OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

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TO : Codes 5170, 5614 and 5600 DATE: 18 June 1970

FROM : Code 5604A

SUBJECT: Staff Study on Ocean Surveillance - ELINT Contributions

Encl : (1) Draft on Subject, dated 8 June 1970

1. The enclosure is an attempt to get a start on a common "handle" to our several problems related to Program C and Ocean Surveillance. Parts of it are reasonably accurate and not subject to too much argument; other parts are strictly tentative (just put down to get a start) and may have to be completely revised. You will note that none of the appendices has been filled out; there is no need to do so until we get nearer to an agreement on what goals we want to work toward (one or more feasible and desirable alternatives). At the same time we should be thinking of the problems to be solved, questions to be answered, etc., and should therefore be building ideas and data for later use in writing.

2. Before Mr. Lorenzen's return (on about July 6) let us get some of this discussion and homework accomplished. For one thing he will owe [redacted] some constructive recommendations on improvement of Program C, including progress towards a systems analysis capability.

3. When you are ready for an initial talk (just Reid, Pete and myself), let me know. Thereafter I'd like to start getting others involved, including [redacted]

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DRAFT
June 8, 1970

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STAFF STUDY
on
Ocean Surveillance
ELINT Contributions

I. STATEMENT OF PROBLEM

To assess future ELINT developments in or closely related to ocean surveillance, both in national and naval contexts, and to derive guidelines for internal NRL planning in this area.

II. FACTS BEARING ON THE PROBLEM

A. For over a decade NRL has been successfully engaged in both the technical and operational activities of a national ELINT program, recently demonstrated to have a useful potential for ocean surveillance.

B. The NRL participation (primarily through the Applications Research Division and Electronic Warfare Division) has built up to a 90-man/year level of effort and has involved us in virtually all aspects of the program: planning, management, budget, RDT&E, systems operation, engineering and logistics support on a broad geographic basis. Similarly there has been continuing involvement with one or more agencies of the intelligence community throughout a wide range of functions, from definition of requirements to collection, processing, and dissemination of results.

C. Over the years NRL has also developed a technical identity in this particular ELINT area in high-level policy and technical

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circles, such as the President's Scientific Advisory Board and special DOD study groups (e.g. the Herzfeld Committee on Ocean Surveillance).

D. The national program concerned is the only in-house program of its kind, being conducted completely under Navy direction, as delegated by national authority, with industrial participation strictly limited and controlled. For a program of this size and type (budget still well under $10M annually), the in-house arrangement is considered to be highly effective.

E. Intelligence results over the lifetime of the program have generally been assessed as valuable, in many cases unique. The list of achievements is impressive, especially when compared to the costs and results of other national programs of the type.

F. At the same time the in-house organization and facilities for this program must be described as austere: they permit only a single-mission production level, a very limited field processing and reporting level, very limited advance R&D, and barely marginal staff and field support. Similarly the overall Navy capability and participation in this sensitive area is "thin" in almost all departments. It is very much of a junior partner, if that.

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III. BACKGROUND

Recent developments seem to portend a significant change in the Navy's role in this general area of national security. The advent of new requirements such as Ocean Surveillance and surveillance/ inspection related to Arms Control and Disarmament could mean as little as the augmentation of present national intelligence programs with some (minor) increased demands on the Navy, or conceivably they could result in new, separate programs with greatly increased involvement of additional, non-intelligence agencies.

In any case there is an immediate need for NRL to anticipate the direction and nature of these future trends and to be prepared when changes occur. (There are also solid reasons for increased technical involvement in the preliminary discussions and planning.)

Were the near future to bring only a further expansion of the present program, with little or no change in the policies, product, customers, etc., then perhaps NRL would not be greatly affected -- unless we elected to change. On the other hand, major changes in the present programs and jurisdictions would seem to call for a whole new look at the Navy program and perhaps many changes in and beyond NRL.

This staff study is intended only to provide a basis for discussion and planning within NRL. While it may assist in establishing guidelines for further effort, it is not intended to be a plan.

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IV. DISCUSSION

For purposes of discussion it is assumed:

That national intelligence requirements will call for continued gradual increases in ELINT capabilities of the type under consideration; and that the present supporting Navy program will continue to be required for at least the next five years.

That,in addition, Ocean Surveillance will be approved as part of the Navy's mission; and that ELINT resources for this mission will be authorized essentially under Navy operational control.* (In all likelihood there would have to be some common authority over all such resources, with delegation and override provisions to cover normal and emergency conditions.)

These two assumptions are postulated in order to set limits for the range of alternatives which should be considered; they are believed to be reasonable and consistent with present thinking as we know it. In practical terms, the first assumption would translate into one mission about every 18-24 months, on the average, which is just about the maximum present NRL capability. The second assumption, were it to come true, on the other hand, could call for a final program two-to-four times as large by the mid-70's, and would be far beyond present Navy capabilities.

*In the event Ocean Surveillance were approved but added to the existing national intelligence programs and resources, the impact on NRL might be much the same in terms of number and variety of functions, involvement with commands and forces, kind and size of technical effort required, etc.

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It is proposed to examine ~~each of~~ these two assumptions as though they were actual requirements and to examine some of the ways by which they could be satisfied. On the basis of such an examination and the highly tentative findings, a more comprehensive plan could be developed. (The staff study is really a preliminary exercise, in this instance, to facilitate later formal staffing. It should not be considered a plan or a substitute for a plan.)

PHASE ONE

Taking only the first assumption (PHASE ONE), it is judged that the caliber of the present national leadership and the capabilities and performance of the Navy program team warrant further Navy investment in its support. In recent months the Navy program has been accorded more critical inspection and also more favorable recognition than in any previous period. At the same time the opportunities and the expectations of the senior officials have probably exceeded our present resources. If continually disappointed, the latter could conceivably turn elsewhere or dictate changes to the Navy program.

In order to respond to this PHASE ONE requirement we need strengthening in almost every NRL department and, in particular, would have to reorganize into a structure and style more in harmony with the higher echelons of this program as well as with the

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operational activities (NSG and NSA). Appendix A is a collection of charts which show these related organizations and the present NRL program structure. It should be obvious that the NAVINTCOM Program Manager's Office is still incomplete (although stronger than ever before) and that the NRL organization is too thin in leadership and virtually without staff support of the rather special kind needed. (There has evolved over the years an unusual and excessive degree of dependence upon three key people: Messrs. Lorenzen, Wilhelm, and Mayo.)

What the charts do not -- and cannot adequately -- show is the picture of the NRL role. Since 1960 these two divisions of NRL (ARD and EWD) have been growing from technical pioneers in a small Navy R&D project into small but key partners in a fully operational national program of vastly greater proportions and importance. It seems to be a fundamental characteristic of this national program to be eternally in a state of R&D while to all intents and purposes operational. The state of the art and the inherent "business" of reconnaissance never stabilize long enough to get into series production or standard operating procedures. Nevertheless the fact remains that ours has become a very unusual role for a laboratory to play.

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In this consideration of PHASE ONE no attempt is made to review or change this NRL role, but only to strengthen our capability to live up to it. Accordingly only the areas and problems related to an expanded national ELINT program are treated in this section.

Adminstration and Security. Code 5614 of the Electronic Warfare Division is inadequately staffed for both administrative and security purposes. Senior personnel are distracted from more important work by writing and typing chores, message and document control, tedious tasks and decisions on logistics, program and budget, and travel, etc. It is proposed to create a new billet for an Administrative Assistant to modernize the files, procedures, and security controls throughout the section and to relieve the engineers of their administrative tasks as much as possible. There may also have to be additional clerical help. For the next six weeks we are borrowing Mr. Trexler's secretary to conduct inventory and to help establish file and security systems.

Technical Support. This will be a section to provide ELINT technical support to the overseas sites and, through a local facility, to in-flight operations. As shown in Appendix B, three subsections are included: Overseas Systems, Site Coordination, and Training and Maintenance, with functions as shown.

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Design & Development. This section will be responsible for all the design, development, and fabrication of the ELINT components and systems, including support of hardware tests and integration into the spacecraft, also collection systems at the sites. Sub-sections include Flight Systems, Operational Analog, Operational Digital, and Mechanics.

Research & Systems Concepts. It will be the principal task of this section to assess current systems, perform research, and do concepts for new systems, and to provide for interfaces and compatibility with related systems. Subsections tentatively identified are Operational Software, Operations Analysis, and Systems Evaluation.

The proposed organization and complement as shown in Appendix B would call for branch status when implemented (or at some point in the process). A recapitulation of the personnel requirements is shown below:*

*Additional personnel required are indicated in parenthesis.

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	Engineers	Technicians	Clerk/Steno
Administration and Security			
Technical Support			
Overseas Systems			
Site Coordination			
Training & Maintenance			
Design & Development			
Flight Systems			
Operational Analog			
Operational Digital			
Mechanics			
Research & Systems Concepts			
Operational Software			
Operations Analysis			
Systems Evaluation			

(Show sub-totals and totals by section and by category, for on-board and additional personnel.)

(Provide rough salary cost estimate as footnote.)

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If feasible and if approved by the appropriate authorities, several of the senior key new billets would be filled by personnel who have worked on the project in a contractor capacity. This is a policy question of considerable delicacy, which has never been discussed with executives of the company, although some informal exploration has been undertaken in confidence with some of the personnel concerned.

Another source of help -- at least for part-time aid -- would be other areas of the EW Division. (For example, 5604 and 5605 personnel, given proper clearances, could contribute.) Other divisions of NRL might be able to assist with fuctions such as systems analysis, training and documentation. Pending further study and consultation, it is impossible to predict how many new personnel, if any, would be needed.

Space and equipment requirements to match the proposed branch status are also listed in Appendix B. They are modest and should not present any serious problem.

In brief, strengthening and expansion to put NRL on a sound basis in its present role in the national ELINT program (PHASE ONE) appears to be achievable within the next year, given success in converting certain experienced contract personnel to Civil Service and given internal support in authorizing the additional personnel and resources. Some action should be initiated by the Navy to support NRO regardless

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of the possible later impact of related programs for Ocean Surveillance; it would be worthwhile and cost-effective on this basis alone.

PHASE TWO

Returning to the second assumption,* as a PHASE TWO we will examine the more important implications and requirements as they might affect NRL.

In spite of an unfavorable budget climate, there are several projects afoot which have the common feature of advocating space platforms to conduct Ocean Surveillance: Project 749, the Herzfeld Committee's PHASE ONE Project, and the ad hoc use by USIB of Program C. It would seem to be just a matter of time before someone does a comprehensive OS systems requirements study, to include multi-sensors, in space and elsewhere.

The question naturally arises: What should be the NRL role in Ocean Surveillance? Obviously NRL could and should participate in many areas of any such program, but only the job of ELINT from space platforms is considered here. Among the possible roles may be listed:

A. Technical Consultant - Based upon the experience of the past decade NRL could serve, actively or passively, as a technical adviser to whatever agency emerges as the OS Program Office as well as to CNO.

*That, in addition, Ocean Surveillance will be approved as part of the Navy's mission; and that ELINT resources for this mission will be authorized, essentially under Navy opcon.

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Judging by recent cases, such a role might quickly diminish and die as technical dependence was eclipsed by other factors or as a new source of advice and influence was developed (e.g. in industry). Even for this role, however, NRL would probably require capabilities somewhat beyond those described under PHASE ONE, although the latter would provide a strong start. This additional strength might be of the type represented by Ed Dix, soon to become an NRL technical adviser in NAVINTCOM's Program Office.

B. Technical Manager - This term is intended to denote the kind of role we have now in Program C, but with substantially more contractor involvement (and therefore more NRL supervision) by virtue of the bigger job to be done and the predominantly Naval use of the products and services. Depending upon the management style and structure chosen by higher authority and the "center of gravity" for program control, NRL might function fairly conservatively in a technical staff capacity without much direct involvement in major actions, or it might be directly and actively involved with the contractors and participate in all of the major program affairs. Because of the wide differences of role available under this heading, the discussion of requirements is split into two subheads to cover two possible extremes.

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B.1. Regardless of whether CNO or someone else manages the sensitive programs supporting Ocean Surveillance, there will be a sizeable job to be done within the Navy to perform the function. In terms of geographic scope of areas under surveillance and of recipients of the different forms of data, size and complexity of the overall sensor and processing effort, data correlation and evaluation, doctrine and procedures for strategic and tactical use of products, time constraints, numbers and importance of users, etc., Ocean Surveillance will probably in time equal or surpass any previous Naval data system. Its size, cost, and identification with early warning and the missile threat would seem to call for a prominent headquarters status and organization "across the board" -- i.e. from OPNAV throughout the command structure. In the event this O.S. organization extends to or includes the Systems Commands in some way, and makes no unusual provision for technical support, then it could easily transpire that the laboratory role would in due course assume a low importance relative to factors like policy and management, command and operations. NRL could become a nominal, passive "technical manager," excluded from top management except when called upon and having only advisory authority even in technical matters.

Admittedly the foregoing condition would seem to be less likely if O.S. were to be developed on a substantially in-house basis, with NRL (and perhaps other laboratories) filling the key roles in every

technical department. It would therefore appear probable that (1) NRL's future role in O.S. is tied to the question of whether major reliance will be placed upon industry or upon internal Navy resources; and that (2) should industry be chosen, the above version of technical manager would be about as much responsibility as the laboratory could expect.

Appendix C is a rough approximation of the sort of NRL organization which could discharge the tasks of O.S. technical manager under the type of constraints described and at the same time sustain Program C. The augmentation is principally in such areas as engineering liaison and support, quality control of end-product, and systems analysis. No attempt is made to provide a breakdown of billet titles or grades at this time.

B.2. Turning now to a Navy approach to Ocean Surveillance which, for one reason or another, stressed reliance upon in-house planning, management, and technical leadership, the role of O.S. technical manager at the laboratory level could have a rather profound impact. In simple terms it would be a many-fold expansion of what NRL is now doing, with such added complications as extensive monitoring and/or participation in many of the related non-technical activities in government and industry, and heavy involvement in relations with the senior echelons of authority in the Washington area, major JCS and Naval commands world-wide, and the operating forces.

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Under such an approach the Navy might establish some special organization to manage and control so vast a program, with all its ramifications among other programs and warfare areas. In this event NRL would probably have to develop an entire new counterpart program structure or even assign major units to help constitute the technical component of the new special organization. (The latter would not necessarily mean a physical move.)

Given such conditions, with the emphasis upon planning, developing, managing, and heavily supporting a major operational system -- and still assuming high-level recognition of the importance of strong engineering participation -- it might be prudent to reconsider the laboratory role. Were NRL to limit its involvement to the RDT&E and technical support aspects, such participation might be termed reasonably orthodox, and the remaining technical requirements could be met from other (outside) resources. If, on the other hand, NRL were to consider assuming the full engineering burden under such conditions, it would probably represent a considerable departure from NRL and traditional laboratory practices. Whether such an exception could and should be justified would probably be a policy question for higher authority.

No attempt is made in this staff study to estimate the kind and size of NRL organization which would be required under this concept of technical manager. (The policy question should be resolved first.)

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C. Headquarters - This term, a completely arbitrary one, is intended to denote an NRL role wherein we would at least initially house the planning, development, complete systems fabrication, and technical support effort of the O.S. and C Programs. Presumably the other elements of the O.S. program organization would be in the Washington area, perhaps some of them even at NRL.

Admittedly this concept would represent an extreme form of the in-house approach as well as an extreme form of technical responsibility and participation. While it is not considered as a serious possibility, and is not pursued further, it nevertheless should not be ignored, for it would have the one great attraction of permitting a fast start by absorbing the existing resources as an initial base.

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APPENDIX A

OUTLINE

CHARTS SHOWING

USIB organization down to SORS level

NRO, with main elements

Program C organization (less NRL details). Show strength and vacancies.

NRL Program C organization (as is)

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APPENDIX B

OUTLINE

CHARTS SHOWING

Proposed 5660 branch organization

with organization down to section level

with functions down to section level

with billet structure showing on-board personnel and vacancies and totals

Space and equipment needs to match the above (if any) by section with rough cost estimates

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APPENDIX C

OUTLINE

CHART(S) SHOWING

Proposed basic 5660 branch organization

Superimposed or overlay expansion to encompass additional role as Technical Manager for combined Program C and Ocean Surveillance*

No supporting data at this time (see text)

*It would be useful and important (not essential) to use the branch organization(s) as stepping stones to this larger one.

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DIRECTOR OF NAVAL INTELLIGENCE

The Director of Naval Intelligence is responsible to the Secretary of the Navy for the administration of the Navy's electronics intelligence collection program. The DNI has appointed a Deputy Director for ELINT matters and has established a Navy ELINT Advisory Group (NEAG) to advise and assist him in meeting these responsibilities.

DEPUTY DIRECTOR FOR ELINT MATTERS

The Deputy Director acts for the Director in supervising and administering the Navy's ELINT program subject to the approval of the Director. He is the principal adviser to the Director in all ELINT matters and is the Chairman of the Navy ELINT Advisory Group (NEAG)

NAVY ELINT ADVISORY GROUP

The Navy ELINT Advisory Group is composed of representatives from cognizant offices within the Navy. This group periodically reviews the Navy's ELINT requirements, determines the manner in which these requirements can be met, advises the DNI in all associated matters, and takes appropriate action to assist him in the administration of the ELINT program.

PROGRAM COORDINATOR AND FISCAL ADVISER

The Program Coordinator and Fiscal Adviser provides the Director with information about required ELINT equipment which cannot be produced within the facilities of the U. S. Naval Research Laboratory. He makes arrangements to procure this equipment when authorized to do so by the Director, and he coordinates such procurement with the output of NRL to assure final-product completeness. In addition, he is responsible for the administration of all the ELINT program finances including the disbursement of funds from the Bureau of Naval Weapons to NRL for the ELINT program. In the performance of his duties he will be guided and directed by the Director, his Deputy and the NEAG.

DESIGN AND CONSTRUCTION ADVISER

The Design and Construction Adviser is responsible for assuring that the capability of the U. S. Naval Research Laboratory is utilized to the fullest in support of the Navy ELINT program. These duties involve both design and construction work. He is further responsible for providing funding estimates and expenditure data to the Fiscal Adviser. In performing his duties he will be guided and directed by the Director, his Deputy and the NEAG.

OPERATIONS ADVISER

The Operations Adviser is responsible for preparing and promulgating operational directives which will permit collection of the maximum amount of required ELINT. His duties require keeping apprised of the capability of all responsive ELINT resources and issuing timely instructions to them as appropriate. In performing his duties he will be guided by the Director, his Deputy and the NEAG.

PRODUCT CONTROL ADVISER

The Product Control Adviser is responsible for providing ELINT requirements to the Director, disseminating quality control technical data to the appropriate ELINT resources, and monitoring the signal analysis process. His duties include assuring that the recorded data is handled promptly from point-to-point, and as expeditiously as possible within the processing area. In performing his duties close liaison will be required with the Operations Adviser and the National Security Agency. He will receive guidance from the Director, his Deputy and the NEAG.

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DESIGN ASSISTANT

The Design Assistant is responsible for the design of all equipment which can be constructed within the facilities of the U. S. Naval Research Laboratory. This includes intercept, direction finding, signal analysis, data storage, jamming, deception and passive reflector equipment.

CONSTRUCTION ASSISTANT

The Construction Assistant is responsible for the construction and assembly of all ELINT equipment produced by the U. S. Naval Research Laboratory.

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DESIGN ASSISTANT

The Design Assistant is responsible for the design of all equipment which can be constructed within the facilities of the U. S. Naval Research Laboratory. This includes intercept, direction finding, signal analysis, data storage, jamming, deception and passive reflector equipment.

CONSTRUCTION ASSISTANT

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PROGRAM "C"

DIRECTOR

The Director supervises and administers that part of the National Reconnaissance Program which is designated Program C. Under the Director, National Reconnaissance Office, he has complete responsibility for the direction of all phases of all assigned projects within the Navy. These duties include coordination of the design, construction, launching and subsequent operations of all projects assigned to his program.

Deputies for other projects as may be assigned.

DEPUTY DIRECTOR

PROJECT POPPY

The Deputy Director acts for the Director in supervising and administering Project POPPY subject to the approval of the Director. He assists the Director in accomplishing his duties as described above and is Directly responsible for the administration of Project POPPY security.

STAFF

This group of specialists provides the Program Director, though the Deputy Director, the necessary technical information and guidance. This includes advising the Director of intelligence requirements, satellite instrumentation, missile rocketry, orbital requirements, field station operations and signal processing. In addition, this group insures that applicable overt research and development are conducted in a proper manner to support Project POPPY.

OPERATIONAL CONTROL

OPERATIONAL DIRECTOR

The Operational Director is responsible for the direction and coordination of field station operations. His duties require keeping apprised of field station administrative, logistic and operational problems which are related to the project. These duties include issuing project planning and operational directives to the field stations and keeping each of these stations advised of the tasking requirements necessary to perform the project's mission. In performing his duties he will be guided by the Director, his Deputy and his Staff.

DESIGN AND CONSTRUCTION

TECHNICAL DIRECTOR

The Technical Director is responsible for the execution of the entire design and construction program including the satellite and field station instrumentation. In performing his duties he will be guided and directed by the Director, his Deputy and his Staff. He is responsible for forming and maintaining a coordinated program at the U. S. Naval Research Laboratory which will support fully each assigned project. He is further responsible for providing funding estimates and expenditure data to the Fiscal Director.

PRODUCT CONTROL

PRODUCT DIRECTOR

The Product Director is responsible for disseminating intelligence requirements to the Program Director, disseminating quality control technical data to the field stations, and monitoring the signal analyses process. His duties include assuring that the recorded data is handled promptly from point-to-point, and as expeditiously as possible within the processing station (s). In performing his duties, close liaison will be required with the Operational Director, the National Security Agency and the Strategic Air Command. He will receive guidance from the Program Director, his Deputy and his Staff.

BUDGET CONTROL

FISCAL DIRECTOR

The Fiscal Director is responsible for budget preparation and submission. He is responsible for the disbursement of project funds to the U. S. Naval Research Laboratory and further, for the submission of expenditure statements to the Program Director. In performing his duties, he will be guided and directed by the Director, his Deputy and his Staff. His duties will require close liaison with the Technical Director.

PAYLOAD AND VEHICLE INTEGRATION

MISSION MANAGER

The Mission Manager is responsible to the Technical Director for the design and construction of the entire satellite payload, exclusive of the ELINT instrumentation. Further, he is responsible for coordinating the vehicle payload integration and for monitoring the launch and the preparations thereof. His duties require him to work closely with the ELINT Manager and with the vehicle custodian to assure payload and vehicle compatibility.

ELINT INSTRUMENTATION

ELINT MANAGER

The ELINT Manager is responsible to the Technical Director for the research and development of all satellite ELINT instrumentation including the matching instrumenfation at the field station collection stations.

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DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20350

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MEMORANDUM FOR THE DEPUTY SECRETARY OF DEFENSE

Subj: Use of POPPY Elint Satellite System for Ocean Surveillance

1. Recently, the Chief of Naval Operations forwarded to me a memorandum in which he expressed his concern with the increased threat to the Nation, and to the Navy, posed by the Soviet Fleet. I share his concern, and concur in his belief that the Navy must be able to locate, identify and track all Soviet Naval units, especially all missile delivery platforms and threats to our seaborne strategic deterrent forces. This is vital to our strategic warning and defense. The threat posed by the Soviet Navy is of such significance today that surveillance of these type platforms must now be recognized as a national requirement, and the use of national overhead reconnaissance assets should be utilized, where capable, to respond to this requirement.

2. As you may recall, I addressed the problem of the Soviet threat in my memorandum to you on 24 July 1969, particularly with regard to the utilization of National Reconnaissance Program resources to provide meaningful information relative to this threat. At that time, I expressed my support of the National Reconnaissance Program, while informing you of the demonstrated capability of the Navy sponsored NRP POPPY Elint Satellite System to provide Ocean Surveillance information. I informed you of my intention to task POPPY, on a non-interference basis, for collection against the Ocean Surveillance requirement, and requested your support for continuation of this time proven and economical program.

3. Experience gained during the past year has permitted the Navy to define a specific proposal for NRP support to Ocean Surveillance within existing national constraints. This proposal herewith attached establishes a requirement for collection of electromagnetic signals associated with Soviet Naval forces, utilizing the POPPY asset of the National

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Reconnaissance Program, without interfering with existing USIB requirements. It requires dedicated military analysis centers, located with existing or planned POPPY ground sites, in order to process and disseminate ocean surveillance information of tactical value to the operational commander without interruption of processing in support of existing national directives.

4. I have prepared detailed requirements, and a breakdown of fiscal and personnel resources required to implement this proposal, utilizing the POPPY system on a non-interference basis with national tasking. There are no satellite system costs attendant with the adoption of this specific proposal. Augmentation of the facilities of [redacted] existing POPPY sites and building [redacted] new POPPY sites, would provide a network of stations which could survey an extensive portion of the high interest areas of the world. Equipment costs and personnel to augment the existing POPPY sites in [redacted] and to establish a new POPPY site [redacted], would require about $3,881,000 and 92 personnel. If construction of the naval communications facility [redacted] is approved, installation of a POPPY ground site at this location would require an additional $2,180,000 and 53 personnel. Total resources required for the [redacted] dedicated ocean surveillance sites are [redacted] and 145 personnel, as indicated supra. Operation of the [redacted] existing overseas sites would provide a meaningful satellite contribution to Ocean Surveillance in the strategically important areas of the Eastern Atlantic, the Pacific north of the equator, and of the Mediterranean, Black, Baltic, North and Norwegian Seas. Operation of the [redacted] site would provide coverage of the [redacted] while [redacted] would provide coverage of the strategically important areas of the Western Atlantic.

5. I solicit your approval and support of this proposal, which is within the present state of the art and requires no development. In order to implement this proposal, an additional funding total of [redacted] is required. It is requested that National Reconnaissance Office funds be made available to the Navy to perform these specific location, identification and tracking tasks. Furthermore, the

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Consolidated Cryptologic Program (CCP) manning levels for this project must be increased by the required 145 billets. Additionally, since this proposal is dependent on a continuation of present tasking of the POPPY Elint Satellite System, the special Ocean Surveillance tasking discussed herein must be assigned such national priority that the POPPY capability will be maintained.

[redacted]

With attachment

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Tasking
Processing
Reporting

PROPOSAL

FOR

OCEAN SURVEILLANCE POPPY PROCESSING CENTERS

UTILIZING

POPPY ELINT SATELLITES

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TABLE OF CONTENTS

PROPOSAL FOR OCEAN SURVEILLANCE POPPY PROCESSING CENTERS UTILIZING POPPY ELINT SATELLITES

1. The increased threat posed by the growing Soviet fleet, and by this fleet's increased deployments beyond local operating areas, highlights a requirement for augmentation of existing ocean surveillance sensors with which to locate, identify and track these units, particularly all missile delivery platforms and threats to our seaborne strategic deterrent forces.

2. The Navy sponsored POPPY Elint Satellite System, an asset of the National Reconnaissance Office, has demonstrated a significant capability to provide unique information in support of the Navy's Ocean Surveillance requirement. During the past year, ship locations provided to CINCLANTFLT, CINCUSNAVEUR and [redacted] a POPPY ground site located at [redacted] have proven to be vital operational intelligence not available from other sensors.

3. In TAB A, the present capability of the POPPY system to support the ocean surveillance requirement is examined. It is shown that present tasking of POPPY in support of national requirements provides significant intercept opportunity against the RF bands in which the majority of the Soviet naval radars are located, and that this tasking can be augmented without interference with national intelligence requirements. It is indicated that existing CRITICOMM centers at these sites provide adequate communications to support Ocean Surveillance. It is also shown that the capability of existing POPPY sites to support the ocean surveillance requirement is constrained by lack of dedicated field processing equipment and personnel.

4. In TAB B, acquiring a dedicated Ocean Surveillance Processing Center at the [redacted] Navy-manned POPPY sites - [redacted] - and new sites [redacted] is examined. It is shown that it is feasible to acquire such a capability over the next two and one-half years [redacted]. Personnel requirements to man these dedicated Centers total 145 officer and enlisted Naval Security Group personnel.

5. In TAB C, the capability of this dedicated system is examined. It is shown that this system would provide significant intercept opportunity against Soviet Naval units operating in the most

strategically important ocean areas of the world, and in those areas, such as the [redacted] in which satellite reconnaissance is a cost effective method of conducting routine surveillance.

6. In summary, the POPPY Elint Satellite System has a capability to provide significant intercept opportunity against Soviet naval electronic emitters without interference with existing national intelligence requirements. In order to utilize this latent capability, it is necessary to acquire dedicated Ocean Surveillance Processing Centers which would provide operational information to the Navy, without interfering with existing national field processing priorities. Existing communications will meet communications requirements of these centers. An augmented ocean surveillance system, built on the use of POPPY on a non-interference basis, and supported by [redacted] dedicated processing centers is economical and feasible.

7. It is proposed that funds in the amount of $6,061,000 be allocated for the purpose of establishing the POPPY Ocean Surveillance Processing Centers, and that action be initiated to obtain the Naval Security Group personnel required to man these sites.

TAB A - PRESENT CAPABILITY FOR OCEAN SURVEILLANCE

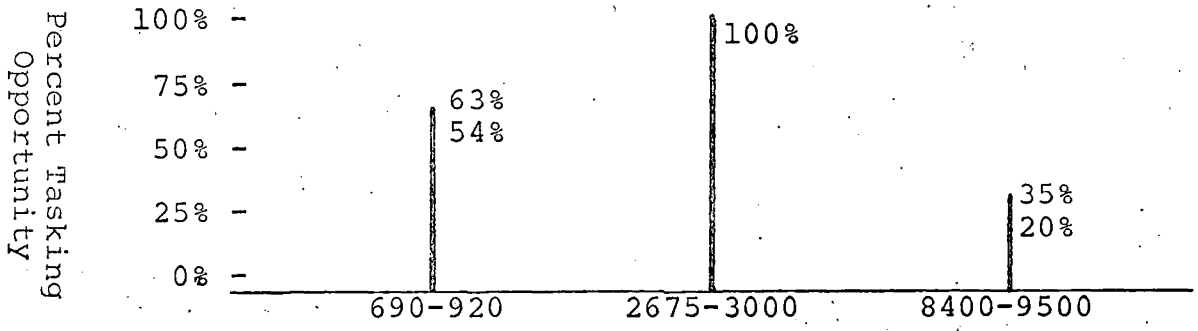
The POPPY Elint satellite system is tasked in response to the highest priority national overhead Elint requirements. An examination of the RF bands in which these high priority national requirements are found, when compared to the highest interest Soviet navy associated signals, reveals that, generally speaking, all are found in common bands. For example, Soviet shipborne emitters are clustered in the following RF bands:

650- 920 MHz - Air Surveillance/Early Warning

2675-3000 MHz - Shipborne missile track and guidance; fire control; surface search and navigation; air search and height finders

8400-9500 MHz - Missile track and guidance; fire control; submarine surface search and navigation

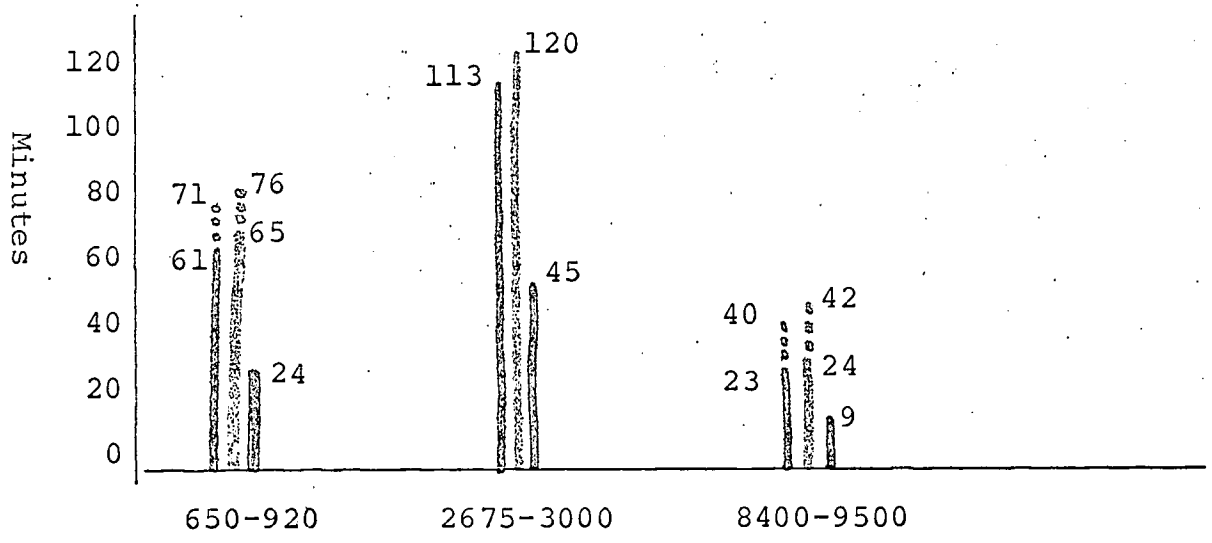
The following graph depicts current tasking of POPPY, in response to national intelligence requirements, which contain those RF bands listed above. The graph depicts current tasking [redacted] in relation to total tasking capacity. System constraints preclude tasking to full capacity in all bands simultaneously. By tasking presently untasked orbits (those ascending orbits generally between 150-200 degrees), these percentages could be raised to the figure indicated in red.



The number of orbits tasked per day varies with the site's geographical location. For example, [redacted] have between 7-8 tasked orbits per day, while [redacted] has an average of 4 tasked orbits per day. Additionally, there is an average of 2 untasked orbits per day for [redacted] and [redacted] While these untasked orbits do not provide significant intercept opportunity against national intelligence requirements, they would provide significant ocean surveillance information in the areas of the North Atlantic and Mediterranean Sea, and North Pacific.

The average number of minutes available for intercept by each POPPY series varies with the distance from the ground station. The following graph shows the average number of minutes of intercept opportunity for those ocean areas in close proximity to the ground site. Extended coverage gained by tasking presently untasked orbits is represented by dotted lines. for detailed minutes of coverage, see Appendix I to Tab A.

[redacted]



The POPPY ground read-out sites are tasked by national authority to process collected data for the purpose of quality control, to detect and report signals of interest, and to geolocate those signals on the processing priority list.

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The field processing priority listing for each station is listed below.

The above listing of the ten top priority field processing requirements does not contain a shipborne emitter. On the other hand, the stations reported intercepting the following average number of shipborne emitters each day but were unable to process these because of processing priorities.

From the above, it can be seen that tasking in response to current national intelligence requirements permits a significant amount of non-interference intercept for Soviet shipborne emitters. It can also be seen that the three Navy manned field sites have a significant number of minutes per day during which shipborne signals are intercepted and recorded. Existing CRITICOMM circuits permit rapid dissemination of emitter locations to Navy operational commanders. It is apparent that, based on the national field processing priority listing, a great amount of latent ocean surveillance intelligence is available which cannot be utilized, primarily due to field computer and processing time limitations.

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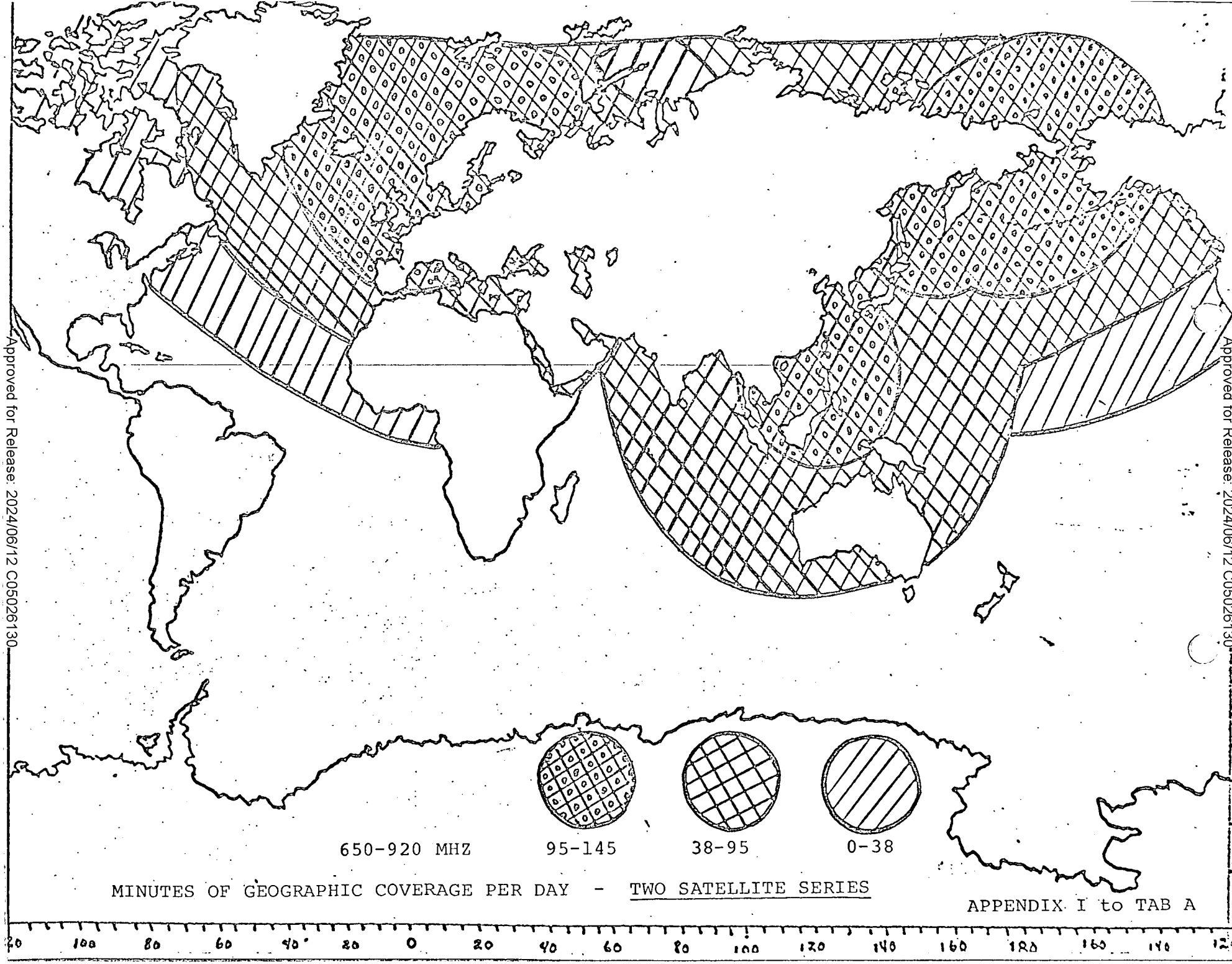

MINUTES OF GEOGRAPHIC COVERAGE PER DAY - TWO SATELLITE SERIES

APPENDIX I to TAB A

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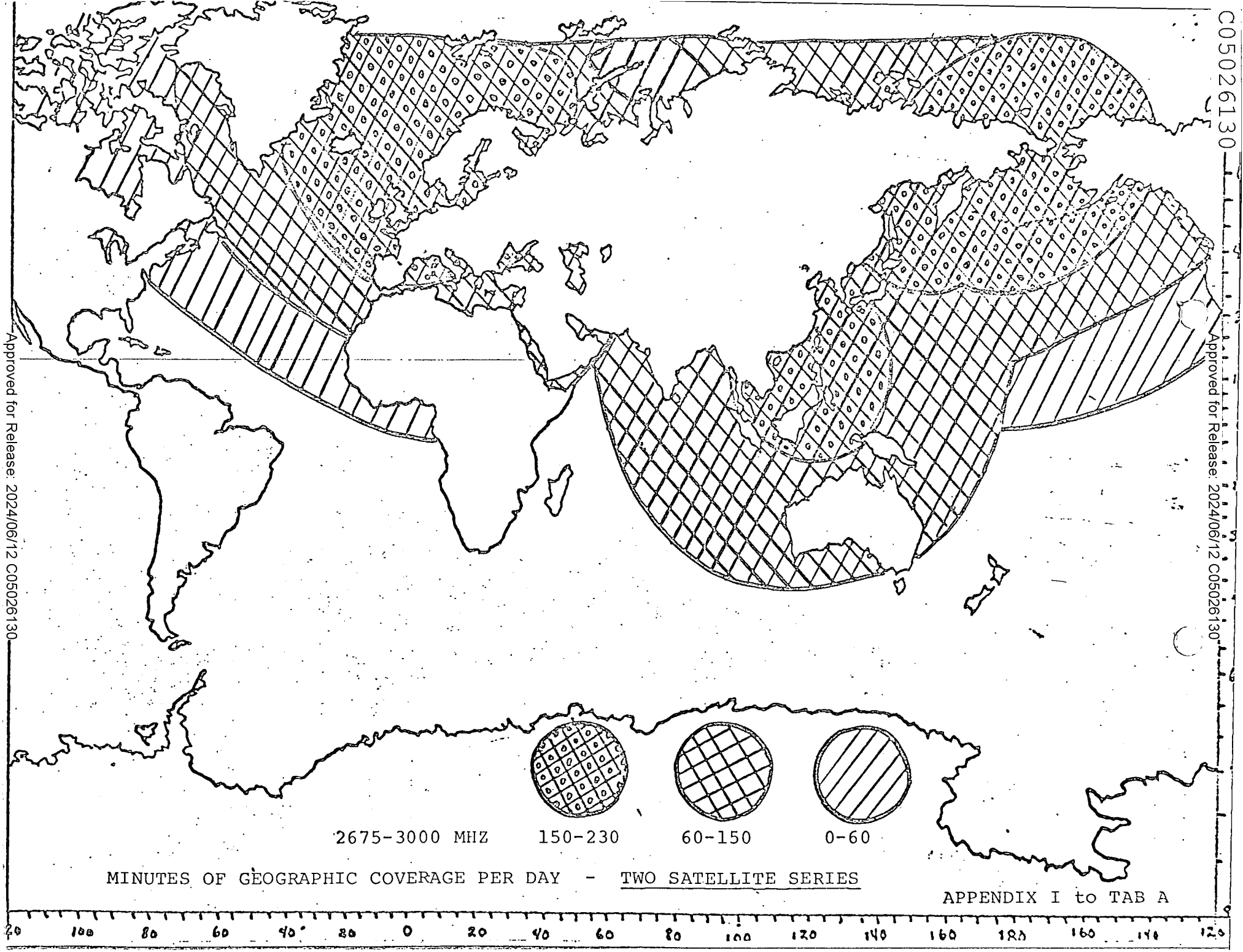

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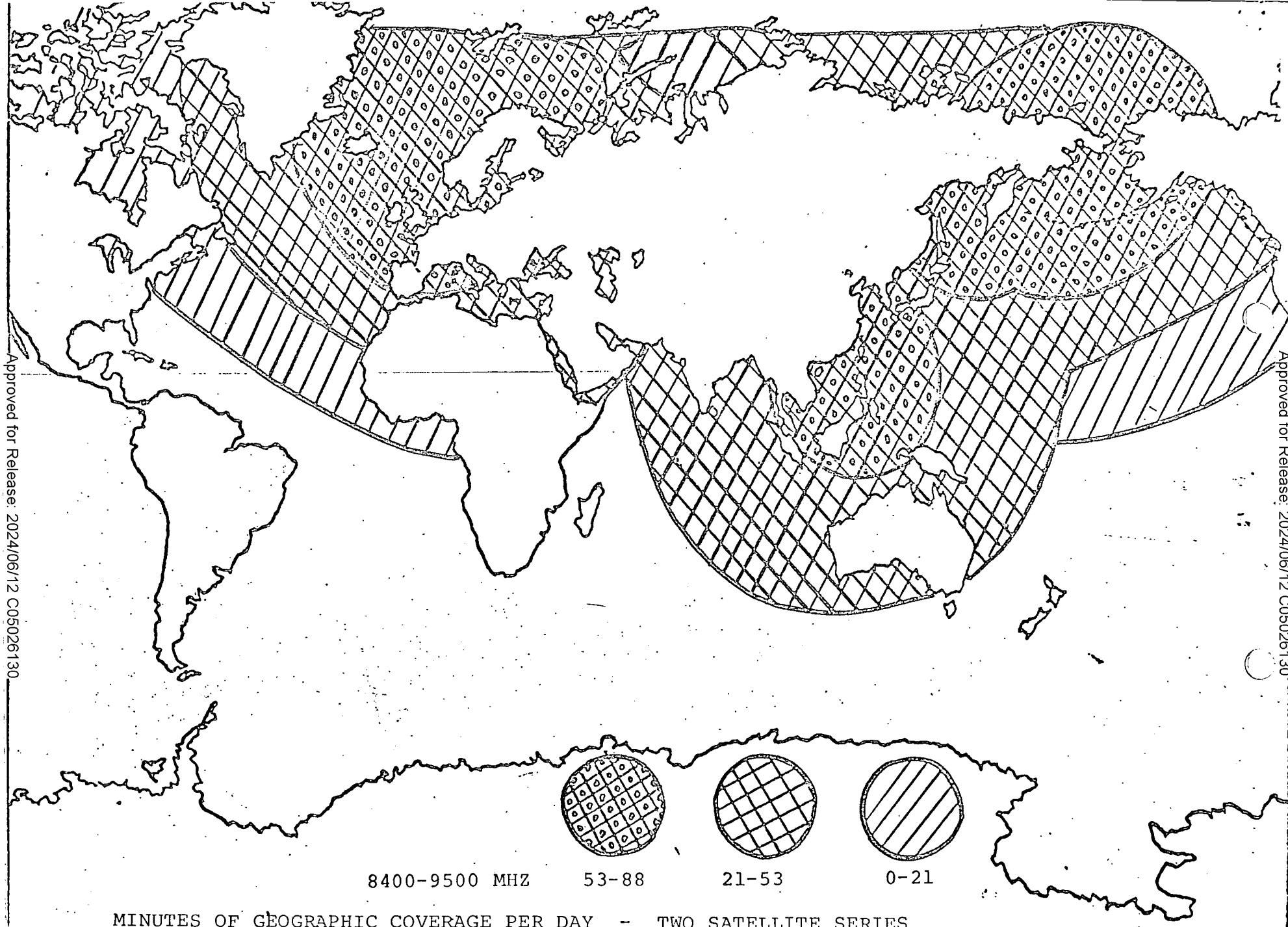

MINUTES OF GEOGRAPHIC COVERAGE PER DAY - TWO SATELLITE SERIES

APPENDIX I to TAB A

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TAB B - Dedicated Processing System

The acquisition of additional ground processing facilities at the [redacted] Navy manned overseas POPPY sites would provide a significant contribution to Ocean Surveillance requirements of the Navy. Additionally, there are reasons for acquiring [redacted] POPPY readout stations, which could be dedicated to Ocean Surveillance. These sites would be [redacted]

An orderly schedule, which would permit acquisition of equipment, identification and training of personnel, and, in some instances, construction of support facilities, would result in operational capabilities as follows:

[redacted]

- 1 June 1971
- 1 September 1971
- 1 December 1971
- 1 March 1973
- 1 July 1972

Detailed equipment and personnel requirements, and time tables for each site, are examined in TABS B1 - B5.

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TAB B-1 - [redacted]

The facility at [redacted] is separately housed in a 3000 square foot building located within the station's controlled perimeter area. Addition of the computer complex will necessitate the construction of a 600 square foot adjunct to the present operations building. Immediate construction, which must be completed prior to initiation of Ocean Surveillance operations, includes up-grading of the existing power system. Costs associated with this upgrading are approximately $37,000. Total construction required, including the addition to the operations building, and berthing for 20 men, is $165,000. To ensure full operational capability, and effective utilization of this pilot station, emergency MILCON in the amount of $165,000 should be identified. Detailed construction requirements, with anticipated costs, are listed in Appendix I. Total equipment costs for [redacted] approximate $504,000. Of this total, digital processing equipment costs are $414,850, of which $115,000 is for support spaces, and $65,000 for deployment. Analog pre-processing equipment costs approximately $90,000, including deployment and installation costs. 15 additional Naval Security Group personnel would be required to operate the dedicated system. Detailed cost and personnel requirements are listed in Appendix I.

The following time table for implementing Ocean Surveillance operations at [redacted] is feasible.

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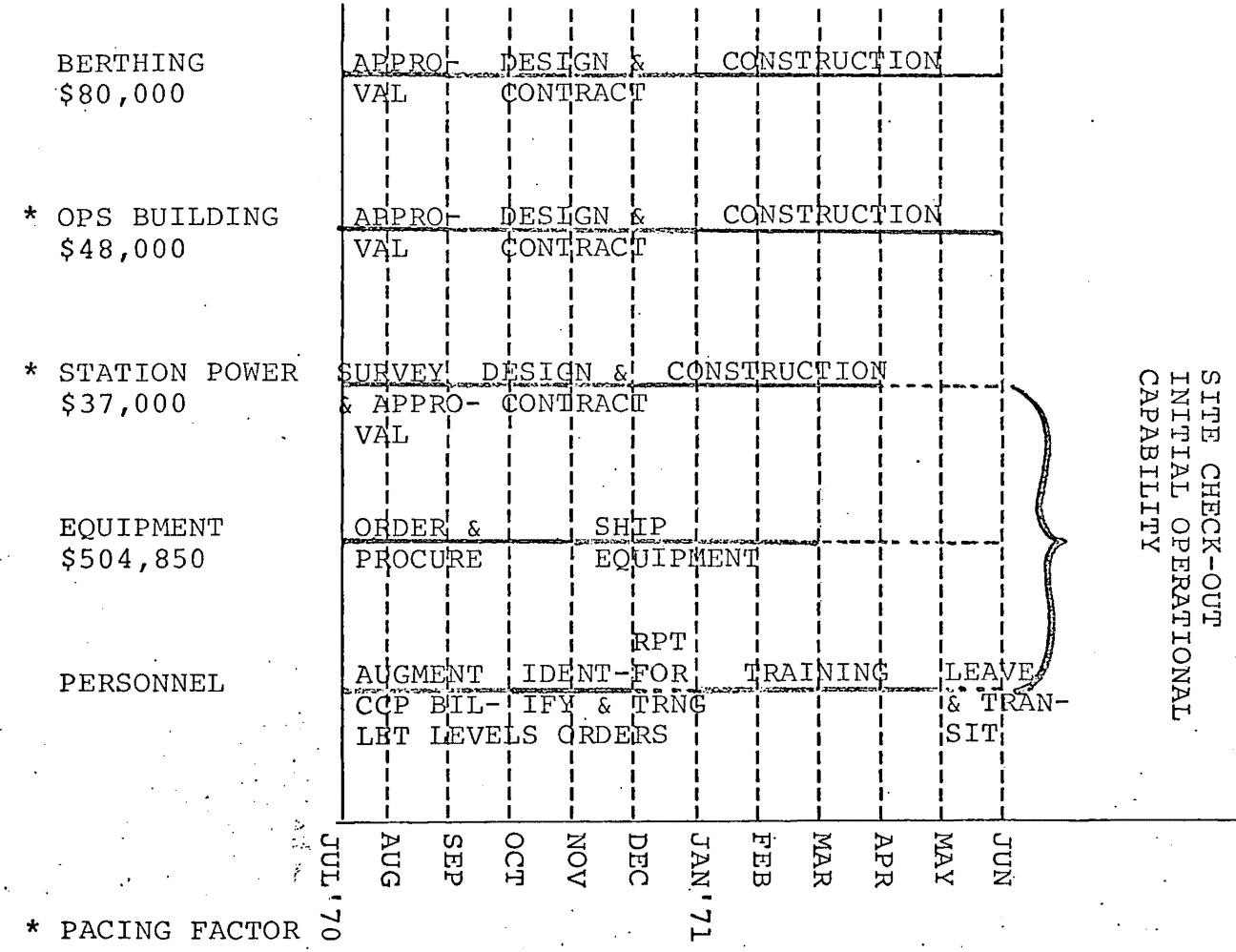

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TAB B-1

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TAB B-2 - [redacted]

The POPPY facility at [redacted], is currently being upgraded to give it a digital processing capability. This installation is programmed for completion in December 1970. This new operations building will have approximately 7000 square feet, and will include emergency berthing and messing facilities as well as room for future expansion. The building design has allowed for the level of expansion necessary to house a dedicated Ocean Surveillance processing system; however, emergency power generation capacity will require an increase of 100 KW. This increase will require MILCON funds in the amount of $30,000. Total equipment costs for the Ocean Surveillance processing system are identical to those required at [redacted] and approximate $504,000. Fifteen Naval Security Group personnel are required to man the facility at [redacted] Detailed equipment costs and personnel requirements are contained in Appendix I.

A feasible time table for acquiring a dedicated Ocean Surveillance processing system at [redacted] follows.

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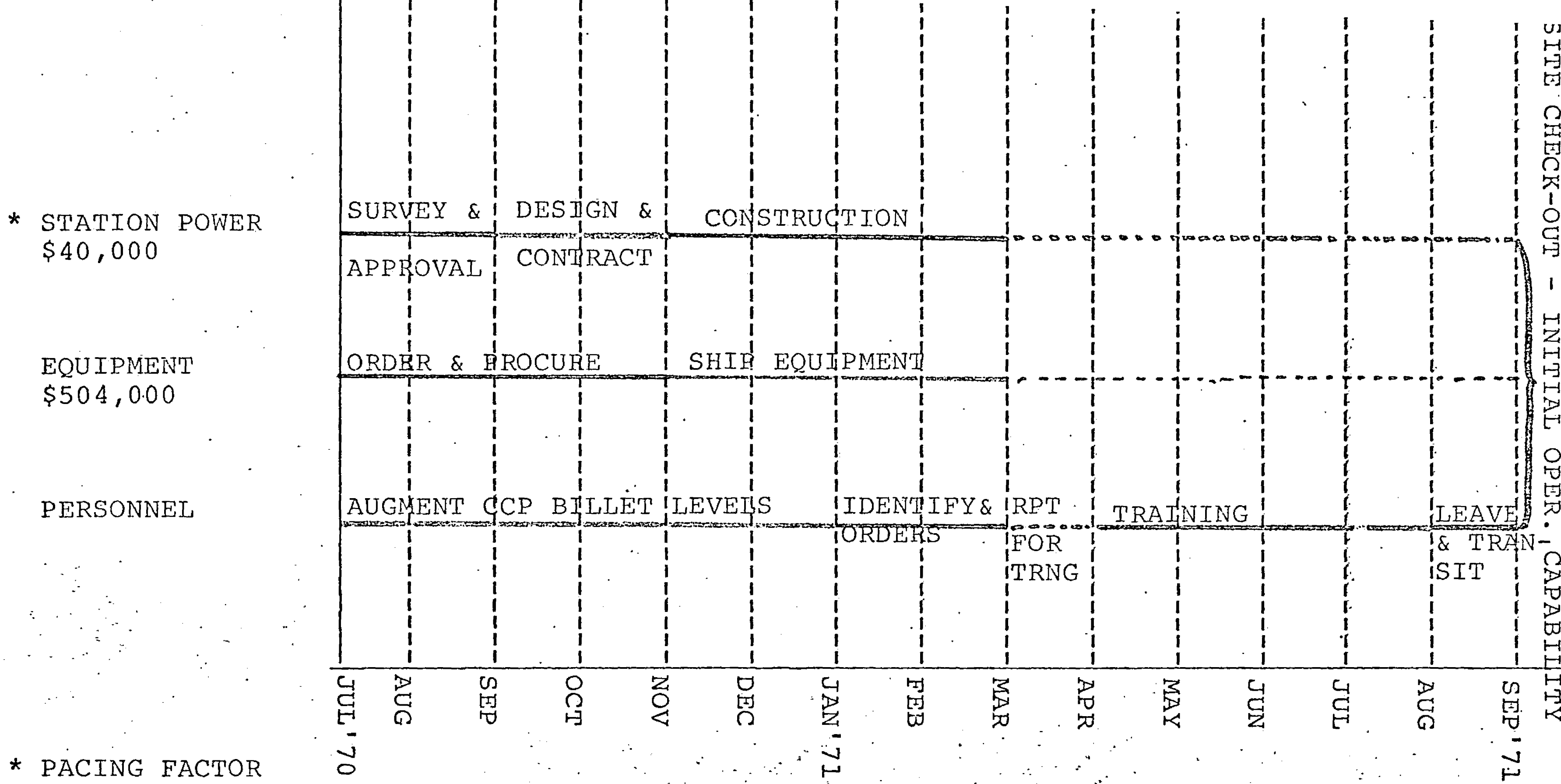

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TAB B-3 - [redacted].

[redacted] is a fully digitized POPPY Processing Facility. Operations are scheduled to be moved to a new operations building by June 1970. This building has approximately 7000 square feet of floor space, and will accommodate the equipment and personnel necessary to acquire a dedicated Ocean Surveillance processing system. Berthing and messing facilities can accommodate the personnel associated with the dedicated system; however, they may be required to occupy sub-standard housing. Construction costs associated with [redacted] include $8000 for upgrading of building air conditioning capacity. Additionally, it may be necessary to increase the emergency power generation capacity by 100 KW, at a cost of approximately $20,000. Total equipment costs for [redacted] are identical to [redacted] and [redacted] - $504,000. Fifteen Naval Security Group personnel will be required to man the system. Detailed equipment costs and personnel requirements can be found in Appendix I.

The following time table for implementation of Ocean Surveillance operations at [redacted] is feasible.

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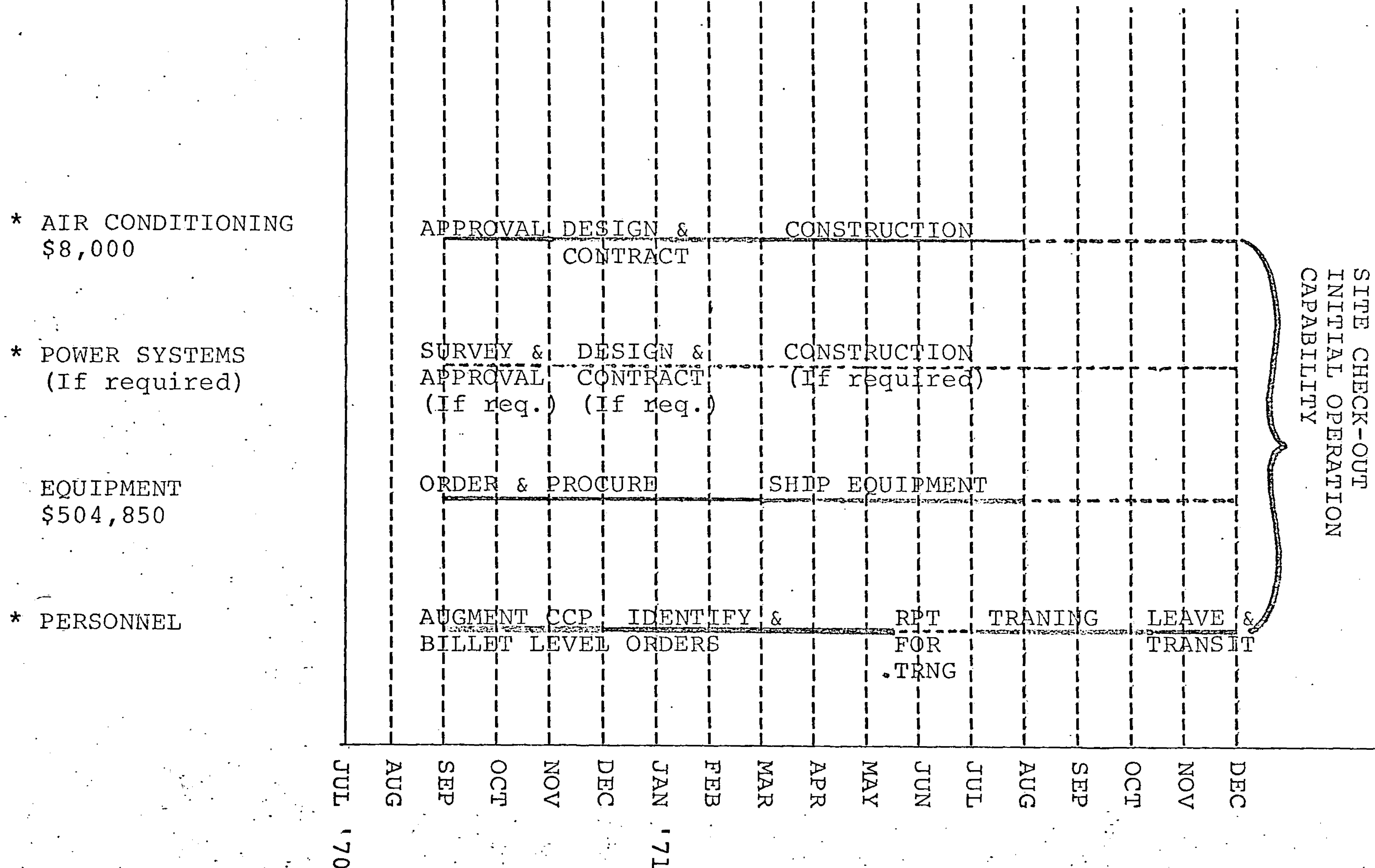

* PACING FACTORS

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TAB B-3

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HANDLE VIA BYEMAN CONTROL SYSTEM

TAB B-4

PROPOSED NAVAL COMMUNICATIONS FACILITY, [redacted]

The Secretary of Defense recently approved a proposal for the first increment of construction of an austere communications facility at [redacted] and Congress has currently the first increment before it. If the project is approved, apportionment is expected in September or October 1970. Present plans call for commencement of construction in March 1971, with completion estimated 24-30 months from date of commencement.

Based on this decision, it is believed highly desirable to include an Ocean Surveillance processing system at this site to provide coverage of this strategically important, but sparsely surveyed ocean area of the world.

The POPPY effort at this site will require a building of approximately 7500 square feet. Total personnel requirements for POPPY dedicated Ocean Surveillance processing system consist of 2 officers and 51 enlisted men from the Naval Security Group. Funds required for equipment costs associated with this facility approximate $1,179,000. Detailed equipment costs, and personnel requirements, are listed in Appendix I. Program C MILCON requirements, totaling $900,000 are detailed in Appendix II. The Navy will require approval in time to reflect the Program C MILCON funds in the 1972 MILCON submission.

A feasible timetable for acquiring a dedicated Ocean Surveillance processing system at [redacted] based on an estimated completion data for construction of the Naval Communications Facility in March 1973, is shown on the attached chart. The primary pacing factor is the completion of the building and support facilities; however, timely action to seek personnel billet approval and funding for equipment procurement is imperative.

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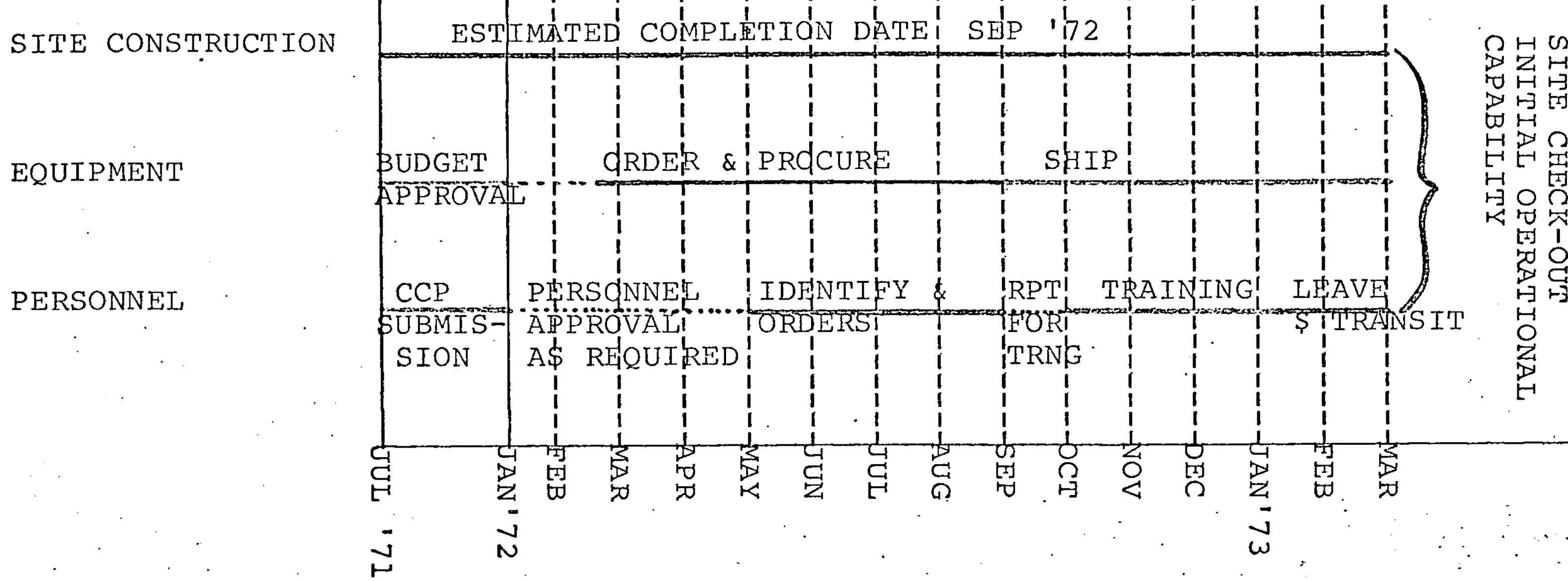

TAB B-4

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HANDLE VIA BYEMAN CONTROL SYSTEM

TAB B-5 - [redacted]

A POPPY Ocean Surveillance Processing Center and Training Facility at the Naval Security Group Activity, [redacted] is desirable for a number of reasons. A site at this location would provide unique coverage of the North Atlantic, the seaward approaches to the east coast of the United States, and of [redacted] Additionally, such a site would provide redundant (with [redacted] coverage of some of the most strategically important areas of the North Atlantic. It has long been recognized that there exists a requirement for a training installation to provide on the job training for personnel assigned to overseas POPPY sites. Such training would benefit both the national and the Ocean Surveillance aspects of POPPY. Finally, there is approved FY 1970 MILCON in the amount of $815,000 for construction of a 7000 square foot building at [redacted] This funding was approved in connection with the locating at [redacted] of an alternate DF Net Control Facility. This Facility is no longer required; however, the funding remains available, and would pay the construction costs attendant with a POPPY ground collection/processing facility. Additional construction funds required would total $5,500, required for false flooring in the building. A barracks modernization plan has been approved for FY 1972 construction, and will provide sufficient berthing space required by the POPPY facility.

Equipment requirements are identical to those associated with [redacted] and total $1,179,850. Equipment needs are: 2 collection positions, with antenna, $500,000; an interrogation position, with antenna, $175,000; analog pre-processing equipment, $90,000; and digital processing equipment, $414,850. Personnel requirements total 1 officer and 42 enlisted personnel. Detailed equipment costs and personnel requirements are listed in Appendix I.

A feasible time table for acquiring an Ocean Surveillance Processing Center and Training Facility at [redacted] is as shown. Pacing factors are site construction, utilizing approved FY 70 MILCON; and approval of personnel requirements. A critical factor is barracks modernization.

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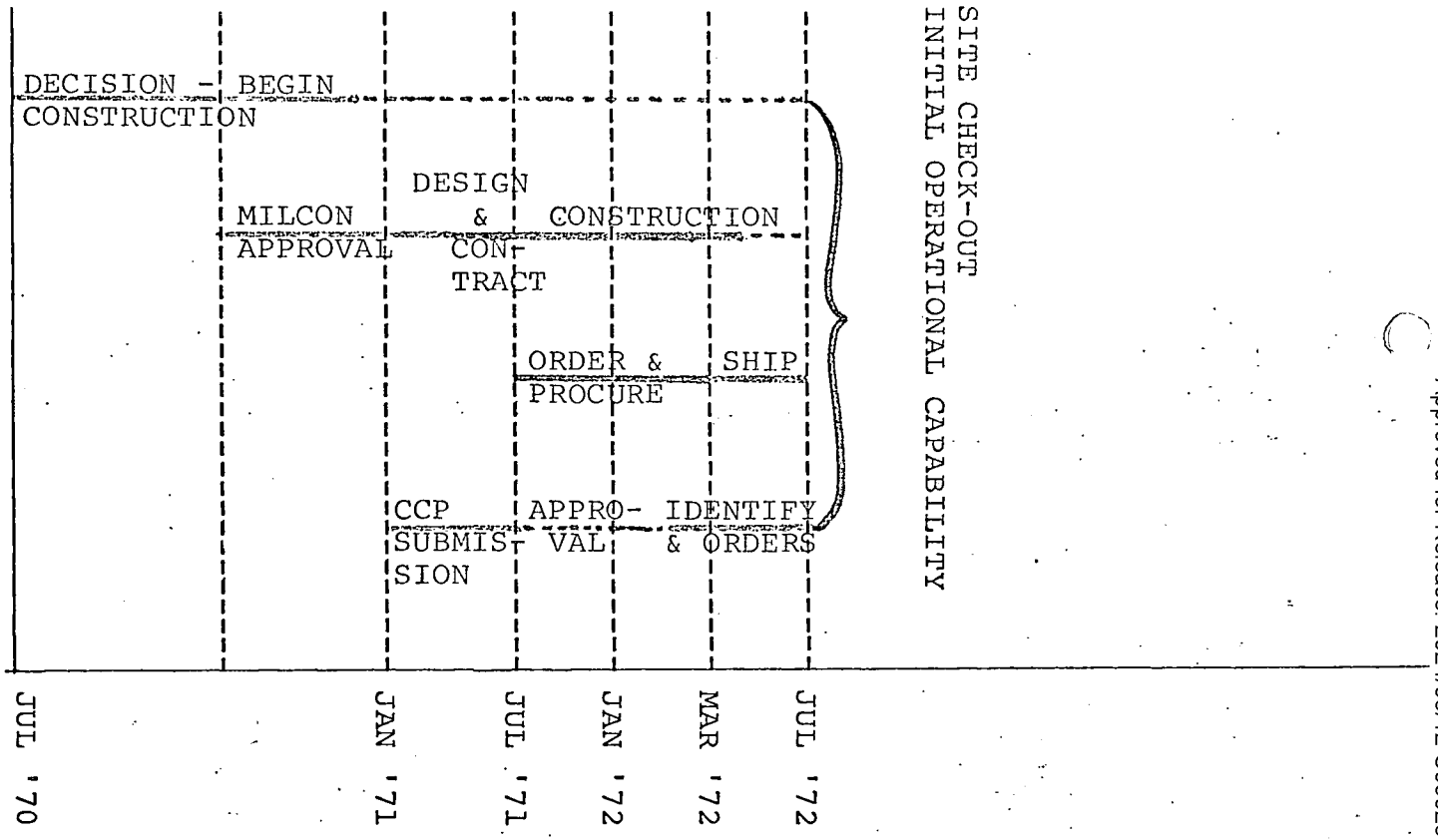

PACING FACTORS

TAB B-5

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APPENDIX I - TAB B

EQUIPMENT AND PERSONNEL REQUIREMENTS

A. [redacted]

EQUIPMENT	PERSONNEL
Digital	
SEL 801A Computer Mainframe	5 Analog processing/signal analysts.
TM-11 Digital Tape Transporters (3)	
Magnetic Tape Control Unit	5 Digital processors.
Moveable Head Disc	
Fixed Head Disc and Controller	
Analex Line Printer	2 Senior analysts/report writers.
Graphics Display Console	
High Speed Paper Tape Reader/Punch	
Paper Tape Spooler	3 Material Maintenance Men.
X-Y Plotter	15 = Total.
Testing/Engineering/BTC Interface	
Sub-Total - $299,850	
Support Spare Package	
Deployment (Transportation/Install)	
Sub-Total $115,000	
Total $414,850	
Analog	
CEC GR 2800 Analog Tape Recorder	
Tektronics 565 Oscilloscope (w/3a1 PI)	
Distribution Amplifier (DA-1)	
CEI Speaker	
ESL Pulse Rate Synthesizer	
Video Disc Recorder	
Brush Oscillographic Recorder (8 ch)	
Astrodata 6200 Time Code Translator	
Electronic Counter HP 5216A	
Test Oscillator HP 204C	
Timing Generator Tek 184	
Audio Signal Monitor AM01	
Oscillographic Recording Camera Poloroid Manual	
Total $90,000	

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EQUIPMENT AND PERSONNEL REQUIREMENTS

B. Naval Communications Facility, [redacted]

EQUIPMENT

Standard Collection Position (2)
Antenna
Analog to Digital Conversion Equipment

Sub-Total $500,000

Command/Interrogation Equipment
Antenna

Sub-Total $175,000

Digital Processing Equipment

Sub-Total $414,850

Analog Pre-processing Equipment

Sub-Total $ 90,000

Total $1,179,850

PERSONNEL

[redacted]

Operations Officer in Charge	1	1
Maintenance Electronics Engineer Officer	1	
Administrative	3	
Material Maintenance Men	6	5
Special Intelligence Communicators	5	
Digital Processors	6	6
Collection Operators (Watchstanding)	16	16
Collection Supervisors (Watchstanding)	4	4
Interrogation/Command Operators (Watchstanding)	4	4
Analog Pre-processing Operators/ Analysts (Watchstanding)	4	4
Senior Function Supervisor	1	1
Senior Digital Analyst	1	1
Senior Analog Analyst	1	1
Totals	51 Enlisted	42
	2 Officer	1

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APPENDIX II - TAB B

TOTAL COSTS

(In thousands)

Processing Equipment	505	505	505	1180	1180	
Construction						
Operations Building	48			310 (2)	820 (3)	
Berthing	80			217 (2)		
Air Conditioning			8	373 (2)		
Electrical Power	37	40	30 (1)			
TOTAL	670	545	543	2080	2000	6061 (4)

(1) Need is not confirmed. A survey on emergency power generation is presently being conducted.

(2) Construction costs are not included in the first Construction Increment of FY 71 MILCON now before Congress, nor in subsequent increments.

(3) $815,000 MILCON line item has been approved for FY 1970 and is available for construction of the required Operations Building. An additional $5,000 is required for false flooring to this building.

(4) Includes $223,000 for deployment, installation, and engineering evaluations at all sites.

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TAB C - FULL SYSTEM CAPABILITY FOR OCEAN SURVEILLANCE

Acquisition of the Ocean Surveillance Processing System described in TAB B will provide unique intercept opportunities of Soviet shipborne emitters in certain strategically important ocean areas of the world, such as the seaward approaches to the eastern coast of the United States, known ballistic missile patrol areas for Soviet SSBN's, and the Indian Ocean. More importantly, this system will permit processing of Ocean Surveillance information from all strategically important ocean areas in a timely, operationally oriented manner.

Initially, Ocean Surveillance information will be available

At present, intercepts an average of 24 shipborne emitters per day from the 7-8 tasked orbits. With the increased intercept opportunity afforded by tasking presently untasked orbits (2 per day) it is reasonable to assume that this total will increase by approximately 20 percent. intercepts an average of 21 shipborne emitters per day. With the increased opportunity provided by tasking presently untasked orbits, this average should also increase by 20 percent. The following summary indicates the increase in Ocean Surveillance information available as a result of acquiring an Ocean Surveillance Processing System at

	Present		Dedicated System	
	Daily Intercepts	Daily Locations	Daily Intercepts	Daily Locations
	24	0	29	15-25
	21	0	25	15-25

The above graph depicts a minimum contribution to the Ocean Surveillance requirement. As personnel become more proficient, and as greater numbers of Soviet fleet units deploy beyond local waters, the capabilities at to provide Ocean Surveillance information should improve significantly.

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The addition of [redacted], in September 1972, as an Ocean Surveillance Processing Center, will enhance the total Ocean Surveillance capability of the Navy, and should provide significant information on Soviet out of area deployments, particularly in the areas of the South China Sea/South Pacific, the approaches to the Indian Ocean, the Philippine Sea, and the Marianas. It will also provide some redundant coverage (with [redacted] of the major operating areas of the Soviet Pacific Fleet. As Soviet out of area deployments increase, and as Communist Chinese Naval units begin deployment beyond local waters, [redacted] should play an ever increasingly important role in Ocean Surveillance. At the present time, [redacted] reports an average of 5 shipborne emitter interceptions per day. Even though [redacted] intercept opportunity, based on times of satellite visibility, is about one-half that of either [redacted] or [redacted] it is believed that the capability of a dedicated Ocean Surveillance Processing Center to intercept, identify, and locate shipborne emitters is considerably greater that the reported average. Occasional ship tracking operations, conducted by [redacted] on a non-interference basis, support this belief.

[redacted]

The acquisition of an Ocean Surveillance Processing Center at a POPPY site located on [redacted] will provide excellent coverage of this strategically important ocean area. Coverage of the major Soviet fleet operating areas and anchorages approaches 50 minutes per day per satellite series. Satellite coverage is concentrated in areas with low electronic emitter density; hence, [redacted] should be able to intercept, identify, and locate shipborne emitters visible to POPPY within the Indian Ocean. Planned communications facilities will be sufficient to enable ocean surveillance information to be disseminated rapidly to operational commanders.

[redacted]

The [redacted] Ocean Surveillance Processing Center will provide outstanding coverage of the seaward approaches to the eastern coast of the United States, of known ballistic missile patrol areas for Soviet SSBN's, and will double the coverage presently available of the Norwegian Sea and North Atlantic. This coverage is important, since these are the areas in which Soviet combatants operate and through which they must pass in the event of hostilities. Existing CRITICOM communications facilities are sufficient to enable ocean surveillance information to be disseminated rapidly to operational commanders.

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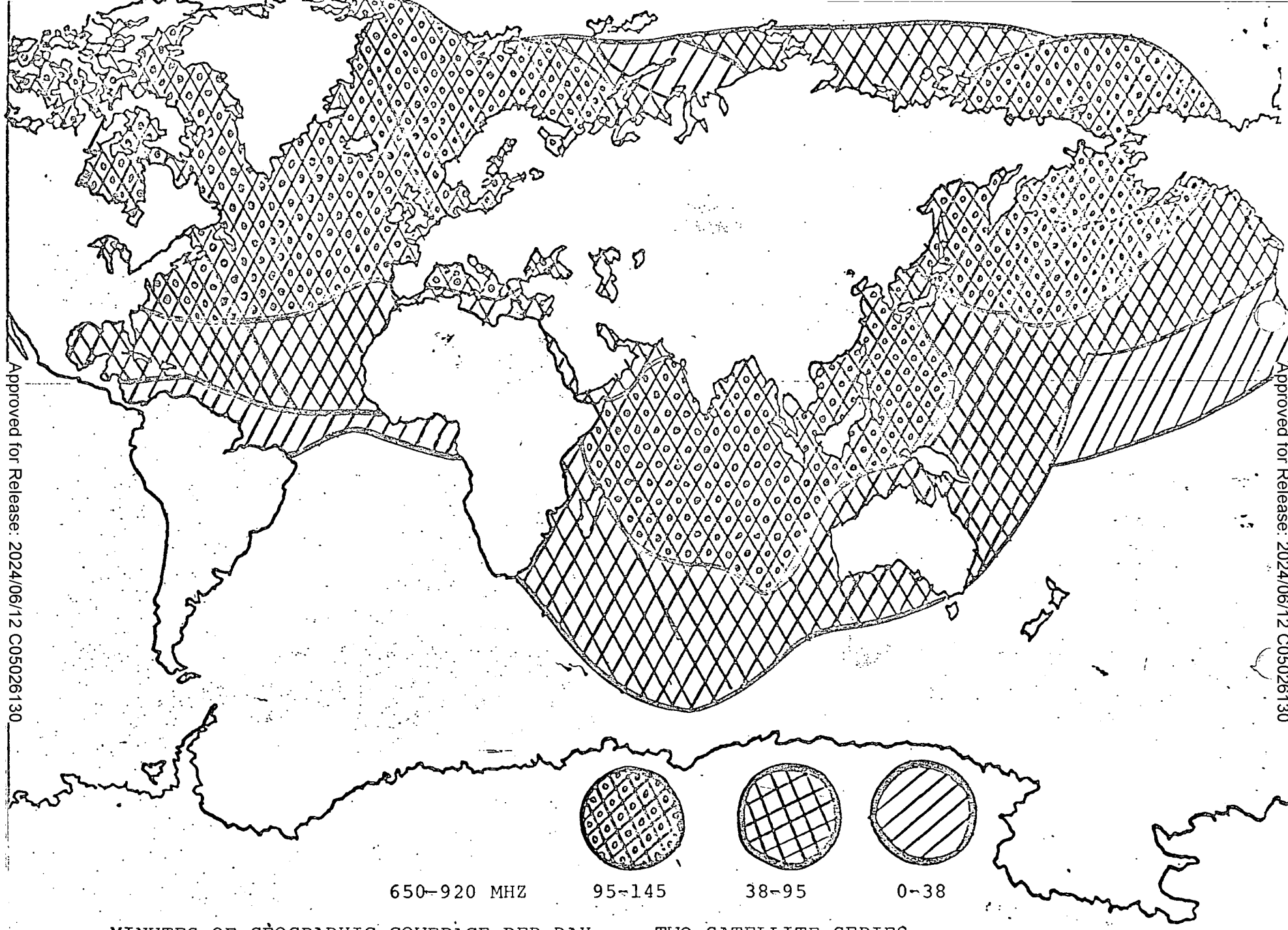
In summary, the Ocean Surveillance capability of the POPPY system, supported by dedicated Ocean Surveillance Processing Centers at [redacted] is impressive. Coverage is maximized in those ocean areas of greatest strategic importance, and in areas, such as the Indian Ocean, in which satellite surveillance is a cost effective method of routine surveillance. For detailed coverage of ocean areas of the world, see Appendix I to TAB C.

The following table summarizes average number of minutes coverage per day in selected important geographic areas. Coverage is depicted for two satellite series of four spacecraft each since past experience indicates that two operable POPPY series can reasonably be expected to be in orbit at a given time. Coverage is based on current tasking of POPPY, which is a governing criteria.

Selected Ocean Surveillance Capability
(Minutes/RF band/per day)

	650-920 MHZ	2657-3000MHZ	8400-9500 MHZ
Norwegian Sea	164	260	91
Northern Fleet Op Areas	120	190	67
GI/UK Gap	189	300	105
East Med/ Black Sea	58	170	34
Western Sea	120	190	67
Vlad/Petro	144	225	79
Sea of Japan	66	110	33
North Pacific	132	220	66
S. China Sea	65	120	24
Straits of Malacca	65	120	24
Suez Canal	63	100	35
Indian Ocean	76	140	28
Phil Sea	70	130	26
West Coast U. S.	57	90	32
East Coast U. S.	132	210	74



MINUTES OF GEOGRAPHIC COVERAGE PER DAY - TWO SATELLITE SERIES

APPENDIX I to TAB C

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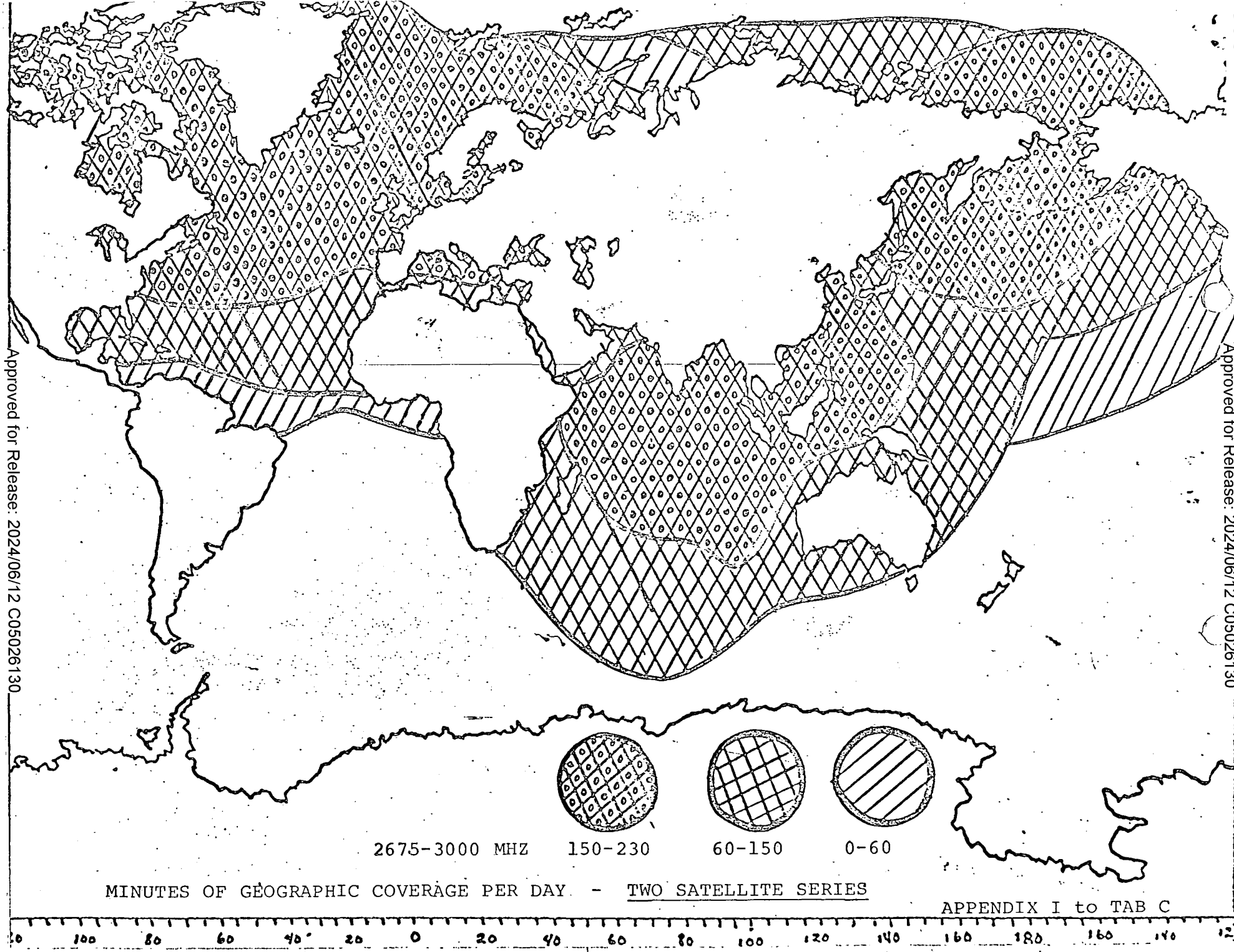

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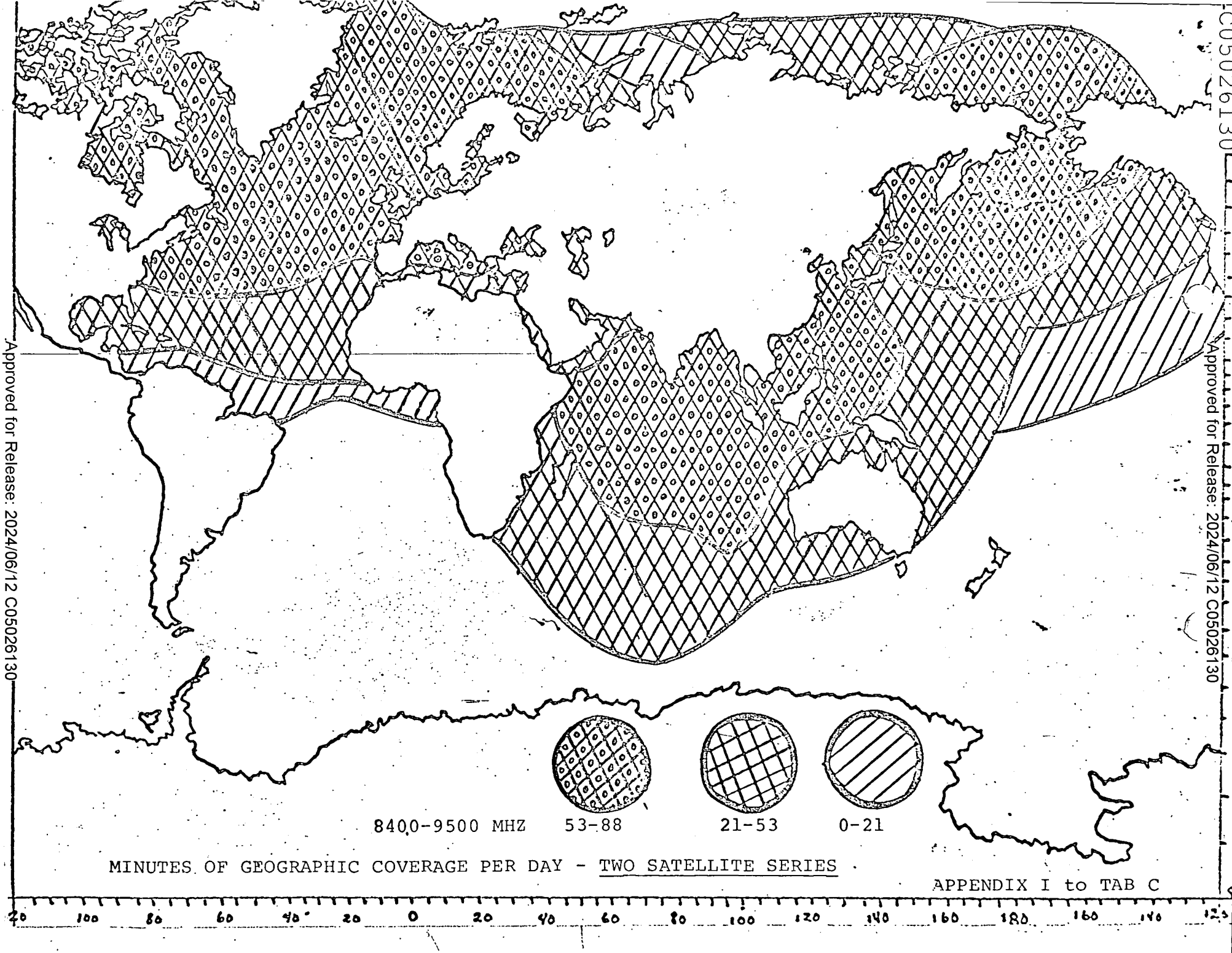

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