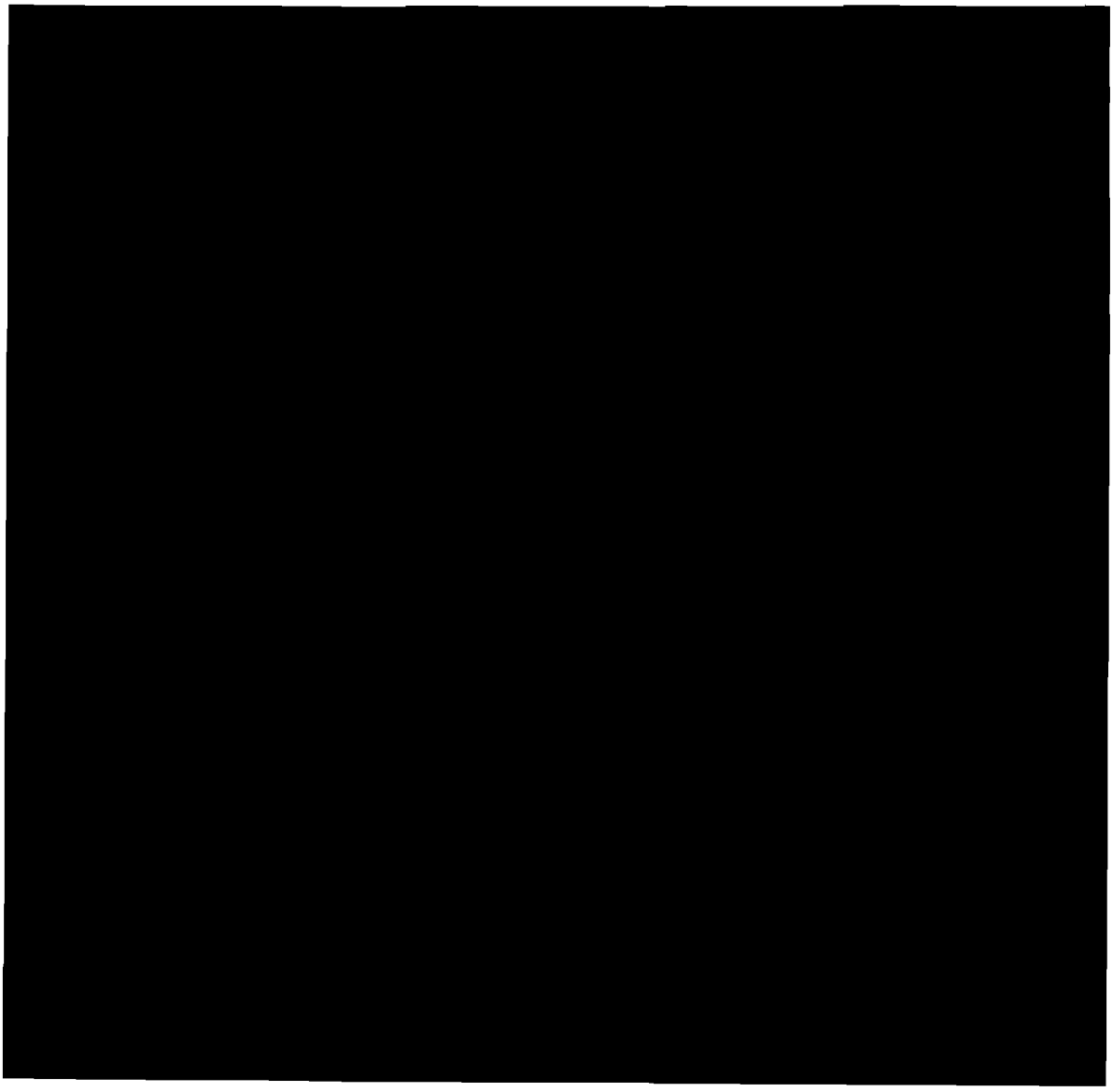
[redacted]

his understanding of [redacted] The section has been included in deference to the canons of historiography: some muddled scholar may some day need to know what element of jargonese referred to what organization. R.P.)

[redacted]

[redacted]



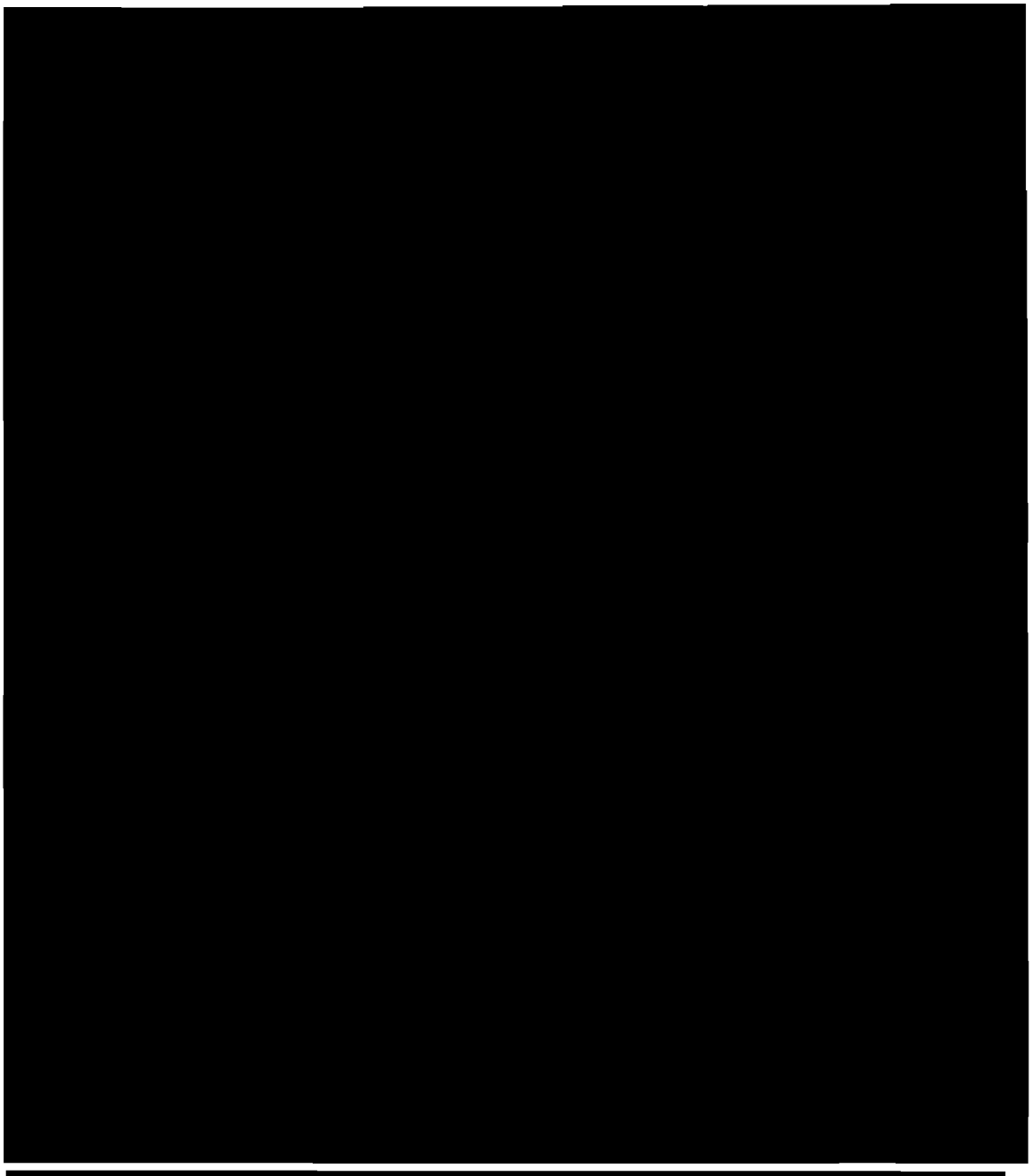


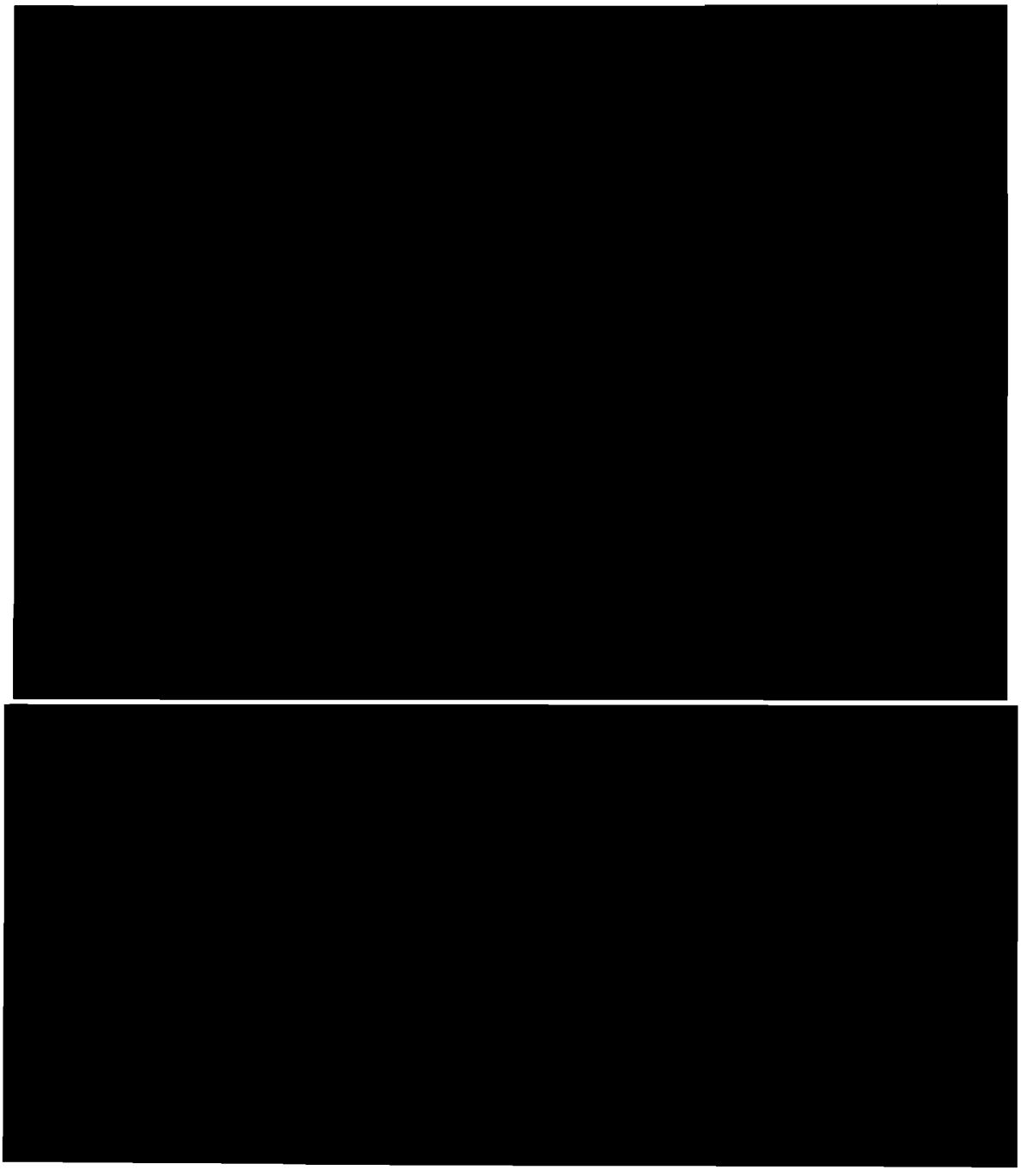
[redacted]

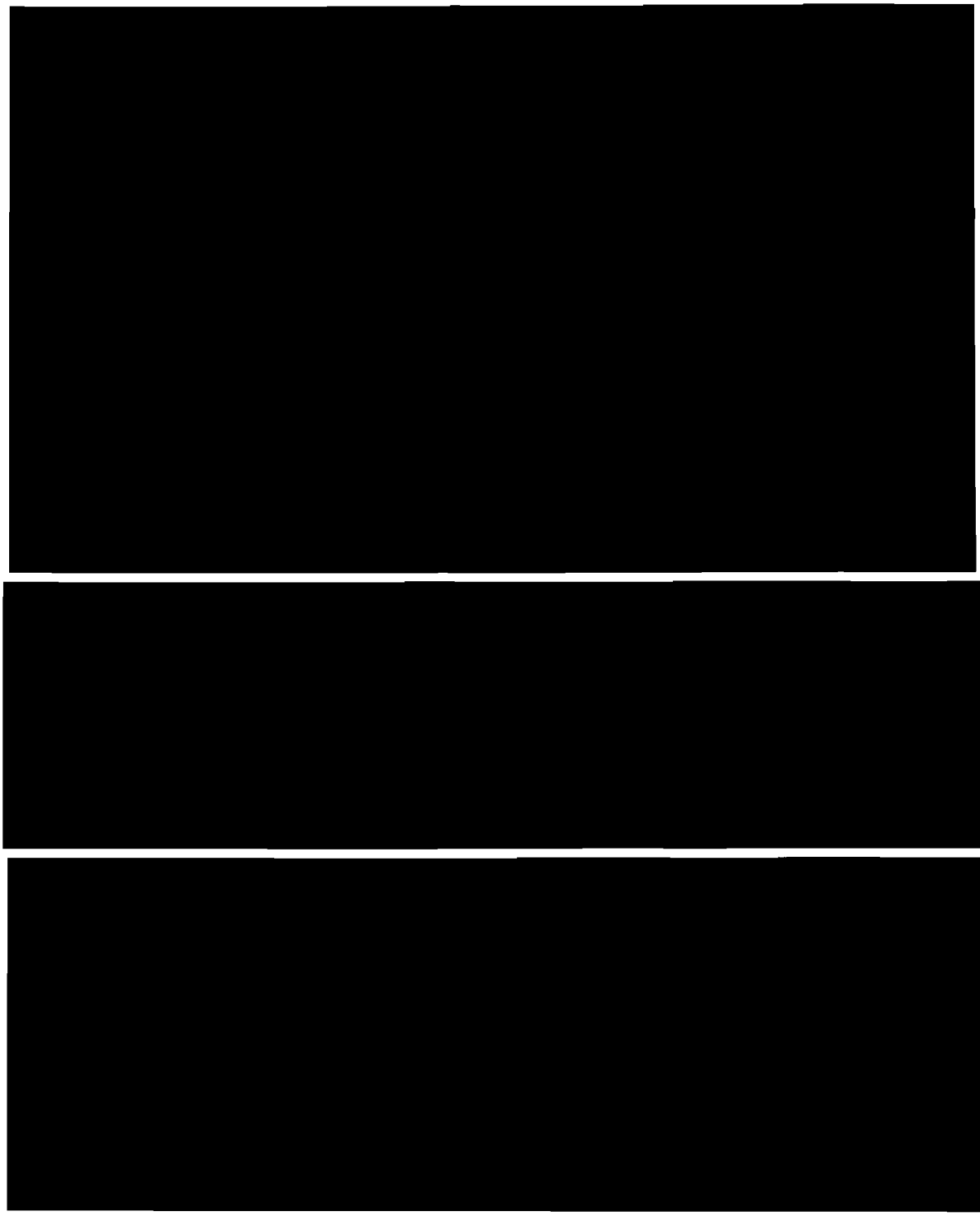
[redacted]

[redacted]

[redacted]



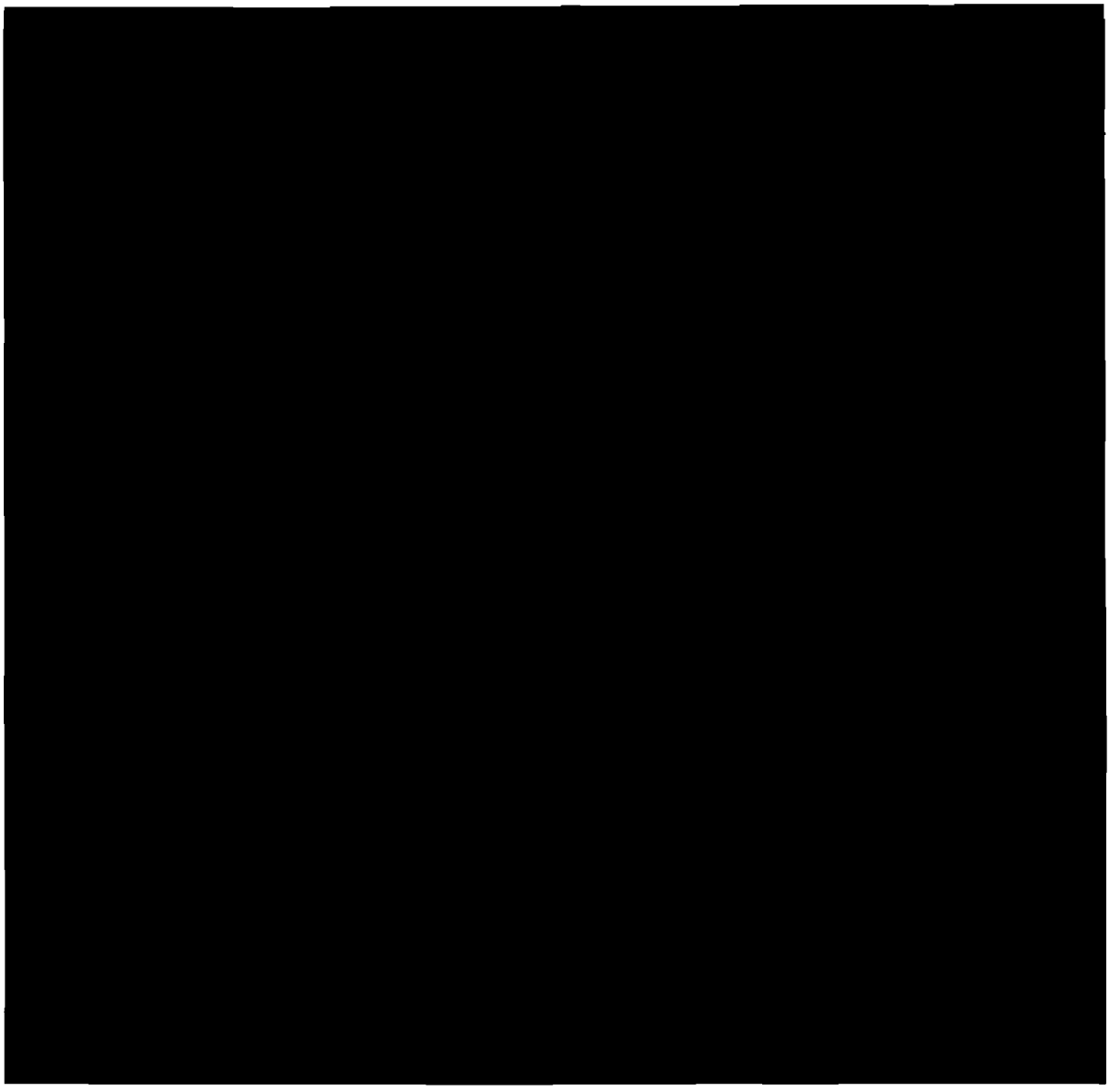




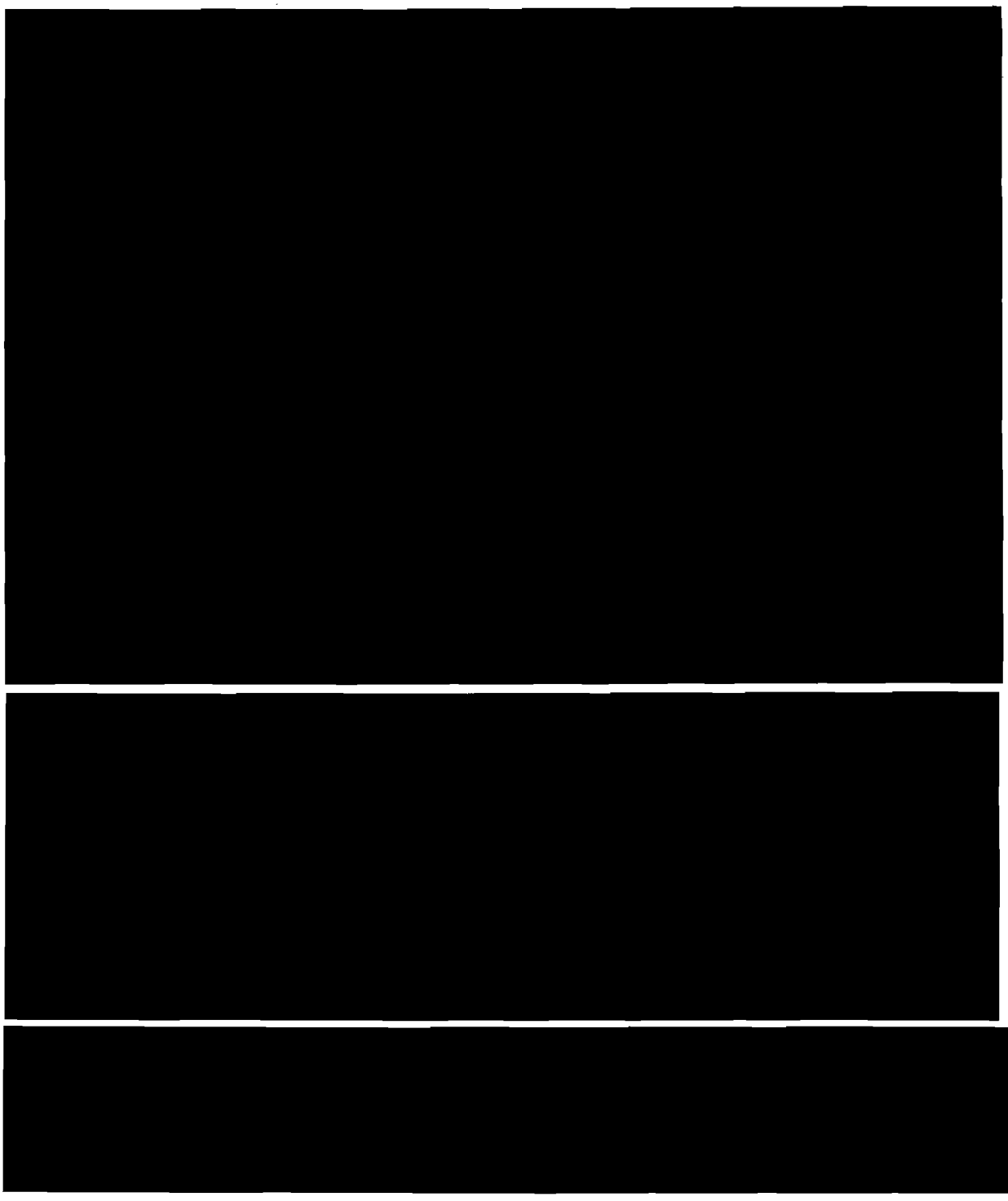
[redacted]

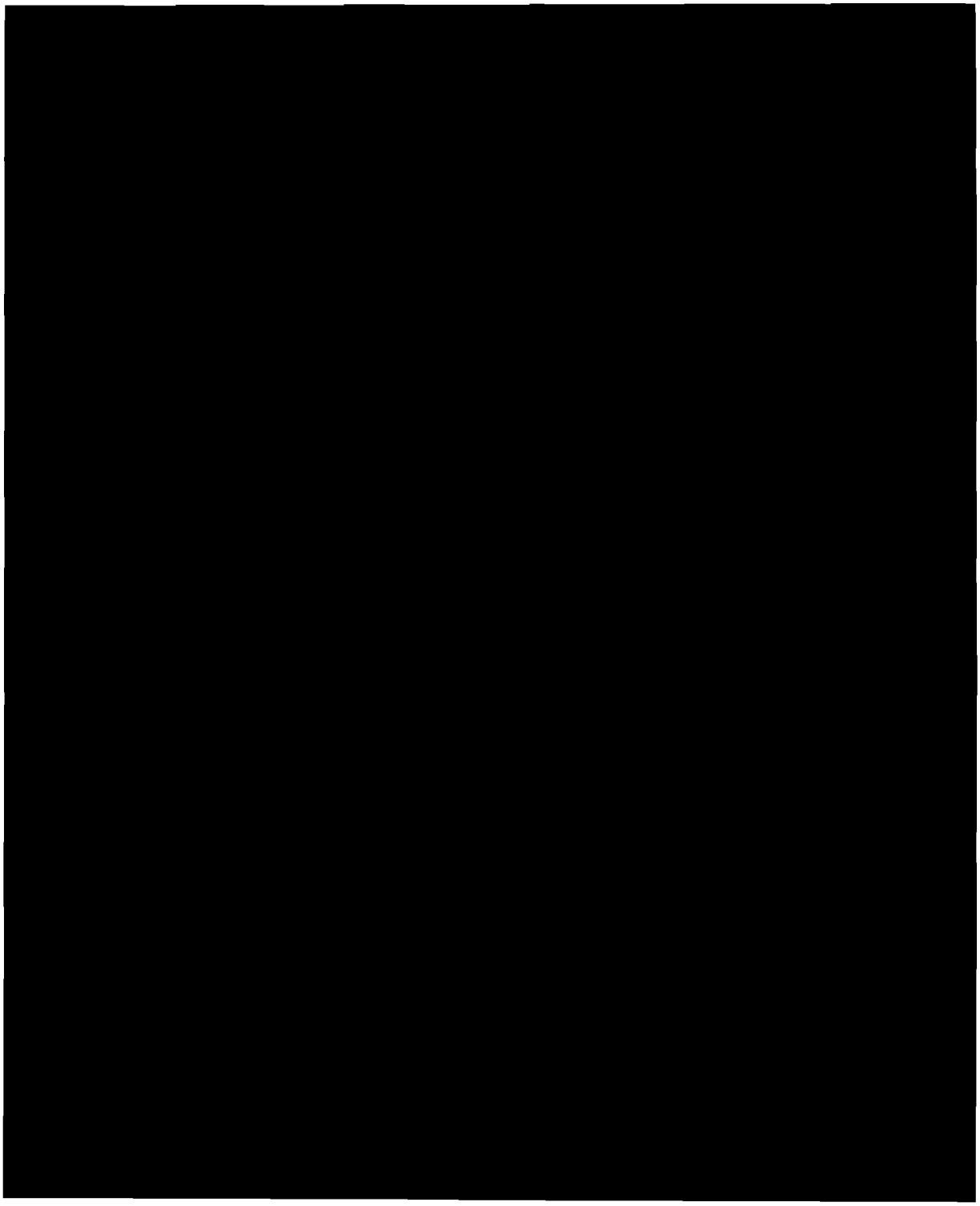
[redacted]

[redacted]

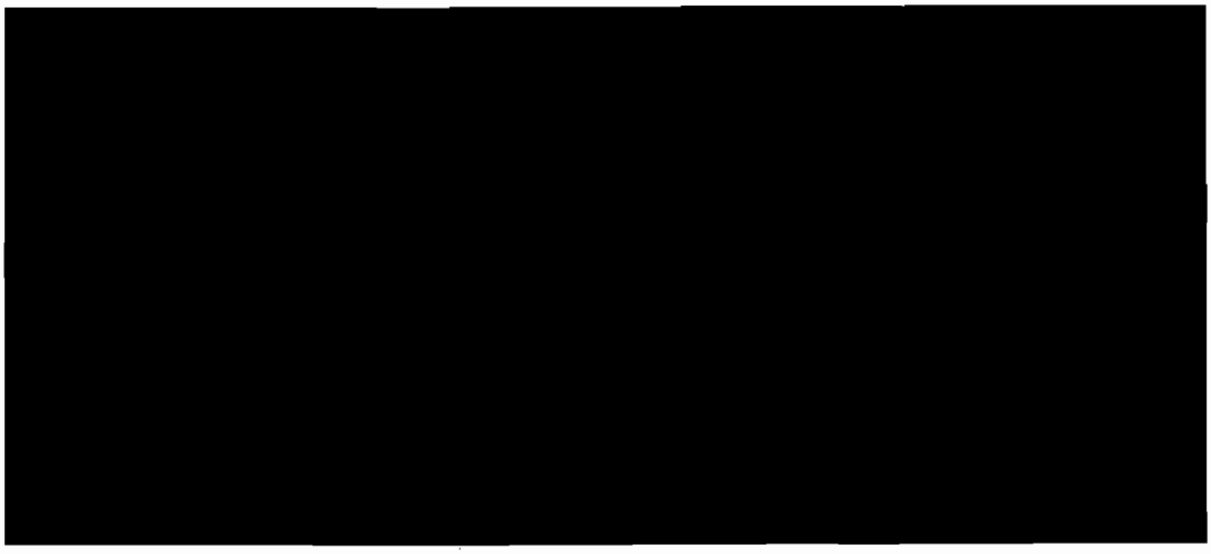


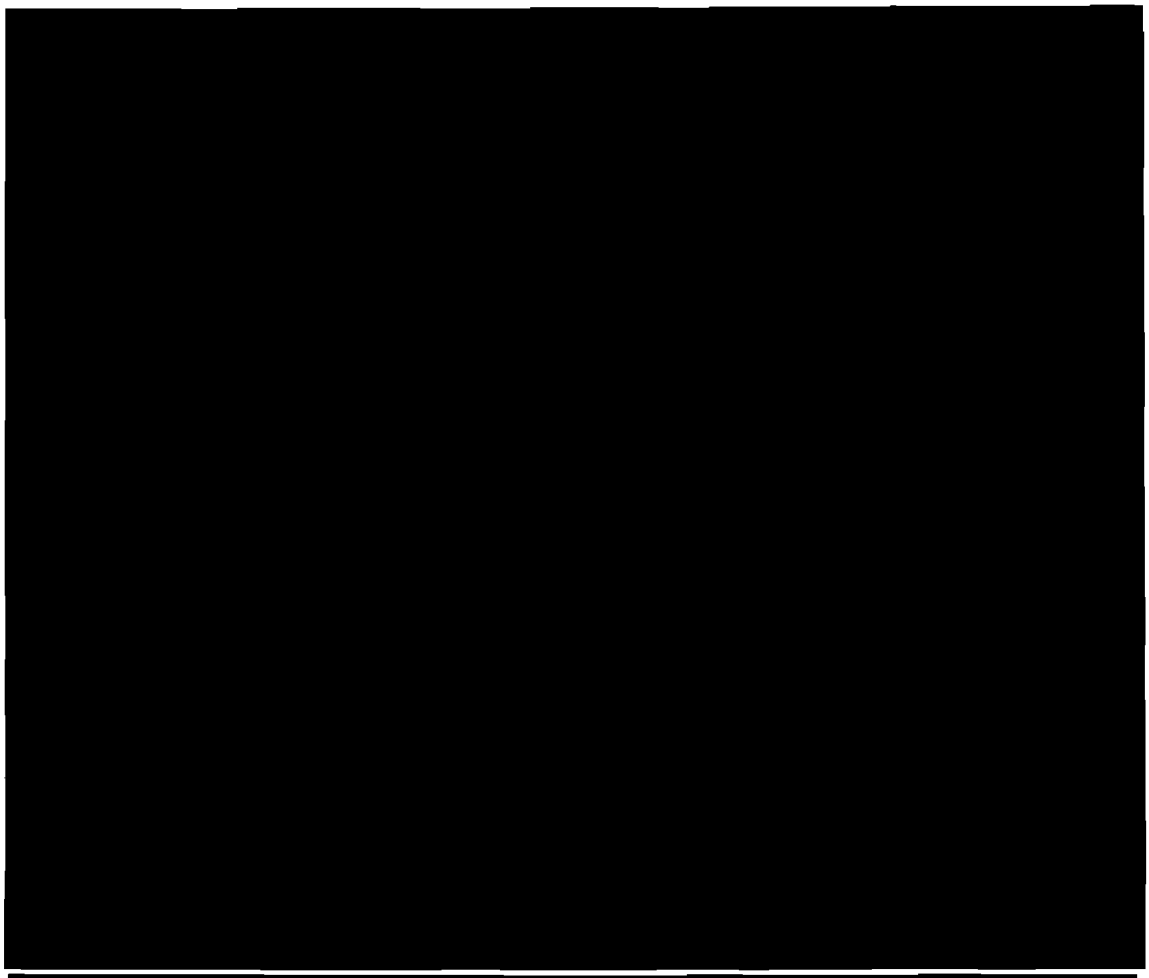
[redacted]

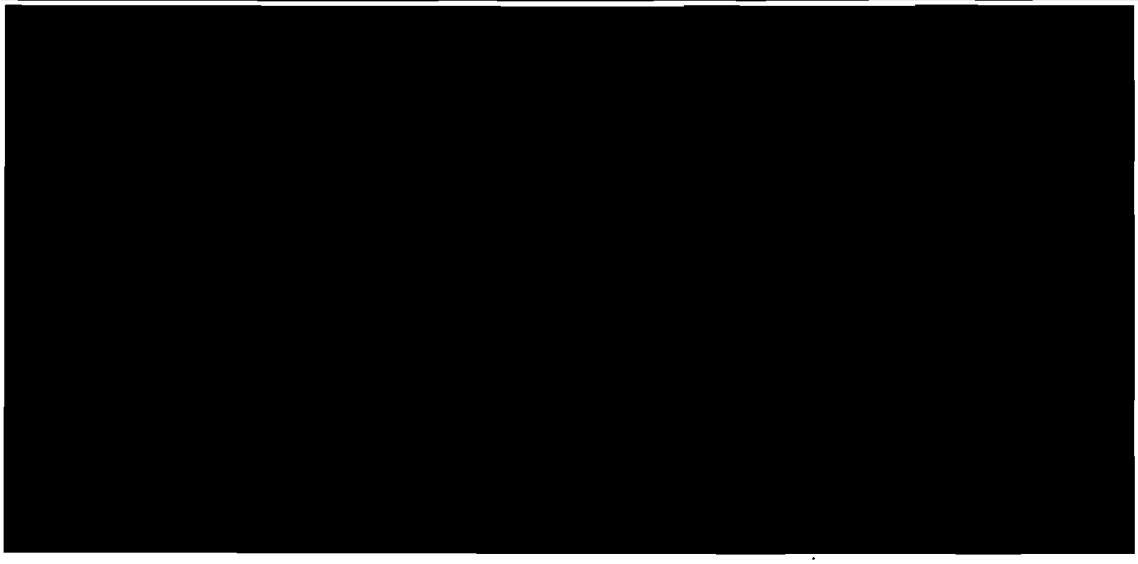




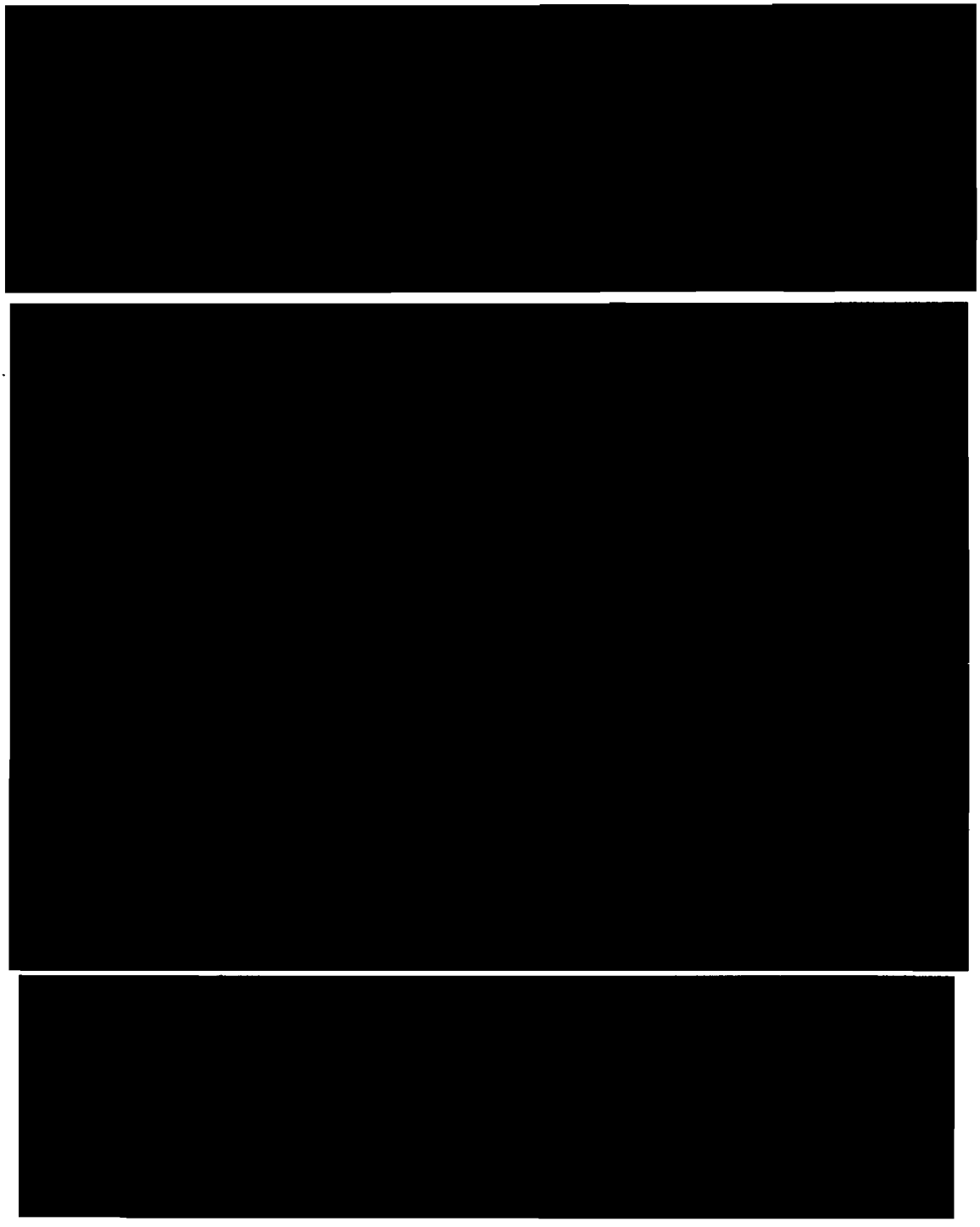
[redacted]

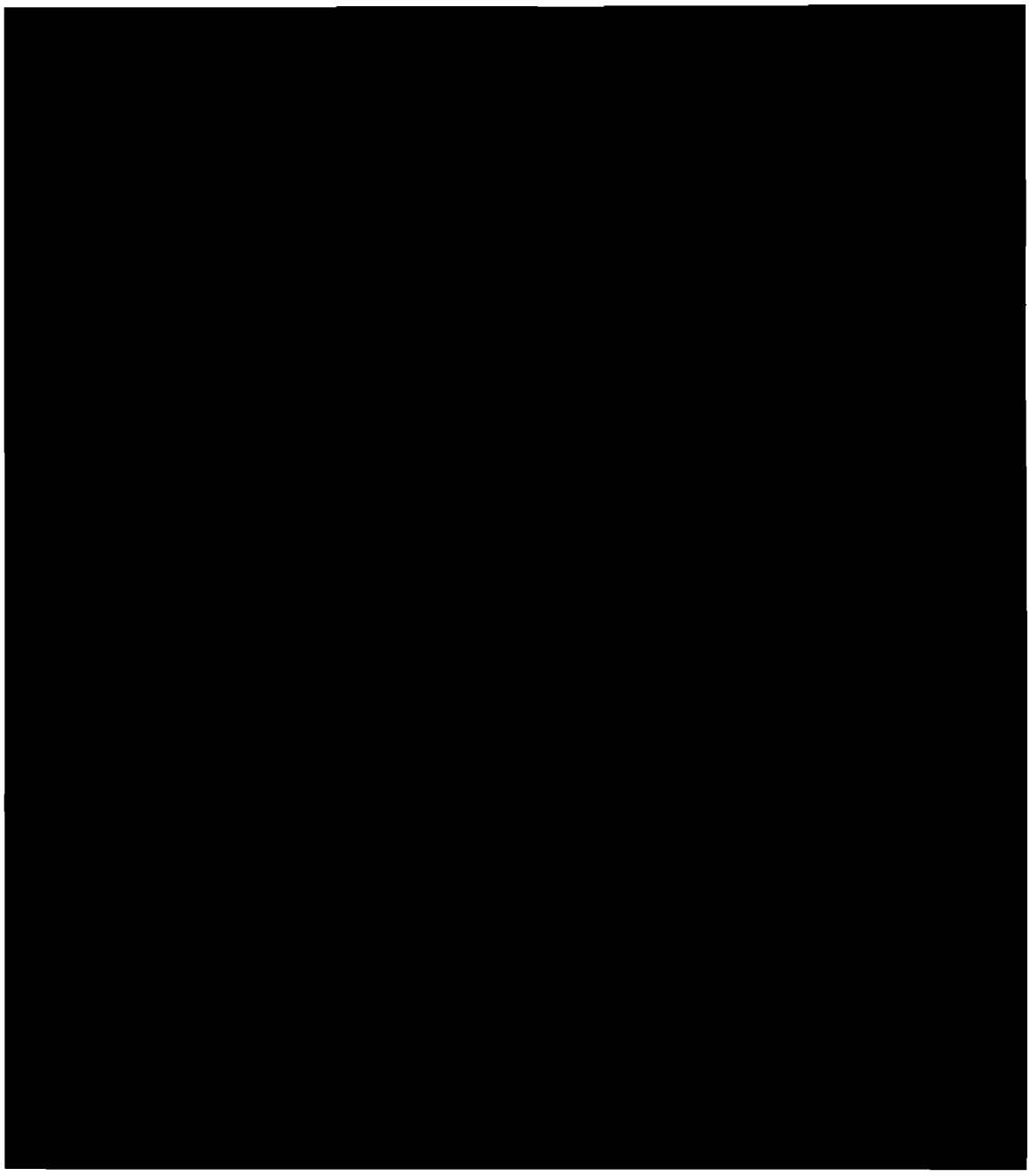


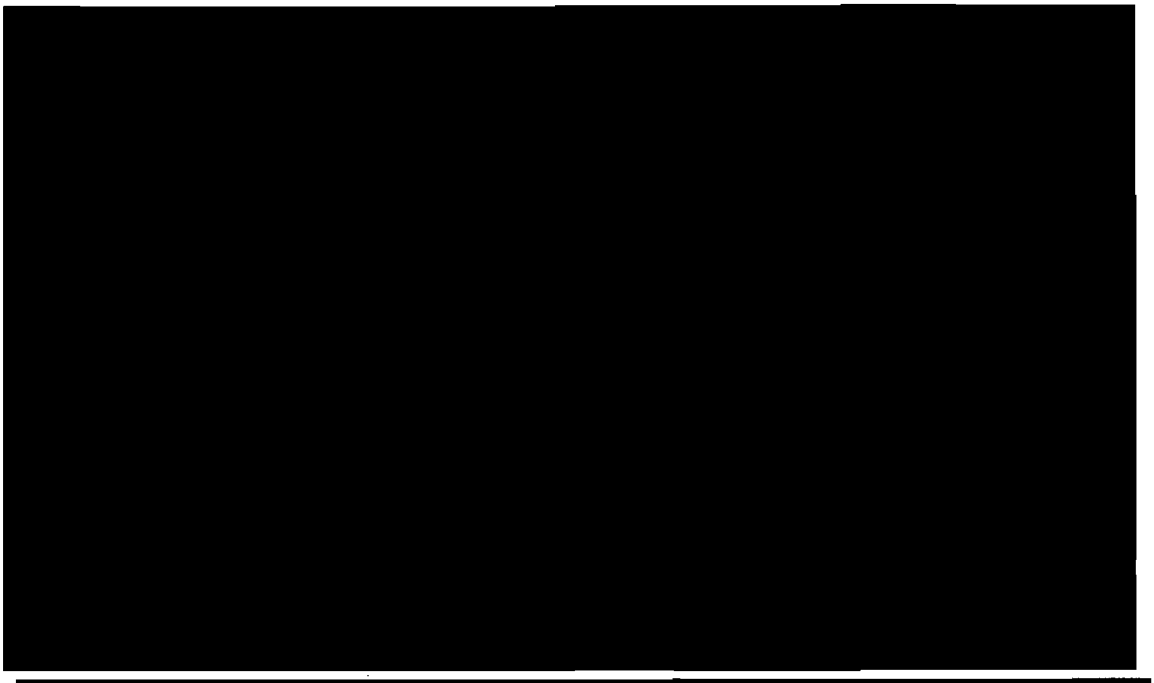




[redacted]





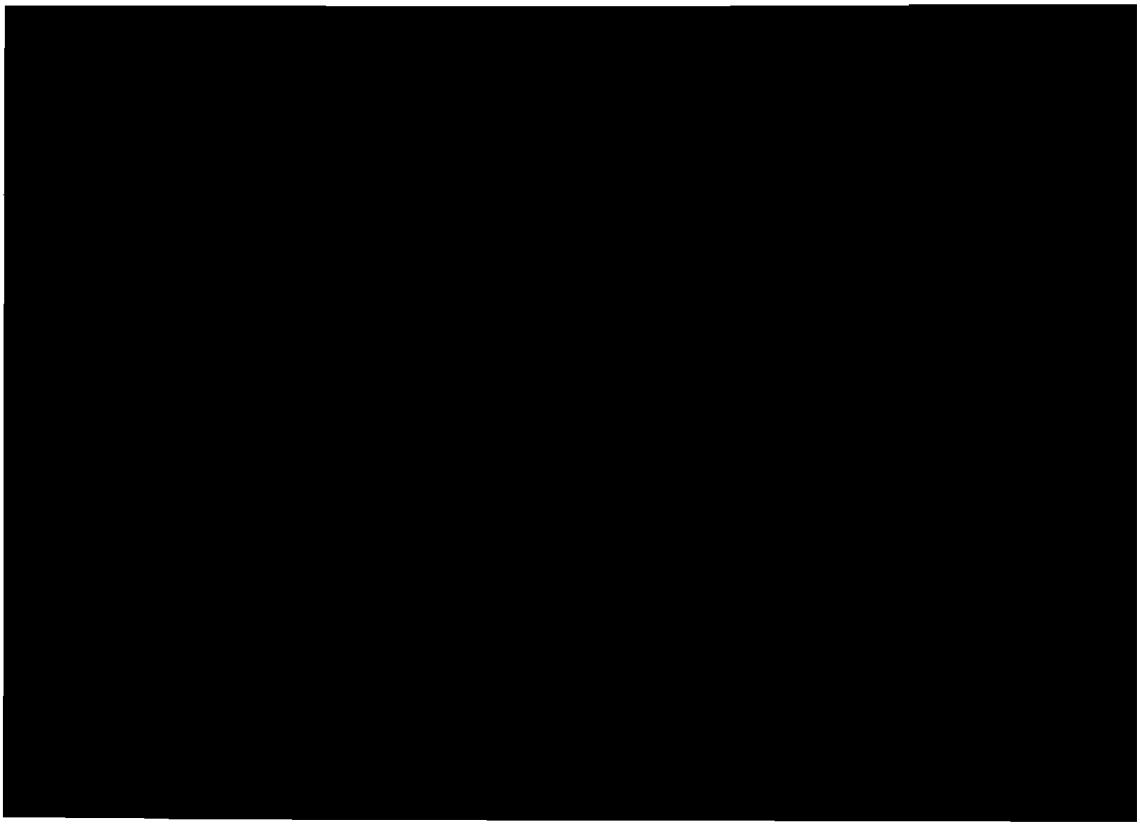


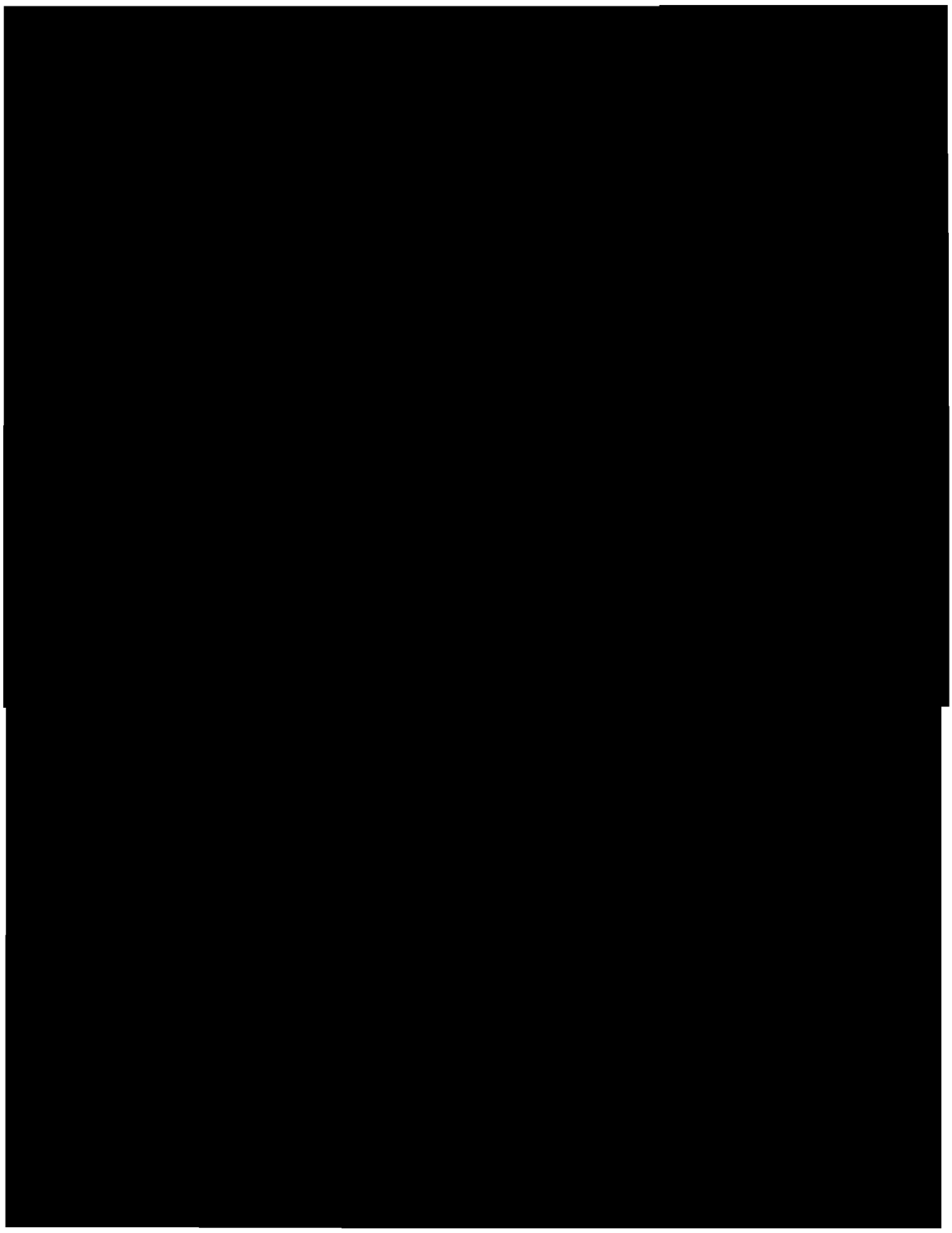
[redacted]

[redacted] by launch

of the last Corona in May [redacted]

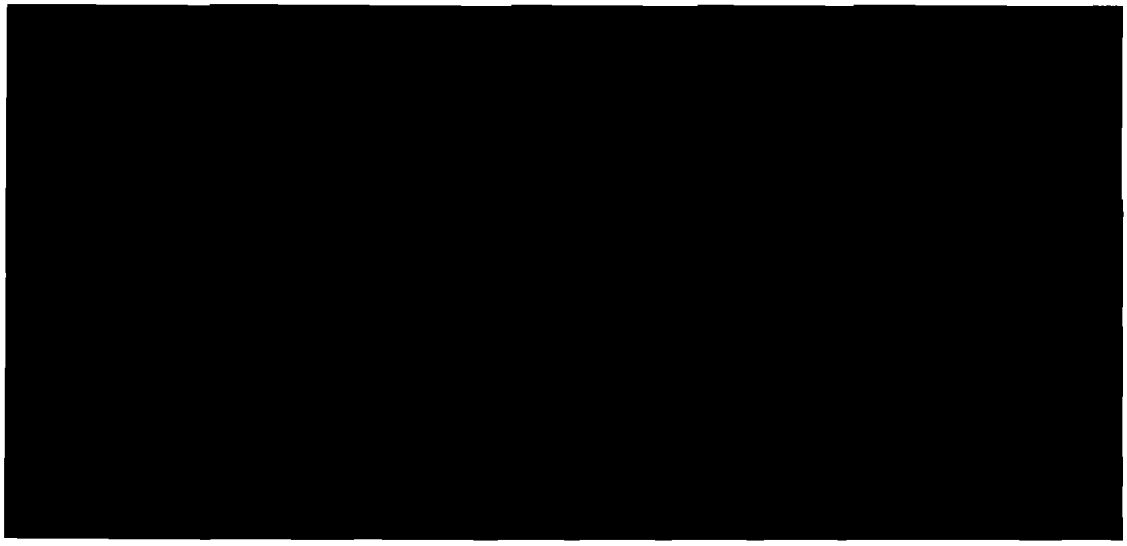
[redacted]

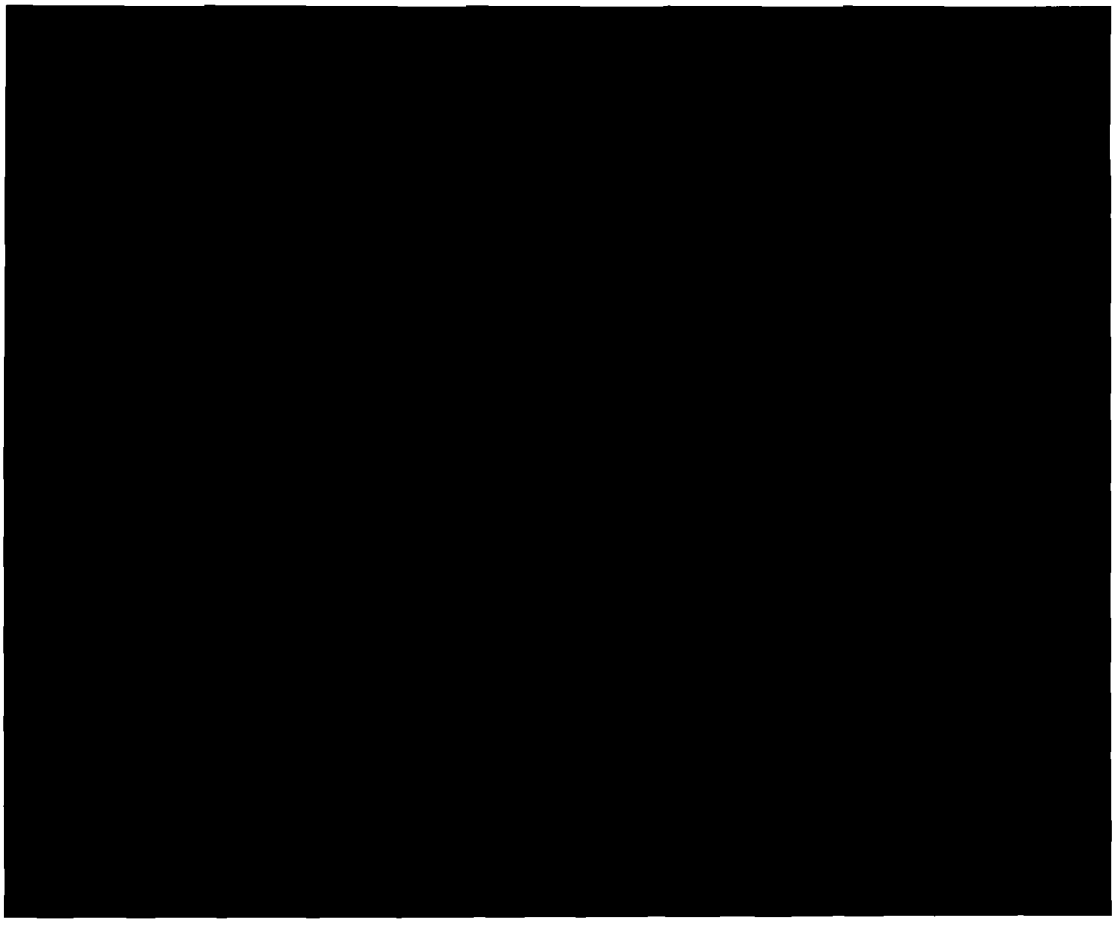


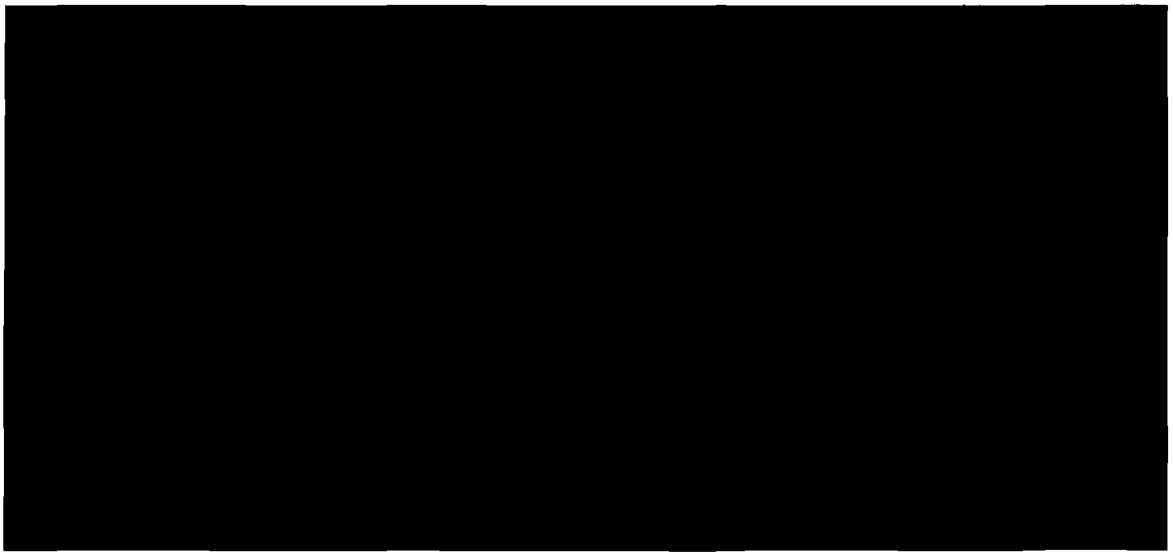


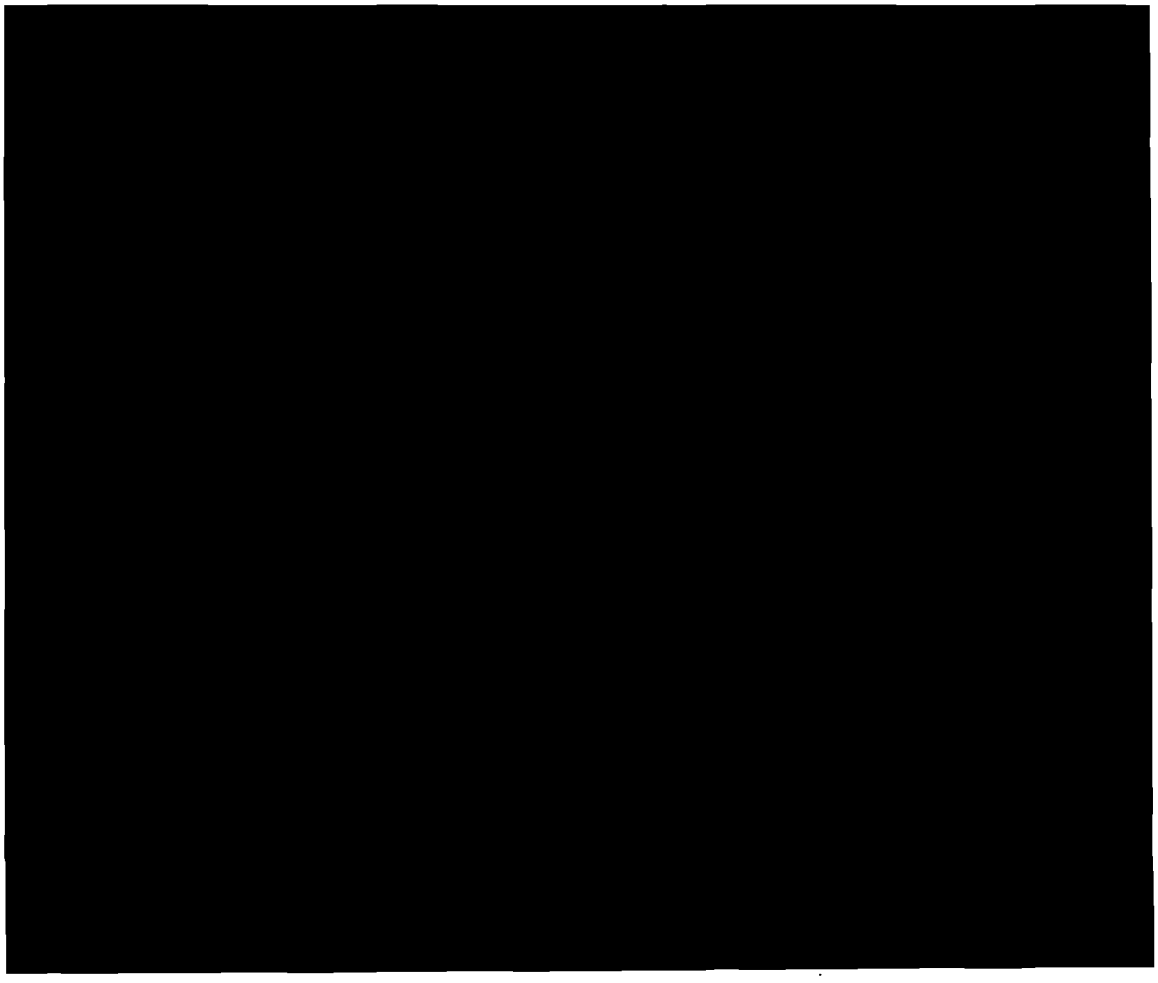
[redacted]

[redacted]

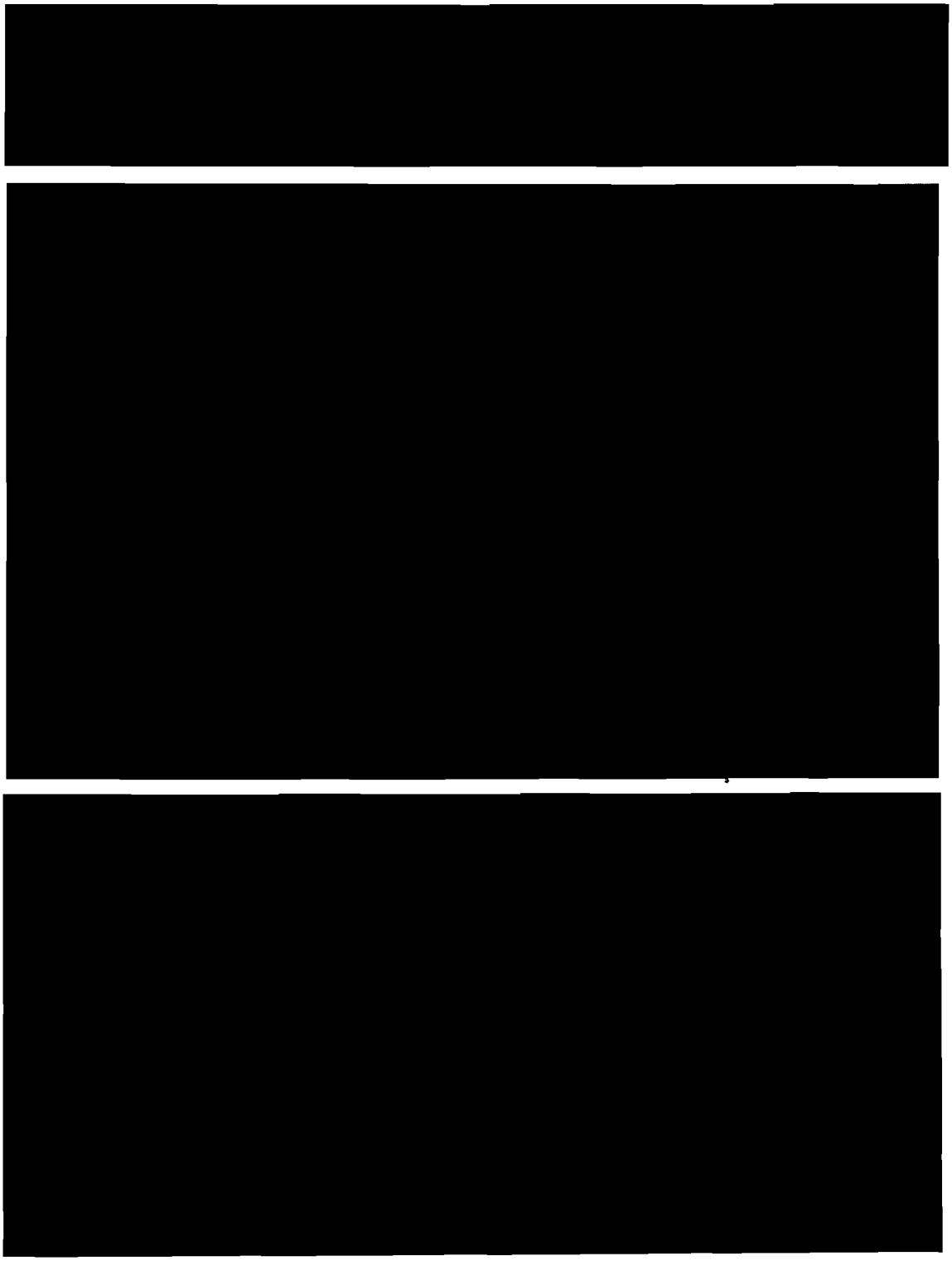








[redacted]

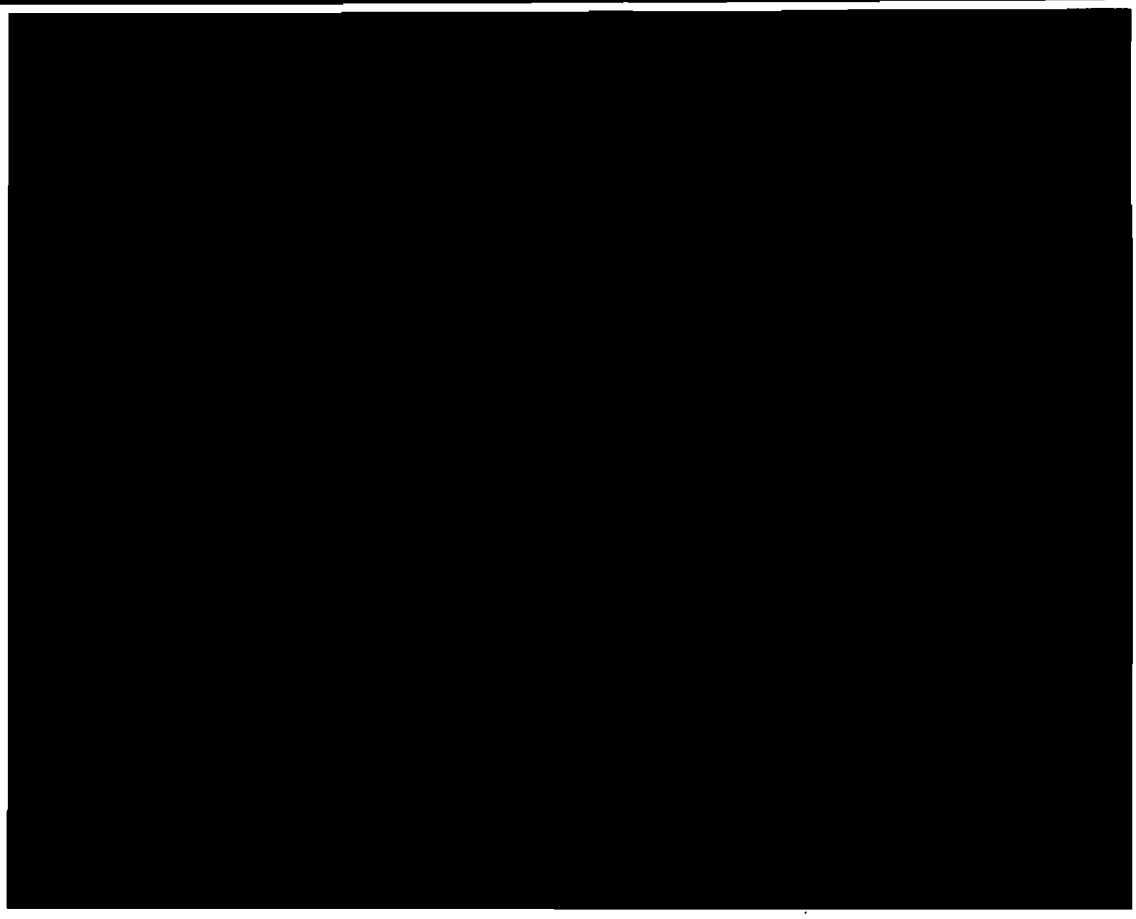


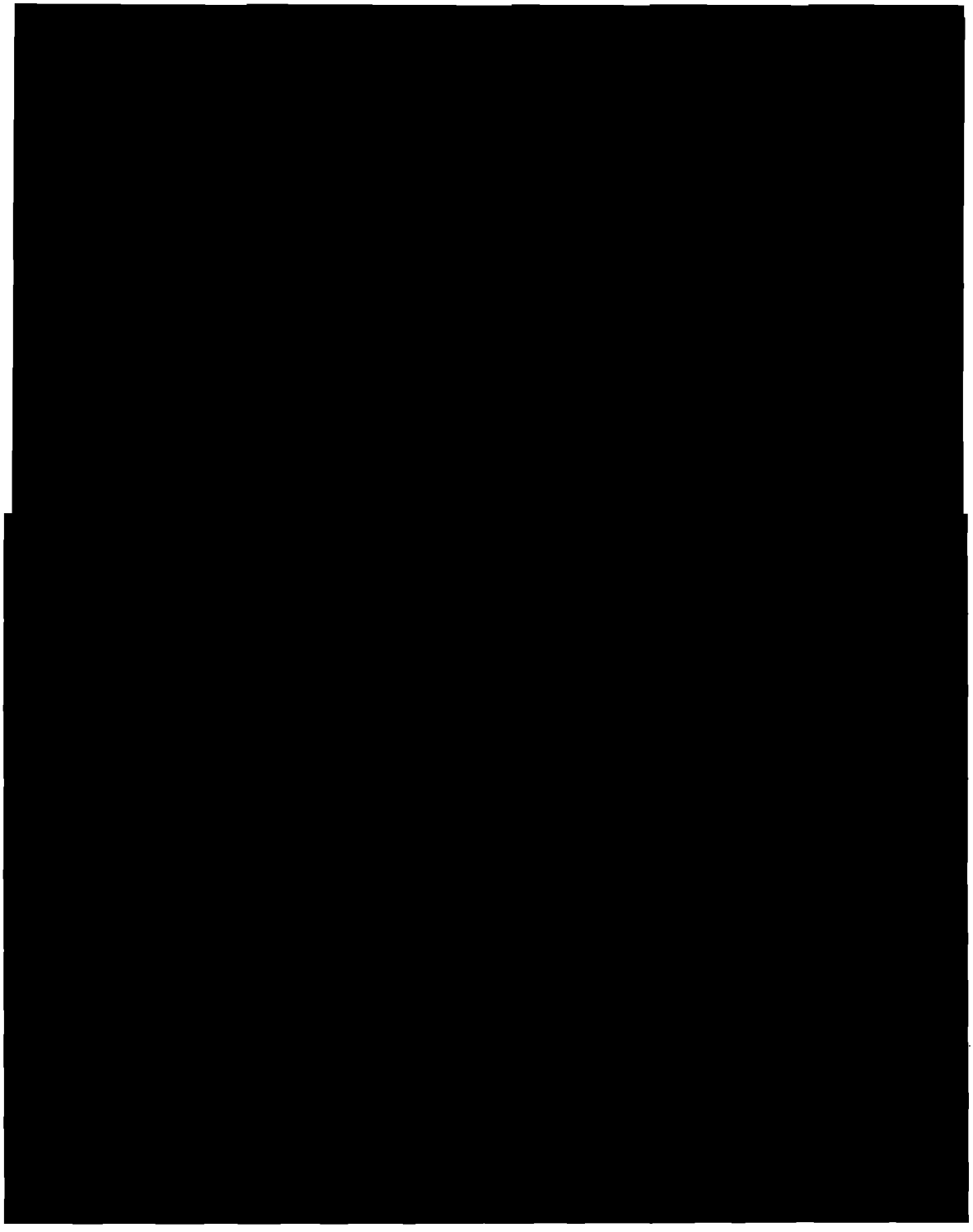
[redacted]

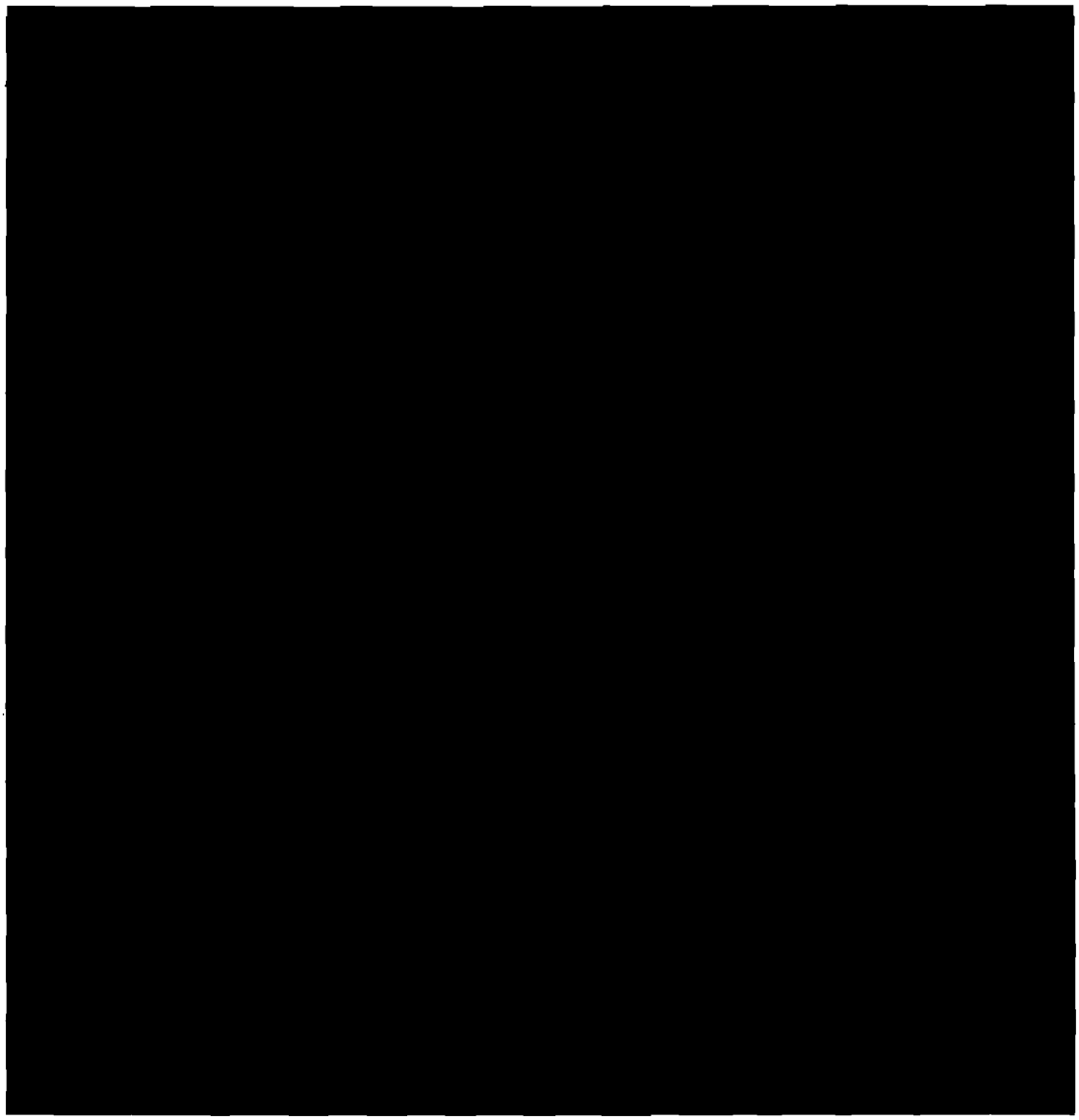
[redacted]

[redacted]

[redacted]







[redacted]

[redacted] On 23 September 1971, President Nixon approved a plan to develop [redacted] a highly ambitious near-real-time readout reconnaissance satellite,

---

* Then known as [redacted] generally referred to as "the EOI system," for electro-optical imaging.

on a schedule that called for initial operations during 1976. Most of [redacted] was to be a CIA responsibility. [redacted]

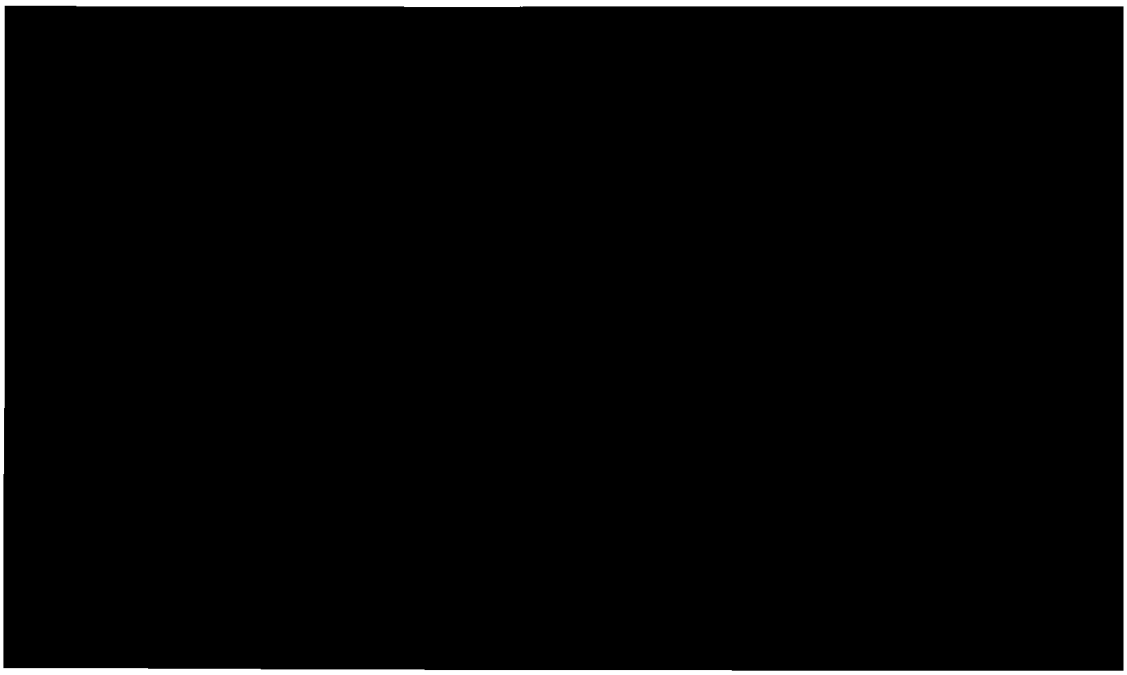
[redacted]

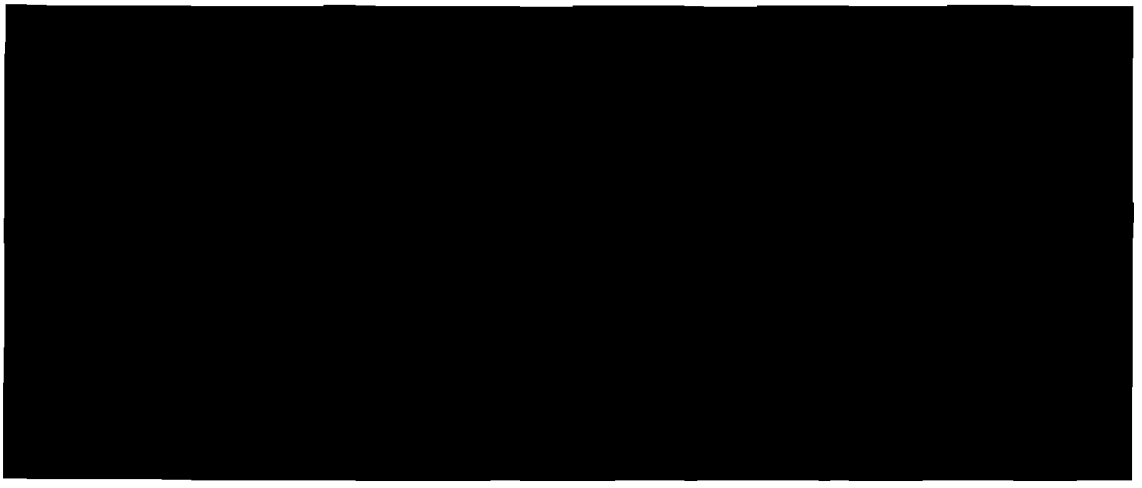
[redacted]

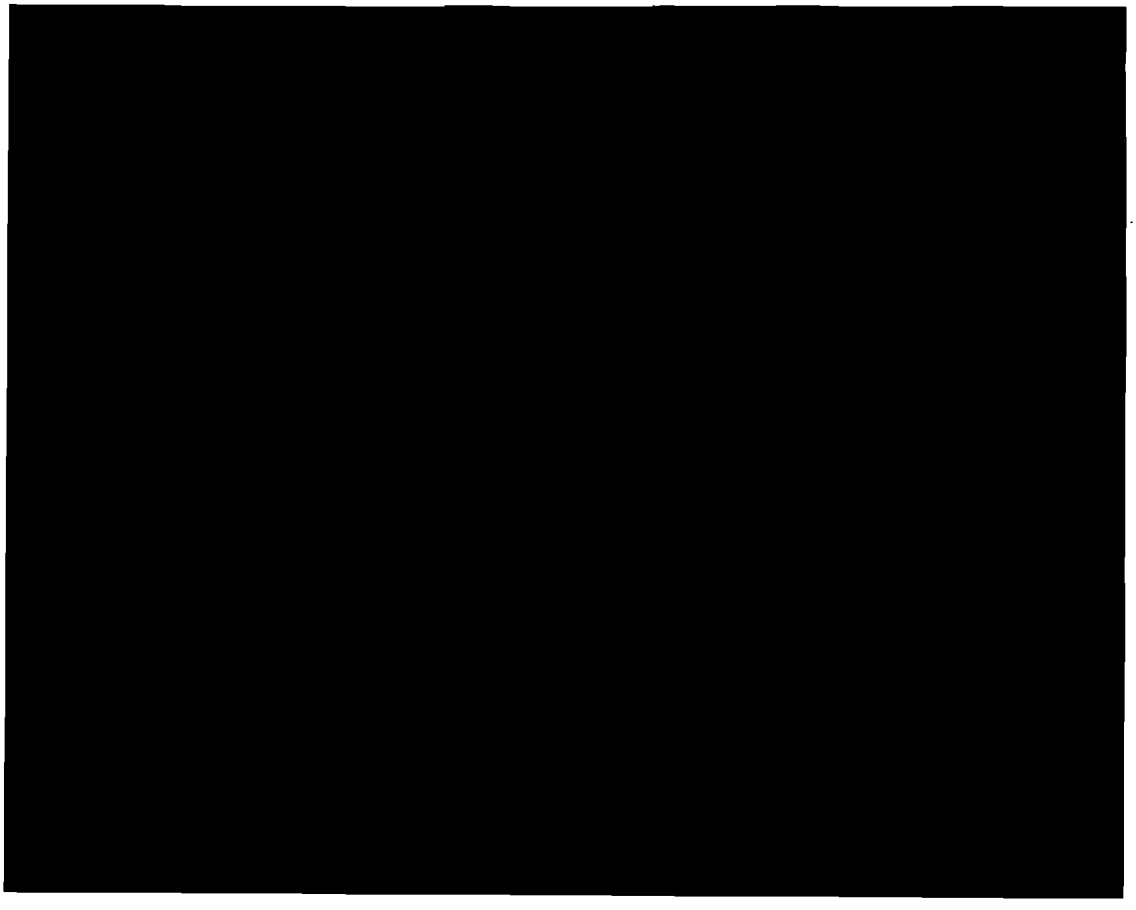
[redacted]

[redacted]

[redacted]







[redacted]

NOTES ON SOURCES

1. Details of the E-5, E-6, and Corona-Mural programs are to be found in the chapters devoted to those topics.

[redacted]

[redacted]

10. Agreement for Reorganization of the National Reconnaissance Program, signed by C.R. Vance, D/SOD, and W.F. Raborn, DCI, 11 Aug 65.

[redacted]

15. Minutes, Meeting of the NRP Executive Committee (hereafter cited as NRP ExCom) on 6 Oct 65.

16. Minutes, NRP ExCom Mtg of 16 Nov 65.

[redacted]

[redacted]

21. Minutes, NRP ExCom Mtg of 26 Apr 66; memo, BGen J. L. Martin, Jr, Dir/SP, to DNRO, 4 Nov 65, subj: [redacted]

[redacted]

[redacted]

29. NRP ExCom Minutes, 17 Aug 66, 23 Nov 66, 16 Dec 66, 17 Nov 67.

30. [redacted] minutes, NRP ExCom mtg of 23 Nov 66; memo, J.Q. Reber, Secy, NRP ExCom, to NRP ExCom, 9 Dec 66, subj: Agenda for NRP ExCom Meeting of 16 Dec 66.

31. [redacted] msg, A.H. Flax, DNRO to BGen J.L. Martin, Dir/SP, 21 Feb 67; [redacted] msg, Flax to Martin, 8 May 67.

32. Msg, A.H. Flax, DNRO, to BGen J.L. Martin, Dir/SP, 14 Jul 67; msg, Flax to Martin, 19 Jul 67; [redacted] minutes, NRP ExCom, mtgs, 17 Nov 67 and 20 Dec 67.

33. [redacted] msg, A.H. Flax, DNRO, to BGen J.L. Martin, Dir/SP, 20 May 68; msg, [redacted].

34. Minutes, NRP ExCom mtg of 20 Aug 68.

[redacted]

38. See Ch III, Vol I, this history for an account of the final Corona program extension proposals (1970-1971).

39. Minutes, NRP ExCom Mtg of 15 Jul 71.

[redacted]

42. Minutes, NRP ExCom Mtg of 8 Aug 69.

[redacted]

[redacted]

47. Minutes, NRP ExCom Mtg of 17 Jul 70.

[redacted]

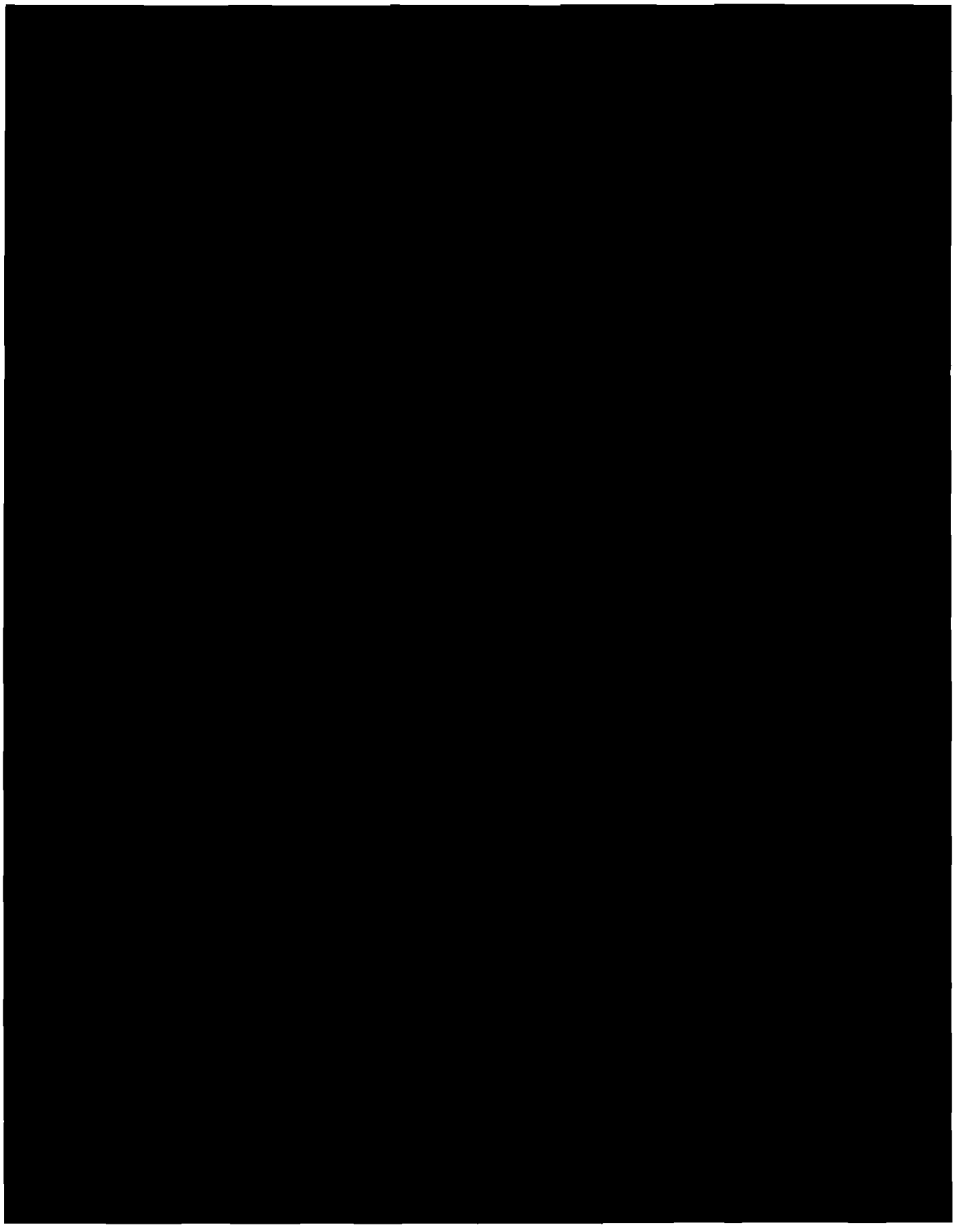
51. Minutes, NRP ExCom Mtg of 29 Jan 71.

[redacted]

53. See Minutes, NRP ExCom Mtg of 13 Jul 71.

[redacted]

55. San Jose News, 20 Mar 71.



[redacted]

65. [redacted]
memo, LtCol F.L. Hofmann, NRO Staff to Col J. Shields, 22 Jan 73, no subj.

66. Minutes, NRP ExCom Meetings of 23 Nov 71, 19 Jul 72, 27 Sep 72; memo, R.E. Williamson, Lockheed, to Col L.G. Stange, Ofc Dir/Spec Proj, 16 Nov 71, subj: Dr. Sorrels Briefing on 12 Nov.

[redacted]