

11/5/71

## CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

BYE 110999-71

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5 NOV 1971

MEMORANDUM FOR: Comptroller, National Reconnaissance  
Office

SUBJECT : EOI Options for the November 1971 ExCom

REFERENCE : Memo - Comptroller NRO - BYE 13090-71

1. Attachments 1 through 3 comprise the response to the Reference and include a description of the Program Plan applicable to each funding option.

2. Attachment 1 is recommended as the preferred option. Early 1976 operational capability can be achieved with minimum technical risk by application of the necessary engineering effort for all segments in the second half of FY 72 in support of a System Preliminary Design Review (PDR) in the first quarter of FY 73. Component and subsystem design, fabrication and test can be carried out in FY 73 to permit completion of qualification prior to commitment of vehicle qualification and flight vehicle hardware testing in the following years. Option I is the only plan which provides a possibility of accelerating the program for Initial Operational Capability prior to January 1976.

3. Attachment 2 is a plan conforming to FY 72 and 73 funding limits stated in the Reference. This plan involves significant risk since design and analysis activities during the first six months are limited and subsequent fabrication and test efforts cannot be accomplished to support timely qualification of equipment at the subsystem level. Delay in subsystem qualification results in overlap of system qualification testing with flight vehicle acceptance and the possibility of costly retrofitting or launch schedule slip. The Option II funding requirement in FY 74 is the highest of all options.

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SUBJECT: EOI Options for the November 1971 ExCom

4. The imposition of a funding limit on both NRP and Relay Satellite (R/S) efforts as required by Option III can only be accommodated with a later launch schedule for I/S #1 and increased program cost to reach Initial Operational Capability. Even with delay of the R/S launch dates, the R/S funding estimates are high in FY 72 and 73. SAMSO has utilized a nearly optimum development plan for their options and the early years of the R/S plan emphasize the design, fabrication and testing required to achieve qualification completion prior to commitment of flight hardware. The effect on the Option III NRP portion of the program is limitation of development effort in FY 72 and 73 to a level less than Option I and in FY 74 less than Option II. Since Option II would involve risk, Option III can only be approached with a schedule delay of not less than five months to avoid completely unacceptable risk. Option III would have the same risk as Option II with respect to commitment of I/S flight vehicle #1 prior to completion of I/S qualification testing.

5. All contractor submittals were made on the basis of an Initial Operational Capability in early 1976. The contractors, responding to requests for a balanced program, developed detailed schedules and plans with well documented cost estimates resulting in funding requirements described in Attachment 1. The maximum spread in contractor total cost estimates was 8%. When funding requirements for support activities, follow-on and engineering changes are included, the impact of contractor segment cost estimate variations on total program funding is less than 4%. The funding options detailed in the attachments are valid for any contractor combination resulting from the source selection evaluation since the values used include management reserves and escalation allowances which exceeds the variation in contractor estimates.

6. Options other than the ones requested were considered. Option I is essentially the preferred option presented to the ExCom in September 1971 and represents the consensus of the EOI Program Office and all Phase II contractor estimates for an early 1976 operational capability so no alternative approaches are being submitted.


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7. Provisions for economic escalation have been incorporated in all areas except follow-on where the escalation costs are listed separately. Contractor manloading and detailed schedule charts are included for Option I. Manloading estimates and summary milestones have been included for Options II and III. Previous submittals for follow-on did not provide for backup I/S vehicle hardware after FV-4. All estimates now reflect availability of a complete backup vehicle at each launch. The costs provided by SAMSO for the Relay represent their estimate of the dedicated vehicle.

  
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5 November 1971

EOI PROGRAM PLANOPTION 1INTRODUCTION

The Electro-Optical Imaging System is configured for continuous capability to obtain high quality imagery to satisfy both the Technical Intelligence and Strategic Intelligence requirements. The system provides daily access to all Sino-Soviet targets. The principal elements of the system consist of the following segments: Imaging Satellites (I/S), Relay Satellites (R/S), Receiving Facility (R/F), Operations Facility (O/F) and Processing Facility (P/F). Implementation of the system will consist of installation of the three ground facilities in the [redacted] activation of the R/S net and launch of the I/S into the required elliptical, sun-synchronous orbit. The O/F will have a capability of commanding the I/S through a R/S to acquire the desired targets. As the I/S accesses the target of interest, the data will be transmitted in real time via a R/S to the R/F. The data will be transferred from the R/F to the P/F where the information will be reconstructed for initial photointerpretation. Production and distribution of imagery for community users will be accomplished after the initial interpretation.

The baseline schedule has been established for a realistic funding program conforming to both contractor and Program Office estimates of system costs. The goal established is achievement of the Initial Operational Capability in 1976. The principal milestones for achieving operational capability are: start system acquisition, 1 December 1971; start R/F installation, March 1974; complete ground facilities, July 1975; launch R/S #1, August 1975; launch R/S #2, October 1975; launch I/S #1, January 1976.

The following sections of the Program Plan describe the necessary management activities, system implementation procedures and funding requirements to achieve the EOI System capability.

Attachment 1 to  
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## MANAGEMENT PLAN

The EOI System Program Office has been established to implement the operational system. The EOI System Program Office has been staffed to carry out the full responsibilities of managing the development, testing and operation of all segments of the system. Management and technical direction for the system acquisition will be developed and implemented by the organization shown in Figure 1. Project Managers for each element of the organization will be responsible for the necessary planning, analysis and engineering efforts to meet the system development milestones. Authorized representatives of each element, designated by the element Project Manager, will participate in all system management meetings. The support activities such as I/S Launch Vehicle Program Office, Western Test Range and others will be designated by the System Management Organization. The authorized representative for each element will have the authority to make decisions and to obligate his organizational element to carry out the necessary actions. System management meetings will include the following system level tasks: scheduling, technical direction, requirement interpretation, performance evaluation, interface definition and cost evaluation as appropriate.

The management of each element of the system organization will be organized to provide the capability for implementing those responsibilities assigned to each element in accordance with the overall system plans and schedules. Activities within each element are to be controlled by the responsible element Project Manager. Scheduling and reporting will be structured to support integration of each element into the overall system.

## SYSTEM IMPLEMENTATION

The System Requirements Document has been utilized to define the characteristics of the hardware and software for each element of the EOI System. Interface Control Documents (ICD) have been generated to identify and characterize the interrelationships of each segment as necessary to achieve the overall system performance. Specifications have been produced for each segment to implement the system requirements and the ICD's and to insure that sufficiently detailed performance characteristics can be demonstrated and measured.

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The design, analysis and planning within each segment has been carried to the subsystem level as well as to components of the subsystems. Segment data for generation of the specifications and ICD's has been developed by detailed planning in each subsystem of each segment. Figure 2 summarizes the design, development, fabrication and test activities for the Communications Subsystem of the I/S Segment and the milestones to be met in support of segment and system development. The principal items to be developed in the Communications Subsystem are the [ ] [ ] transmitting and receiving equipment. [ ] component qualification begins in early 1973 and [ ] qualification tasks are initiated in the second half of 1973.

Items tested in the qualification program include: new components, new subassemblies and the complete subsystem. Tests comprise physical integrity, performance and environmental conditions. The principal components to be tested include: [ ] mixer, diode circuits, varactors and couplers. Testing will include checks of sealing where applicable, on-off power cycling, stability, vibration and thermal vacuum. Subassemblies to be tested include: antennas, transmitters, amplifiers, receivers, switches and power supplies. Testing of these subassemblies is similar to component testing but with more emphasis on performance and environmental tests. Communications Subsystem level testing will emphasize measurement of overall parameters including wideband and narrow band signal-to-noise ratios, phase noise, spurious outputs, ranging, frequency acquisition and tracking characteristics.

The subsystem plan provides for vigorous effort leading to a Preliminary Design Review (PDR) with documentation which confirms interface requirements and all performance goals. The detailed design, extending from PDR to Critical Design Review (CDR), is supported by fabrication of engineering test equipment which is subjected to a series of tests to validate basic design criteria. After CDR, final qualification test procedures are prepared and fabrication of qualification components, subassemblies and assemblies is initiated. All activities are phased to support delivery of the Communications Subsystem equipment to the I/S Qualification Test Vehicle early in 1974. Work has been programmed so that testing at the component, equipment and subsystem level has been completed before initiation of segment level qualification testing. This sequence minimizes technical risk and increases confidence of

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satisfactory completion of segment level qualification testing. Planning for each subsystem of each segment has been detailed in the same manner as the I/S Communications Subsystem.

The I/S Segment qualification test program including assembly and test activities is summarized in Figure 3. Delivery of qualification tested subsystems in the early part of 1974 supports final assembly of the I/S Qualification Test Vehicle by mid-1974.

The I/S Qualification Test Vehicle will consist of flight-type subassemblies fabricated to flight quality specifications and drawings. Initial tests will be conducted at ambient conditions to verify the performance of each principal subsystem. The [ ] communications will be operated using hardline connections to [ ] rf switches. The transducer operation will be monitored using the communications link. The electrical power and distribution subsystem will be verified using test equipment to provide battery charging power and command response. Pyrotechnic events will be tested with squib simulators. The Attitude Control Subsystem tests will be conducted to evaluate the gyro reference assembly, [ ] star sensors and the attitude control electronics. Optical Subsystem tests will verify capability of that subsystem to accept, condition and distribute command signals. Additional optics tests include focus adjustment of the field group and alignment of the secondary mirror verified with telemetry data as well as operation of the thermal control heaters. The Propulsion Reaction Control Subsystem will be exercised utilizing a simulated flight sequence with verification of response to all commands. The Command and Control Subsystem will be exercised to demonstrate flight-type sequences of transmitting attitude control signals, antenna pointing commands, attitude reference updating, telemetry sequence and formatting and failure diagnosis.

A complete electro-magnetic compatibility test will be performed with subsystems operating to simulate all phases of flight including launch, ascent, deployment and acquisition, imaging and deorbit. Both transient and steady state interference will be measured and evaluated. Acoustic testing will be conducted on the I/S Qualification Test Vehicle with the system electrically and mechanically conditioned for the launch and ascent modes. The equipment normally powered during those phases will be active and

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all test points will be monitored. Shock tests will be carried out to evaluate environment associated with shroud separation, booster adapter separation, solar array and antenna deployment and fairing jettison. Combined thermal vacuum qualification testing will include cold temperature, hot temperature, thermal cycling and functional performance testing. This series of tests will confirm the design established in the CDR and verify the specifications established for fabrication of the flight vehicle equipment. Assembly of the first flight vehicle is not initiated until the end of 1974, when approximately six months of qualification testing have been completed. Qualification testing of the I/S is completed by mid-1975 prior to the acceptance test of the first flight vehicle.

Figure 4 shows the time-phased activities and principal milestones for integration of the segments into the overall EOI System. The interrelationships between segment PDR activities and overall system design reviews are indicated as well as qualification test vehicles and important software activities.

System level activities include essential compatibility tests between segments. The most important compatibility tests are I/S to R/S, R/S to R/F and O/F to I/S. Simulators will be utilized for development and factory-level testing, and as much actual equipment as possible for final acceptance testing. System-level validation and testing of all software components is conducted during system-level tests. Launch vehicle fabrication, test and integration are programmed to support other system-level activities. Launch test equipment, software and procedures are scheduled as well as crew training for all phases of the operation.

### FUNDING

The essential element of the Option I EOI Program Plan leading to minimum technical risks and maximum schedule confidence is early completion of the system, segment, subsystem and component detailed design activities. The funding described in Tables 1 through 3 is the level necessary to meet required milestones at subsystem, segment and system levels and to support the EOI System design reviews in 1972-1973. Since the progress in each segment is dependent upon the progress of each other

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segment, it is essential that all activities are supported to the necessary degree. An orderly development and test program with sequential activities requires vigorous engineering and fabrication activity in the first two years of the program. The Phase II System Definition engineering reports and proposals from the contractors developed detailed schedules and cost estimates for the appropriate segments. The funding requirements resulting from the segment estimates confirmed the appropriate portions of the previous overall system estimates.

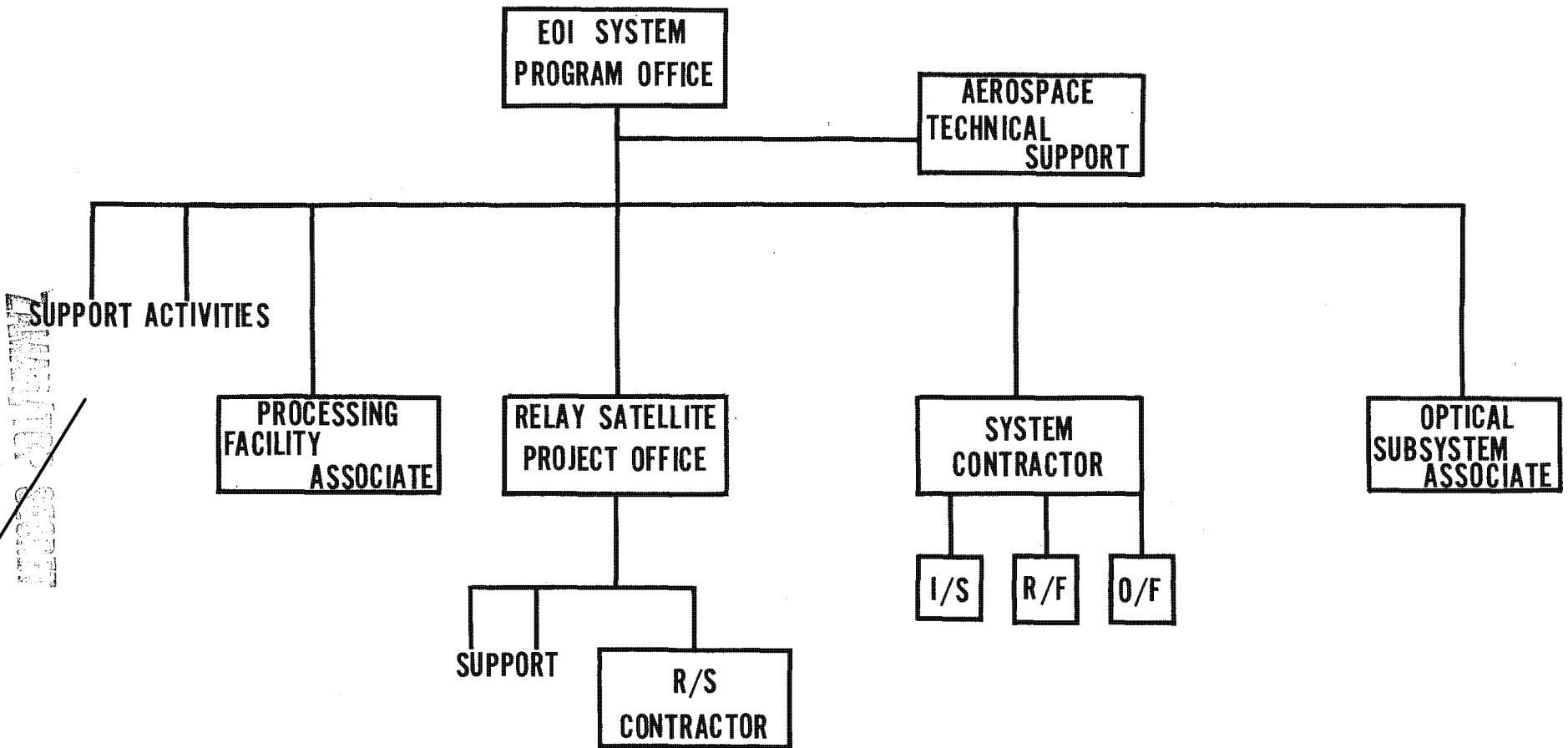
Contractor submittals were based on achieving Initial Operational Capability in early 1976. Their schedules and manpower loading (Figure 5) reflect an orderly emphasis on design, component selection and test, subsystem engineering and finally segment qualification test. This approach permits the completion of the significant portions of the I/S vehicle qualification-testing prior to assembly of the first flight vehicle. This is the only option which offers a possibility of schedule acceleration.

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FIGURE 1  
EOI SYSTEM MANAGEMENT ORGANIZATION



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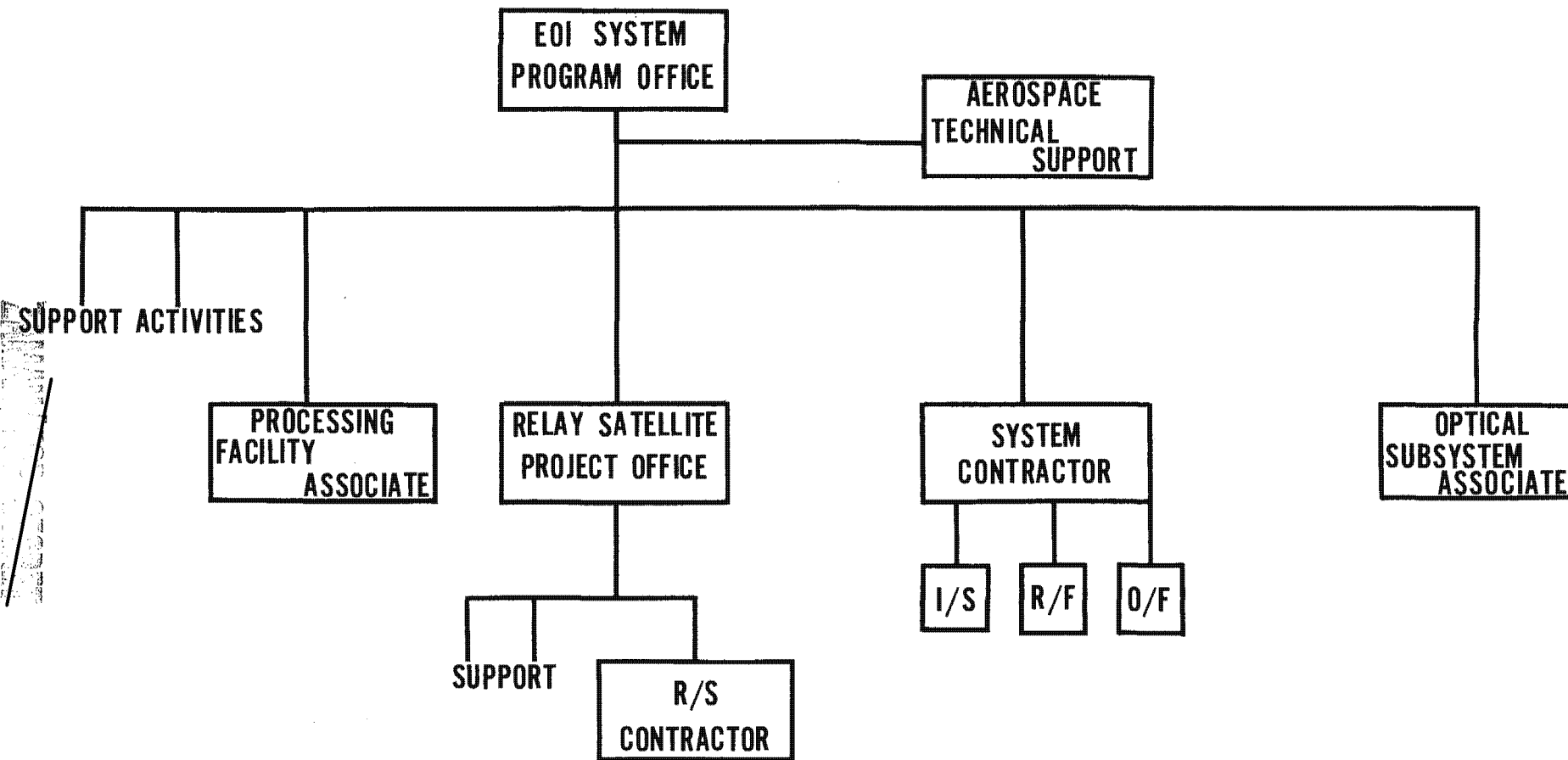
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FIGURE 1  
**EOI SYSTEM MANAGEMENT ORGANIZATION**



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FIGURE 2

 SUBCONTRACT

 COMPLETE

 START

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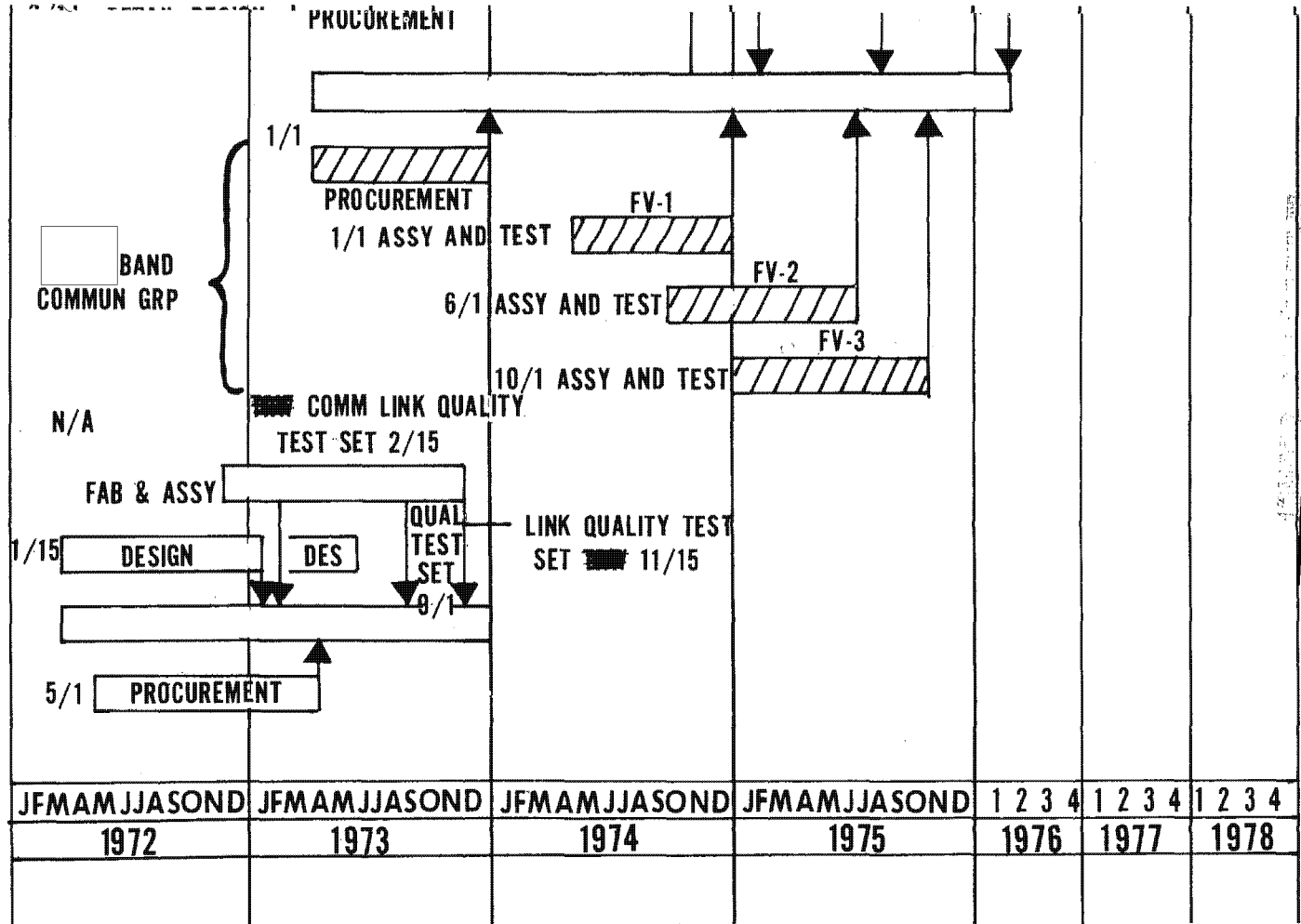
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COMMUNICATIONS SUBSYSTEM (CS)

FLT UNIT PROC & FAB

TEST OF FLT UNITS

TEST EQUIPMENT



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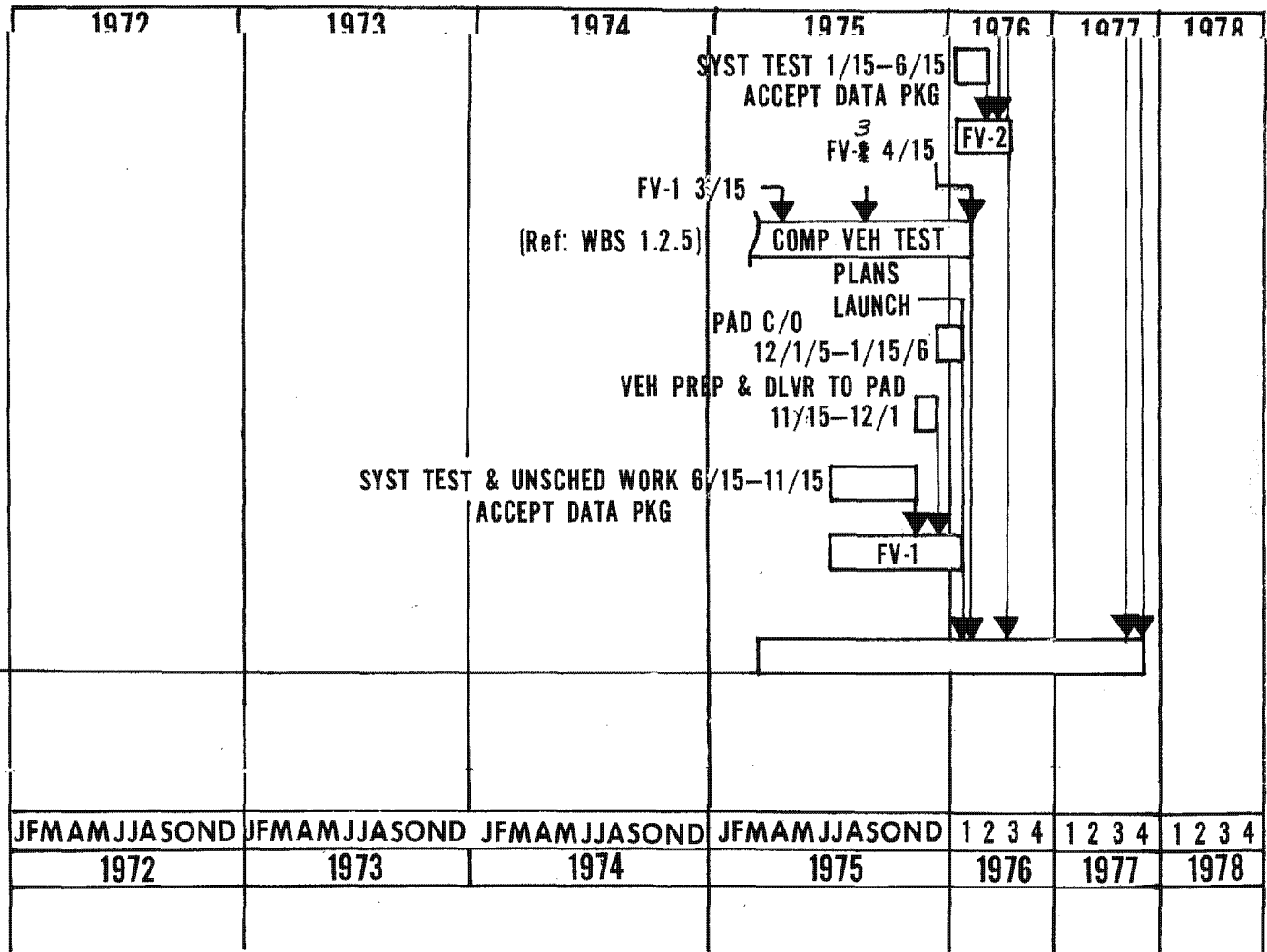
FIGURE 3

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### VEHICLE ASSEMBLY AND TEST

(S) START

(C) COMPLETE



\* ACCERT TEST FLIGHT VEHICLES

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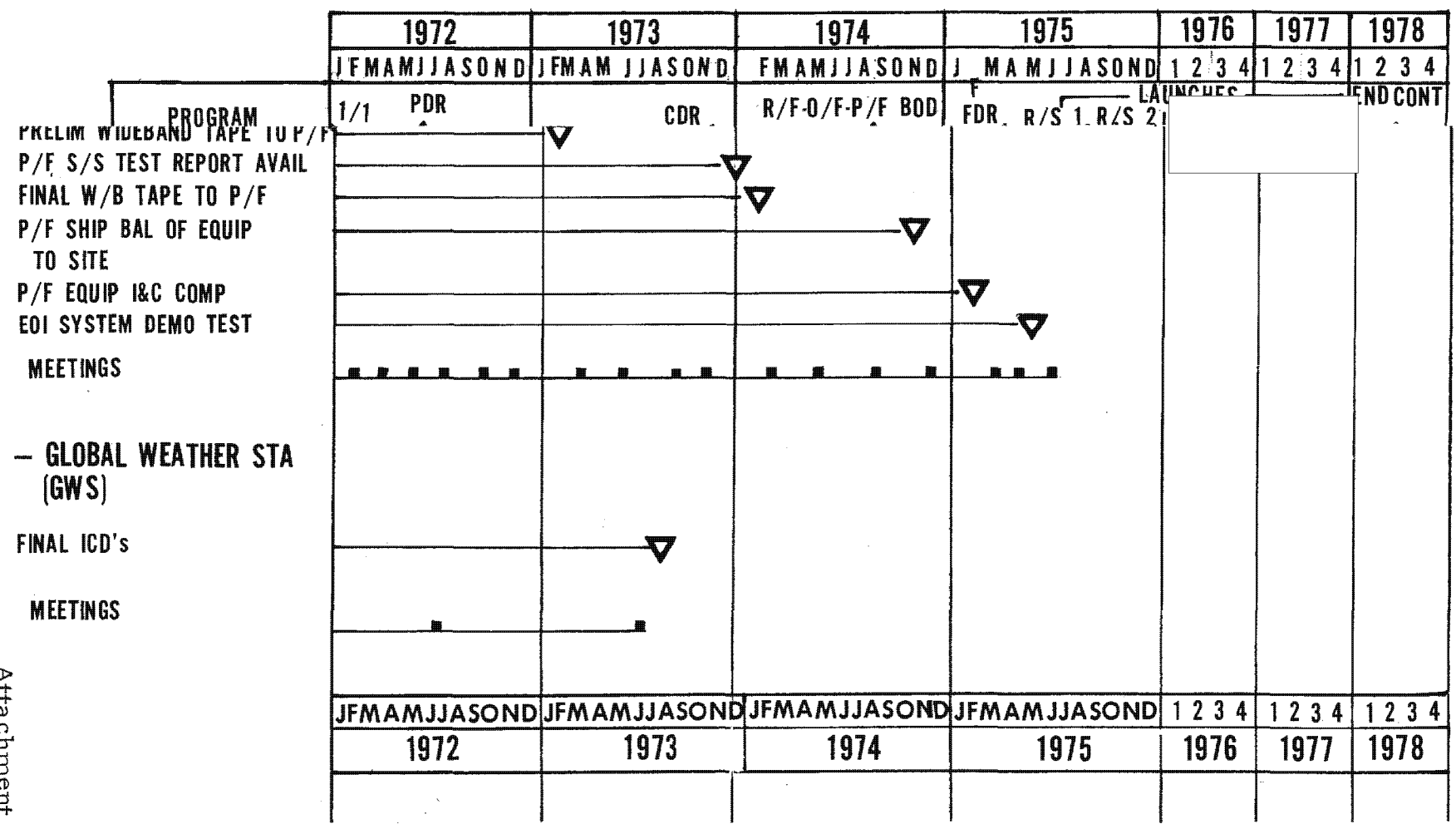
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FIGURE 4

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- (S) START
- (C) COMPLETE
- ▨ SUBCONTRACT

**SYSTEM INTEGRATION SUMMARY SCHEDULE**



Attachment 1  
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 HANDLE VIA BYEMAN CONTROLS SYSTEM

EOI COST SUMMARY

ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JAN 1976

TABLE 1

OPTION I

	<u>FY72</u>	<u>FY72</u>	<u>FY73</u>	<u>FY74</u>	<u>FY75</u>	<u>FY76</u>	<u>FY77</u>	<u>FY78</u>	<u>TOTAL</u>
A. Development									
B. Operation									
Sub-Total									
C. Follow-On									
D. Engineering Changes									
Total									
E. R/S (Dedicated)									
Total									

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ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JAN 1976

TABLE 2

OPTION I

DEVELOPMENT DETAILS

	<u>FY72</u>	<u>FY72</u>	<u>FY73</u>
1. I/S			
System Management			
Segment Management			
Segment Engineering			
Assembly & Test			
Launch Support			
Communication S/S			
Transducer S/S			
Attitude Control S/S			
Command & Control			
Propulsion Reaction Control S/S			
Deorbit S/S			
Electrical Power & Distr			
Structure Mechanism S/S			
Thermal Control S/S			
Total I/S			
2. Optical S/S			
3. R/F - O/F			
R/F			
O/F			
Total R/F - O/F			
4. P/F			
5. Launch Vehicle			
6. Miscellaneous			
Mirror Blanks & Itek			
Tech Cons. & ICP			
Phase II			
Total Development			

1. I/S

- System Management
- Segment Management
- Segment Engineering
- Assembly & Test
- Launch Support
- Communication S/S
- Transducer S/S
- Attitude Control S/S
- Command & Control
- Propulsion Reaction Control S/S
- Deorbit S/S
- Electrical Power & Distr
- Structure Mechanism S/S
- Thermal Control S/S

Total I/S

2. Optical S/S

3. R/F - O/F

- R/F
- O/F

Total R/F - O/F

4. P/F

5. Launch Vehicle

6. Miscellaneous

- Mirror Blanks & Itek
- Tech Cons. & ICP
- Phase II

Total Development

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ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JAN 1976

TABLE 3

OPTION I

OPERATION DETAILS

	<u>FY72</u>	<u>FY72</u>	<u>FY73</u>
1. I/S			
Communication S/S			
Transducer S/S			
Attitude Control S/S			
Command & Control S/S			
Propulsion Reaction Control S/S			
Electrical Power & Distr			
Total I/S			
2. Optical S/S			
3. R/F - O/F			
4. P/F			
5. Launch Vehicle			
6. Miscellaneous			
Total Operation			

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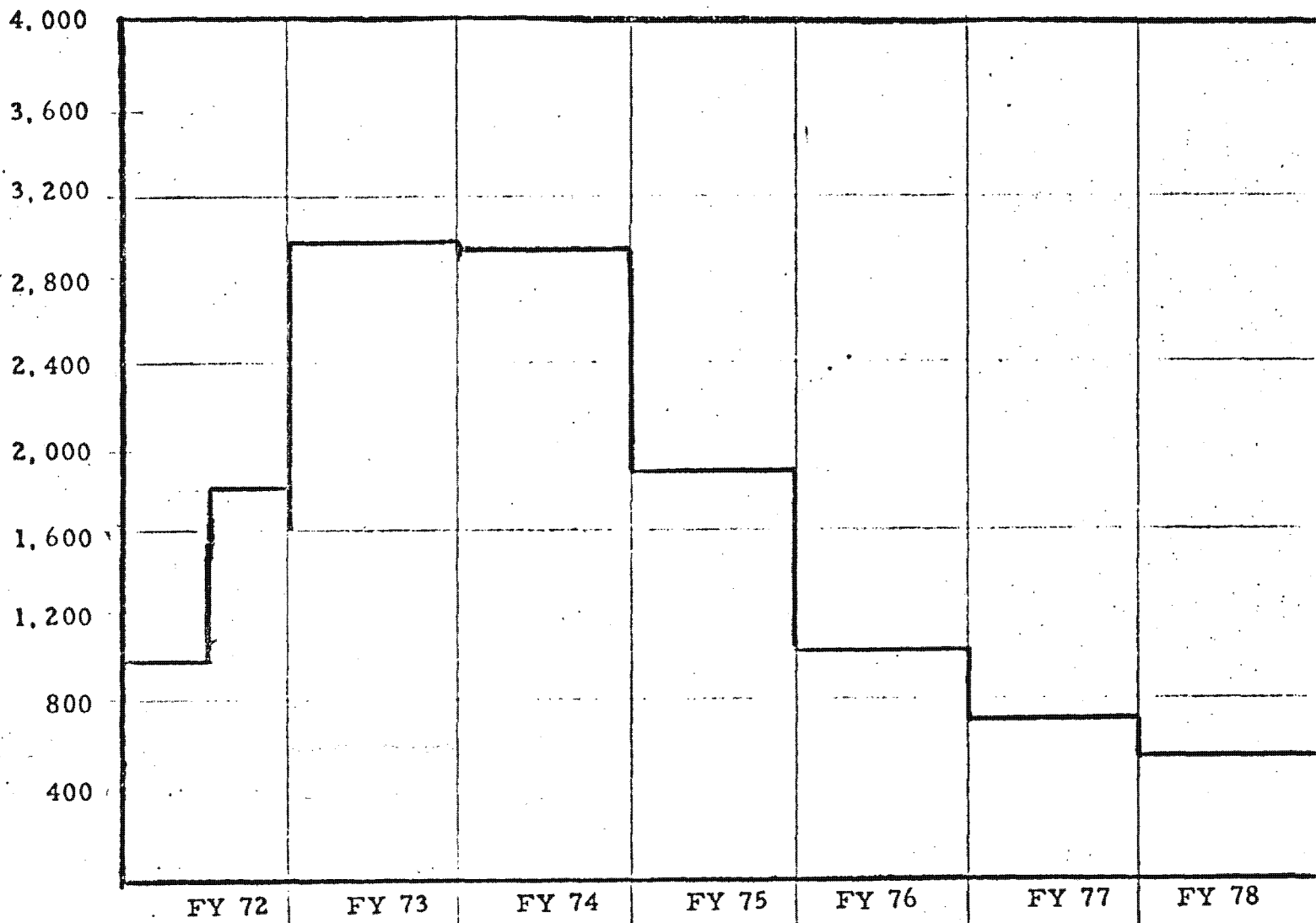
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EOI CONTRACTOR MANLOADING

I/S, O/S, R/F, O/F AND P/F SEGMENTS

FIGURE 5

OPTION I



Note: These figures are based on contractor estimates for development and operations for the basic IOC program.

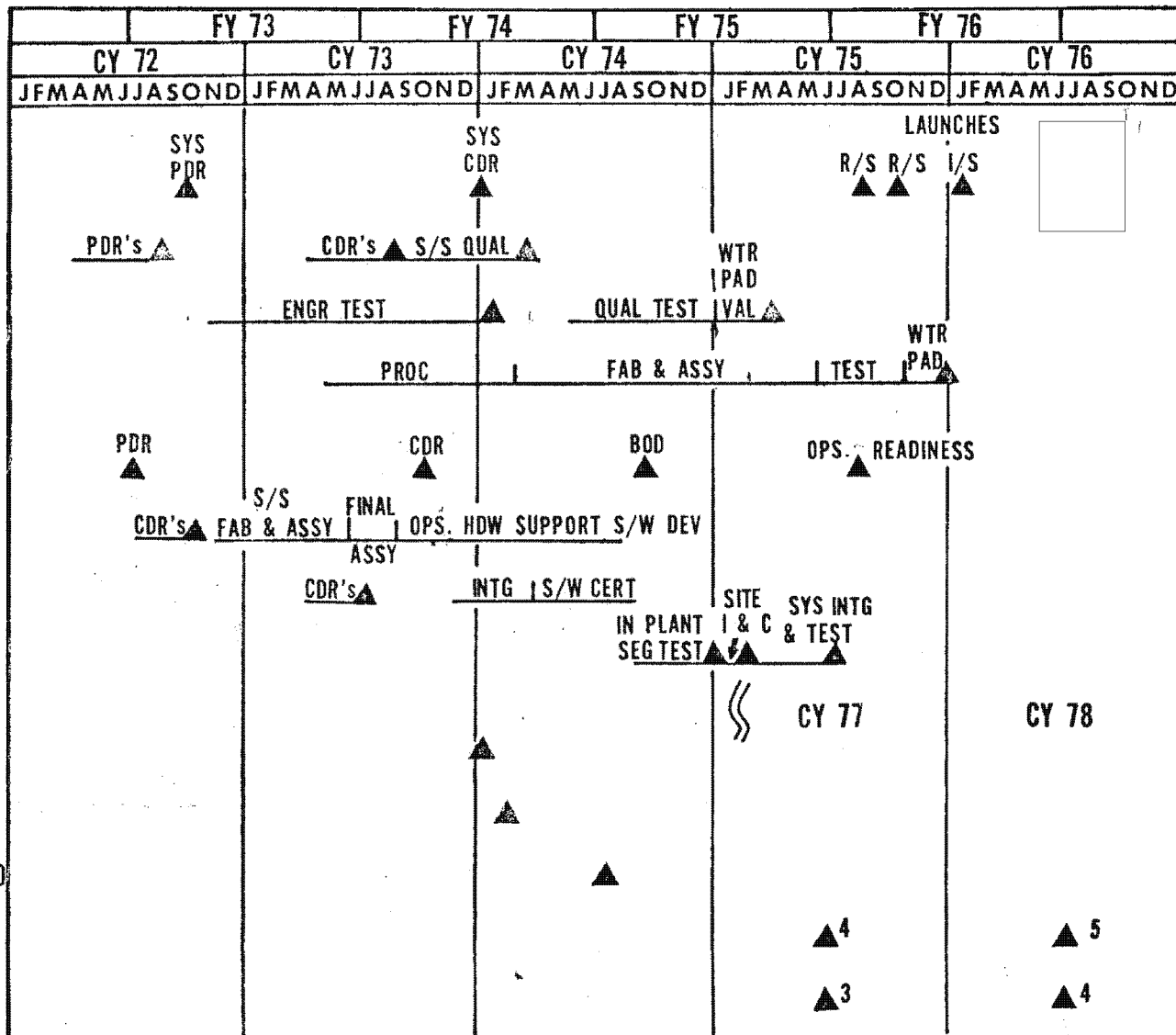
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**FIGURE 6**  
**EOI PROGRAM**  
**OPTION I SCHEDULE**

- I/S SEGMENT*
- MAJOR MILESTONES
- S/S MILESTONES
- TEST
- FLIGHT VEHICLE
- GROUND SEGMENT*
- MAJOR MILESTONES
- HARDWARE
- SOFTWARE
- TESTING
- FOLLOW-ON PROGRAM*
- APPROVAL REQUIRED
- ISSUE RFP's
- CONTRACTOR (S) GO-AHEAD
- AVAILABLE FOR LAUNCH
- PLANNED LAUNCH



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EOI PROGRAM PLANOPTION IIINTRODUCTION

The Electro-Optical Imaging System is configured for continuous capability to obtain high quality imagery to satisfy both the Technical Intelligence and Strategic Intelligence requirements. The system provides daily access to all Sino-Soviet targets. The principal elements of the system consist of the following segments: Imaging Satellites (I/S), Relay Satellites (R/S), Receiving Facility (R/F), Operations Facility (O/F) and Processing Facility (P/F). Implementation of the system will consist of installation of the three ground facilities in the [redacted] activation of the R/S net and launch of the I/S into the required elliptical, sun-synchronous orbit. The O/F will have a capability of commanding the I/S through a R/S to acquire the desired targets. As the I/S accesses the target of interest, the data will be transmitted in real time via a R/S to the R/F. The data will be transferred from the R/F to the P/F where the information will be reconstructed for initial photointerpretation. Production and distribution of imagery for community users will be accomplished after the initial interpretation.

The baseline schedule has been established for a FY 72 and 73 funding limited program. The goal is achievement of an Initial Operational Capability in 1976. The principal milestones for achieving operational capability are: start system acquisition, 1 December 1971; start R/F installation, October 1974; complete ground facilities, July 1975; launch R/S #1, August 1975; launch R/S #2, October 1975; launch I/S #1, January 1976.

The following sections of the Program Plan describe the necessary management activities, system implementation procedures and funding requirements to achieve the EOI System capability.

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Page One

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MANAGEMENT PLAN

The EOI System Program Office has been established to implement the operational system. The EOI System Program Office has been staffed to carry out the full responsibilities of managing the development, testing and operation of all the segments of the system. Management and technical direction for the system acquisition will be developed and implemented by the organization shown in Figure 1. Project Managers for each element of the organization will be responsible for the necessary planning, analysis and engineering efforts to meet the system development milestones. Authorized representatives of each element, designated by the element Project Manager, will participate in all system management meetings. The support activities such as I/S Launch Vehicle Program Office, Western Test Range and others will be designated by the System Management Organization. The authorized representative for each element will have the authority to make decisions and to obligate his organizational element to carry out the necessary actions. System management meetings will include the following system level tasks: scheduling, technical direction, requirement interpretation, performance evaluation, interface definition and cost evaluation as appropriate.

The management of each element of the system organization will be organized to provide the capability for implementing those responsibilities assigned to each element in accordance with the overall system plans and schedules. Activities within each element are to be controlled by the responsible element Project Manager. Scheduling and reporting will be structured to support integration of each element into the overall system.

SYSTEM IMPLEMENTATION/FUNDING

Since contractor proposals did not consider alternative funding options, detailed schedules based on limited FY 72 and 73 costs are not available. It is possible to adjust the contractor cost submittals, however, since every element of cost was identified for management, engineering, fabrication and test at system, segment and subsystem levels.

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In order to accommodate to the limited FY 72 and 73 funding values, system and subsystem activities must be sharply curtailed in FY 72. This results in delays of most milestones as compared with Option I and since FY 73 is also funding limited, it is not possible to accelerate sufficiently to start component and subsystem qualification testing in time to support early segment qualification efforts. The delay of segment qualification will cause overlap of that activity with flight vehicle acceptance testing.

Ground segment work will also be restricted in the first two years and time available for check-out and training will be reduced. It may be possible to recover some on-site time by reducing factory check-out cycles but the risk of costly rework will increase. Work-around plans for software development and test will be essential to avoid having operations be on the critical path.

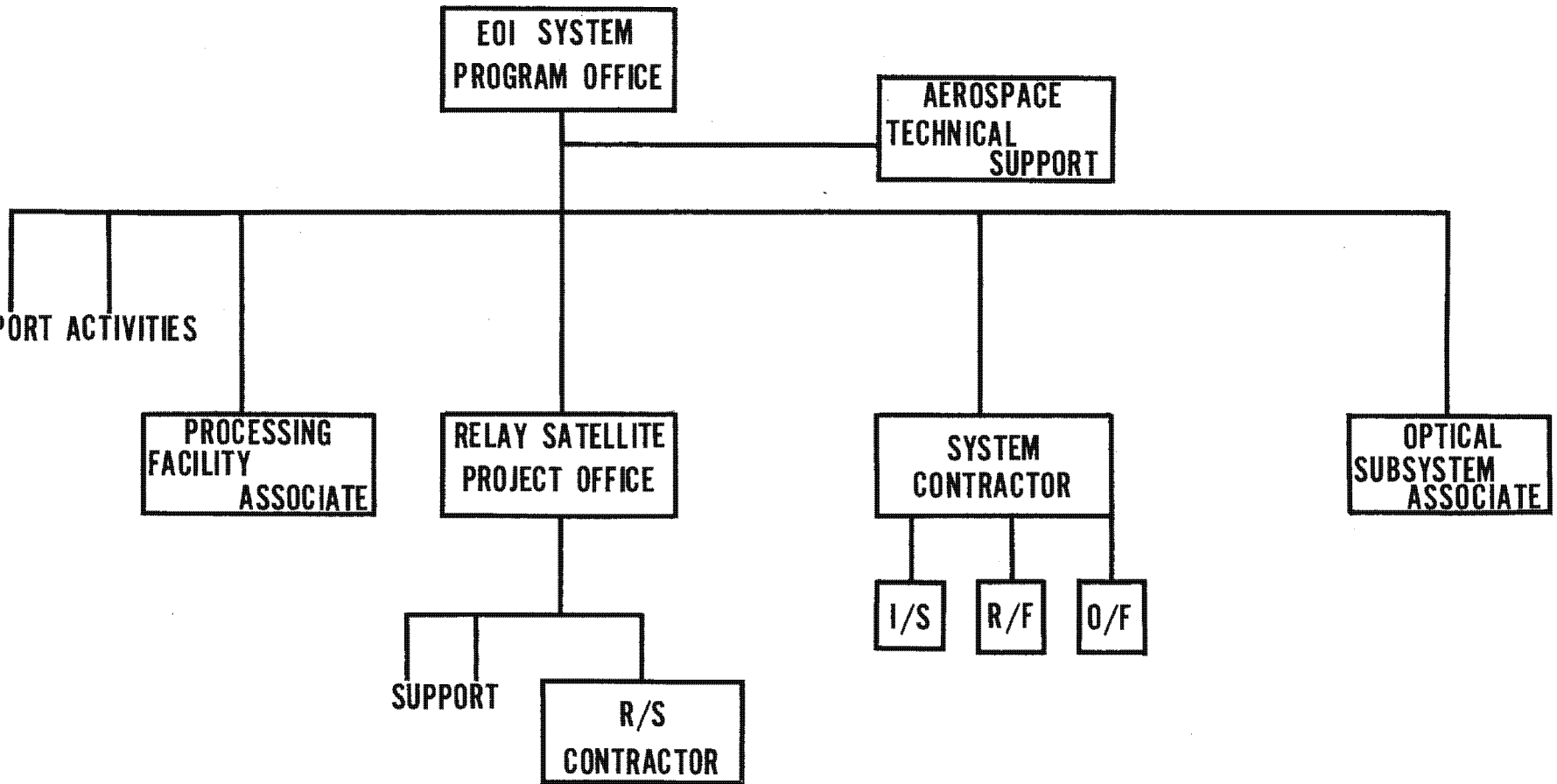
The peaking of program effort in FY 74 will require careful management attention to achieve objectives while at the same time controlling costs. The sharp reduction of effort in FY 75 will also require tight controls and significant contractor manpower reductions. Tables 1 through 3 present the funding data and Figure 2 is an estimate of contractor manloading.

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FIGURE 1

EOI SYSTEM MANAGEMENT ORGANIZATION



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EOI COST SUMMARY

ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JAN 1976

TABLE 1

OPTION #4

	<u>ϕ II</u> <u>FY 72</u>	<u>Acq. ϕ</u> <u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 78</u>	<u>TOTAL</u>
A. Development									
B. Operation									
Sub-Total									
C. Follow-On									
D. Engineering Changes									
Total									
E. R/S (Dedicated)									
Total									

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ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JAN 1976

TABLE 2

OPTION II

DEVELOPMENT DETAILS

	<u>II</u>	<u>Acq.</u>	<u>FY73</u>
	<u>FY72</u>	<u>FY72</u>	
1. I/S			
System Management			
Segment Management			
Segment Engineering			
Assembly & Test			
Launch Support			
Communication S/S			
Transducer S/S			
Attitude Control S/S			
Command & Control S/S			
Propulsion Reaction Control S/S			
Deorbit S/S			
Electrical Power & Distr			
Structure Mechanism S/S			
Thermal Control S/S			
Total I/S			
2. Optical S/S			
3. R/F - O/F			
R/F			
O/F			
Total R/F - O/F			
4. P/F			
5. Launch Vehicle			
6. Miscellaneous			
Mirror Blanks & Itek			
Tech Cons. & ICP			
Phase II			
Total Development			

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EOI DETAILED COST SUMMARY

ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JAN 1976

TABLE 3

OPTION II

OPERATION DETAILS

	II FY72	Acq. FY72	FY73
1. I/S			
Communication S/S			
Transducer S/S			
Attitude Control S/S			
Command & Control S/S			
Propulsion Reaction Control S/S			
Electrical Power & Distr			
Total I/S			
2. Optical S/S			
3. R/F - O/F			
4. P/F			
5. Launch Vehicle			
6. Miscellaneous			
Total Operation			

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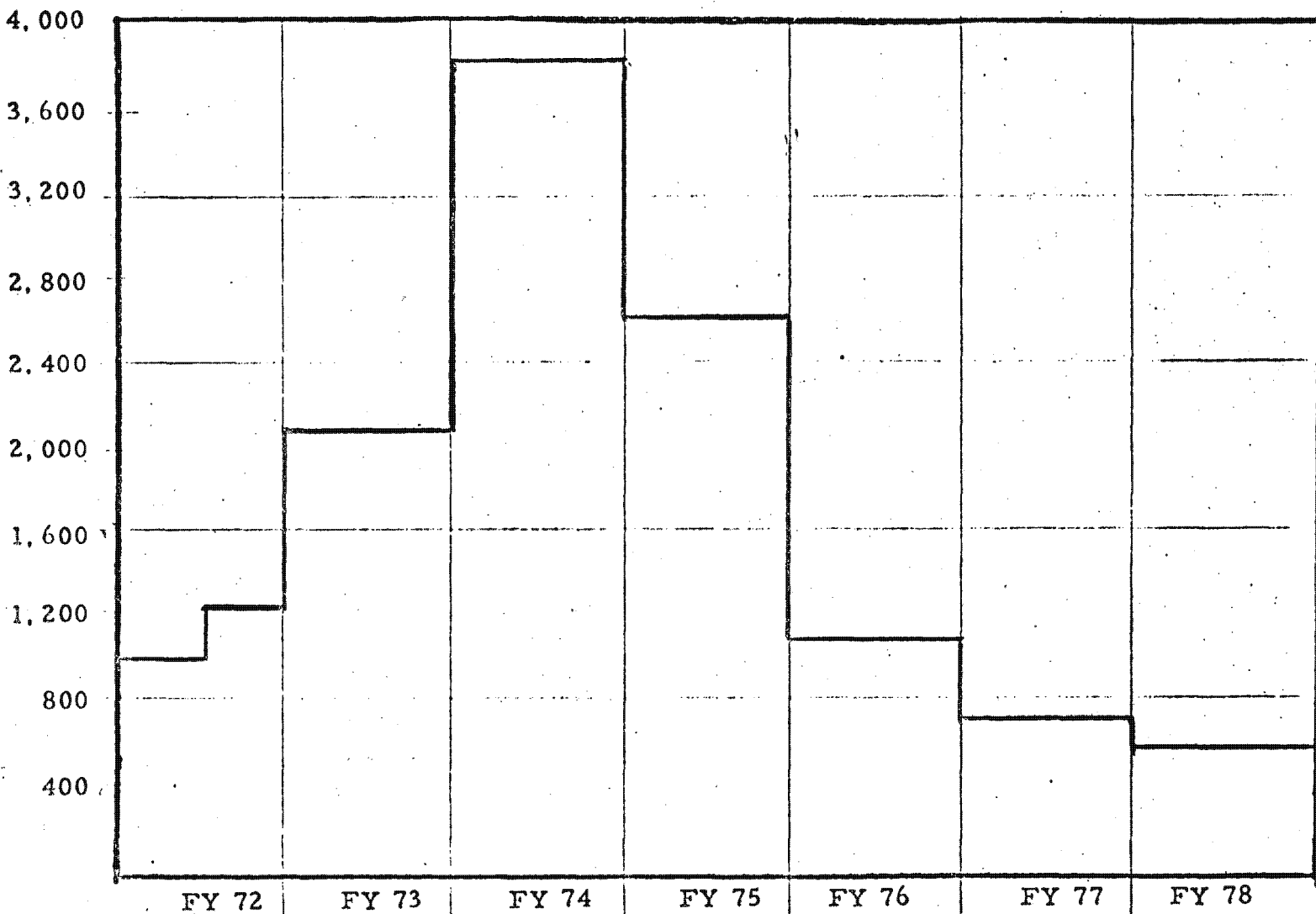
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EOI CONTRACTOR MANLOADING

I/S, O/S, R/F, O/F AND P/F SEGMENTS

FIGURE 2

OPTION #4



MAN YEARS

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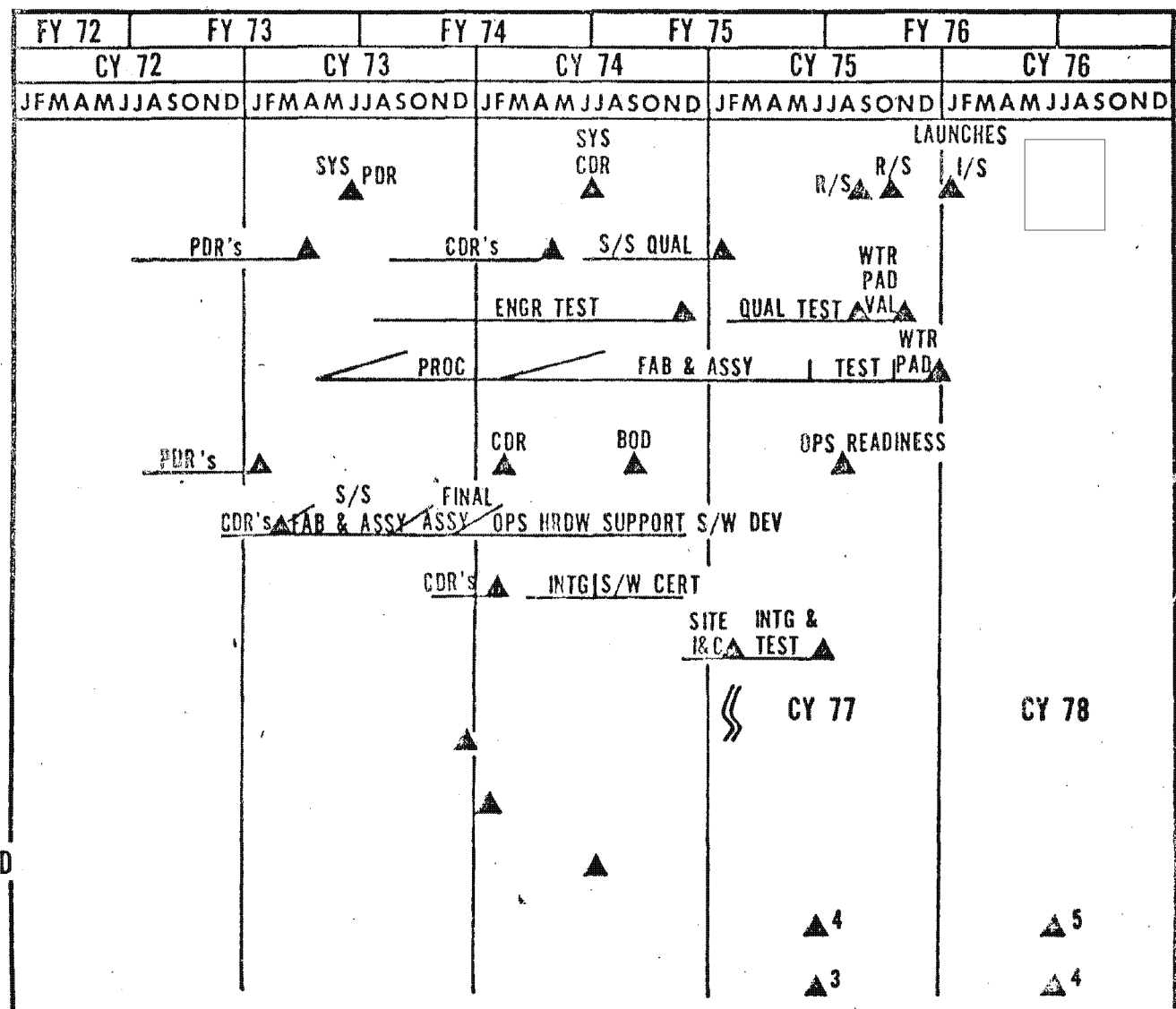
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FIGURE 3  
 EOI PROGRAM  
 OPTION #4 SCHEDULE

**I/S SEGMENT**  
 MAJOR MILESTONES  
 S/S MILESTONES  
 TEST  
 FLIGHT VEHICLE  
**GROUND SEGMENT**  
 MAJOR MILESTONES  
 HARDWARE  
 SOFTWARE  
 TESTING  
**FOLLOW-ON PROGRAM**  
 APPROVAL REQUIRED  
 ISSUE RFP's  
 CONTRACTOR (s) GO-AHEAD  
 AVAILABLE FOR LAUNCH  
 PLANNED LAUNCH



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5 November 1971

EOI PROGRAM PLANOPTION IIIINTRODUCTION

The Electro-Optical Imaging System is configured for continuous capability to obtain high quality imagery to satisfy both the Technical Intelligence and Strategic Intelligence requirements. The system provides daily access to all Sino-Soviet targets. The principal elements of the system consist of the following segments: Imaging Satellites (I/S), Relay Satellites (R/S), Receiving Facility (R/F), Operations Facility (O/F) and Processing Facility (P/F). Implementation of the system will consist of installation of the three ground facilities in the [redacted] activation of the R/S net and launch of the I/S into the required elliptical, sun-synchronous orbit. The O/F will have a capability of commanding the I/S through a R/S to acquire the desired targets. As the I/S accesses the target of interest, the data will be transmitted in real time via a R/S to the R/F. The data will be transferred from the R/F to the P/F where the information will be reconstructed for initial photointerpretation. Production and distribution of imagery for community users will be accomplished after the initial interpretation.

The baseline schedule has been established for a combined NRP-Relay Satellite funding limited program. The best goal achievable with this option is Initial Operational Capability in mid to late 1976. The principal milestones for achieving operational capability are: start system acquisition, 1 December 1971; start R/F installation, November 1974; complete ground facilities, December 1975; launch R/S #1, January 1976; launch R/S #2, March 1976; launch I/S #1 not earlier than June 1976.

The following sections of the Program Plan describe the necessary management activities, system implementation procedures and funding requirements to achieve the EOI System capability.

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MANAGEMENT PLAN

The EOI System Program Office has been established to implement the operational system. The EOI System Program Office has been staffed to carry out the full responsibilities of managing the development, testing and operation of all the segments of the system. Management and technical direction for the system acquisition will be developed and implemented by the organization shown in Figure 1. Project Managers for each element of the organization will be responsible for the necessary planning, analysis and engineering efforts to meet the system development milestones. Authorized representatives of each element, designated by the element Project Manager, will participate in all system management meetings. The support activities such as I/S Launch Vehicle Program Office, Western Test Range and others will be designated by the System Management Organization. The authorized representative for each element will have the authority to make decisions and to obligate his organizational element to carry out the necessary actions. System management meetings will include the following system level tasks: scheduling, technical direction, requirement interpretation, performance evaluation, interface definition and cost evaluation as appropriate.

The management of each element of the system organization will be organized to provide the capability for implementing those responsibilities assigned to each element in accordance with the overall system plans and schedules. Activities within each element are to be controlled by the responsible element Project Manager. Scheduling and reporting will be structured to support integration of each element into the overall system.

SYSTEM IMPLEMENTATION/FUNDING

Since the required funding for Option II exceeds the [ ] NRP-plus-DRS limit of Option III, contractor costs were re-examined and reallocated to meet the required FY total dollar programming. It became clear that even with an increase of the NRP budget to [ ] in FY 73, limitation to a similar amount in FY 74 to meet the [ ] total makes a January 1976 I/S launch not feasible. The risk of launching I/S #1 prior to completion of qualification might be considered acceptable but even with a success-oriented schedule, adequate development testing could not be accomplished to support final design decisions.

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After the EOI System Program Office revised milestones to be compatible with available funding, SAMSO was requested to review their estimates based on an Initial Operational Capability not earlier than June 1976. Since no constraints other than launch dates were applied, SAMSO utilized a plan involving minimum risk and retained the same funding plan as Options I and II. NRP FY 73 through 75 are influenced as shown in the cost tabulations and the conclusion that the first I/S launch must slip to mid 1976 was substantiated. Schedule problems for the ground segments and software development efforts are similar to Option II.

Technical risks associated with this option are similar to Option II; however the FY funding levels are more uniform and, therefore, some of the difficult program control problems associated with Option II are not presented here. Tables 1 through 3 present the funding requirements and Figure 2 is an estimate of contractor manloading.

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EOI COST SUMMARY

11/3/71

ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JUN 1976

OPTION III

TABLE 1

FY72    FY72    FY73    FY74    FY75    FY76    FY77    FY78    TOTAL

A. Development  
B. Operation  
    Sub-Total  
C. Follow-On  
D. Engineering Changes  
    Total  
E. R/S  
    Total

--	--	--	--	--	--	--	--	--

Rest

ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JUN 1976

TABLE 2

OPTION III

DEVELOPMENT DETAILS

	FY72	FY72	FY73
1. I/S			
System Management			
Segment Management			
Segment Engineering			
Assembly & Test			
Launch Support			
Communication S/S			
Transducer S/S			
Attitude Control S/S			
Command & Control S/S			
Propulsion Reaction Control S/S			
Deorbit S/S			
Electrical Power & Distr			
Structure Mechanism S/S			
Thermal Control S/S			
Total I/S			
2. Optical S/S			
3. R/F - O/F			
R/F			
O/F			
Total R/F - O/F			
4. P/F			
5. Launch Vehicle			
6. Miscellaneous			
Mirror Blanks & Itek			
Tech Cons. & ICP			
Phase II			
Total Development			

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EOI DETAILED COST SUMMARY

ACQUISITION PHASE GO-AHEAD DEC 1971

FIRST FLIGHT JUN 1976

TABLE 3

OPTION III

OPERATION DETAILS

	<u>II</u> <u>FY72</u>	<u>Acq.</u> <u>FY72</u>	<u>FY73</u>
1. I/S			
Communication S/S			
Transducer S/S			
Command & Control S/S			
Electrical Power & Distr			
Total I/S			
2. Optical S/S			
3. R/F-O/F			
4. P/F			
5. Miscellaneous			
Total Operation			

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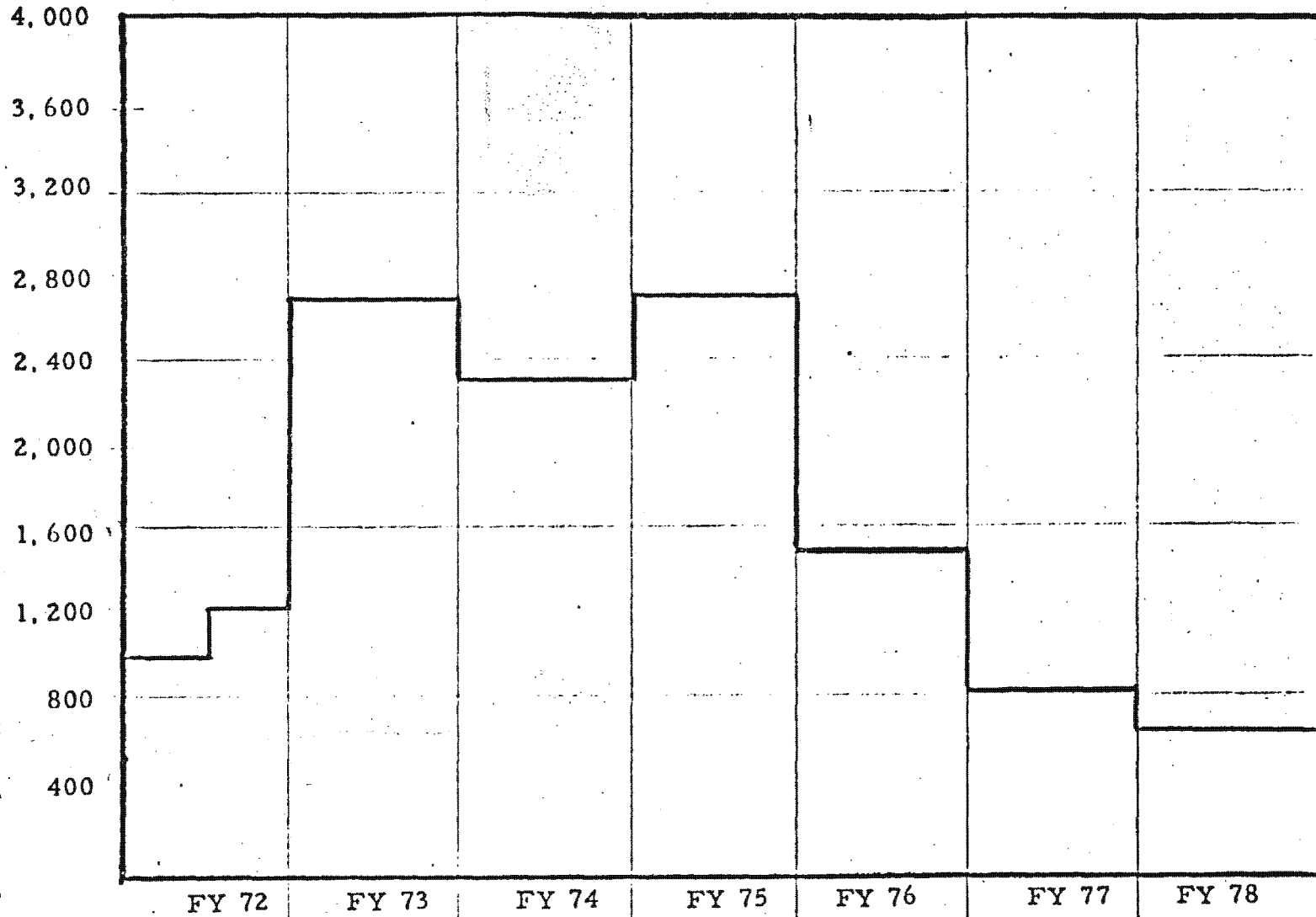
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EOI CONTRACTOR MANLOADING

I/S, O/S, R/F, O/F AND P/F SEGMENTS

FIGURE 2

OPTION III



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