ATTACHMENT 10

PHASE I SYSTEM DEFINITION GUIDELINES

1.0 INTRODUCTION

This attachment provides guidelines to be utilized by contractors in conducting Phase I System Definition studies for the EOI System. The primary objectives of these studies are to:

a) Develop preliminary designs for both a Configuration A and a Configuration B system option

b) Develop preliminary subsystem designs

c) Develop comprehensive cost and schedule data

d) Provide the basis for selecting contractors to conduct Phase II System Definition studies

2.0 CONTRACTOR INTERFACING

The following ground rules shall be adhered to by all prime system and Processing Facility contractors participating in Phase I System Definition studies.

2.1 Technology Contractors

All visits to technology contractors will be at the request of a prime system or P/F contractor only. There is no limit on the number of such visits, and there will be no Program Office participation. However, prior

notification to the Program Office and security clearances are required for each visit.

All visits with technology contractors shall be conducted at the TOP SECRET/ZAMAN level and under no circumstances shall contacts be made with persons other than those approved by the Program Office.

The current list of technology contractors for which meeting approval may be obtained are listed below according to the subjects approved for discussion. Any additions to this list will be provided as available.

2.1.1 Communication Components/Technology

2.1.3 Tape Recorder Technology

(TBD)

2.1.4 Traveling Wave Tube

2.1.5 Antennas

2.2 Prime System - P/F Contractor Interfaces

All visits will be at the request of a prime system or P/F contractor only. There is no limit on the number of such visits, and there will be no Program Office participation. However, prior notification to the Program Office and security clearances are required for each visit. All discussions shall be conducted at the TOP SECRET/ZAMAN level.

2.3 Transducer and Optics Contractors

2.3.1 Prime System Contractor Visits

The Program Office will schedule, make appropriate arrangements for and monitor prime system contractor visits with the transducer and optics contractors. The schedule of interface meetings is listed below. Under no circumstances will other contacts with either the transducer or optics contractor be permitted.

	Full Day	Half Day	Full Day	Half Day	Full Day	Half Day	Full Day	Half Day
Transducer								
[redacted]	9-15	10-20	9-24	10-20	9-8	10-13	9-9	10-13
	9-22	10-23	9-29	10-23	9-18	10-16	9-17	10-16
Optics								
[redacted]	9-17	10-22	9-23	10-22	9-10	10-15	9-11	10-15

2.3.2 P/F Contractor Visits

The Program Office will schedule, make appropriate arrangements for and monitor visits of the P/F contractors with the transducer contractors. The schedule of interface meetings is listed below. Under no circumstances will other contacts with the transducer contractor be permitted. There will be no contact permitted with the optics contractors.

Transducer	Full Day	Full Day	Full Day
[redacted]	9-22	9-23	9-17
	9-17	9-16	9-15

2.4 Uncleared Suppliers

All contractor contacts with uncleared suppliers shall be at their own request. Prior notification to the Program Office is required for each company to be contacted.

2.5 Program Office Presentations

The Program Office will provide presentations at Headquarters according to the schedule, attendees and topics listed below.

Subject		
Image Quality Performance Program	All prime & P/F	10-7-70 (half-day)
Program Schedule	All prime & P/F Optics, Transducers	10-7-70 (half-day)
[redacted]	All prime only	10-8-70 (half-day)
TWT/Antennas	All prime only	10-8-70 (half-day)

3.0 COMMUNICATION LINKS

The purpose of this section is to define the nomenclature calculation format and frequency assignment criteria to be used in all studies of the communication links between the I/S, the R/S and the R/F. The guidelines presented herein have been adopted as standard by the Program Office. It is imperative that these established guidelines be adhered to throughout System Definition by all contractors.

Information presented in this section is specifically directed toward a two relay, double-hop R/S segment for a wide band image data rate of [redacted] and hence is directly applicable to the Configuration A system option. In the case of Configuration B system option studies, it is desired that the pertinent nomenclature, calculation format and frequency assignment criteria be utilized wherein possible.

3.1 Link Nomenclature

The identification of all links are shown in Figure 3-1 for the two relay, double-hop R/S segment. All services to be provided by these links are defined with link number subscripts and are listed in Table 3-1. All of these services need not be used and others may be added by using additional subscripts, depending upon the configuration being analyzed. However, this scheme of identification is to be utilized for all references to the communication links.

3.2 Link Calculations

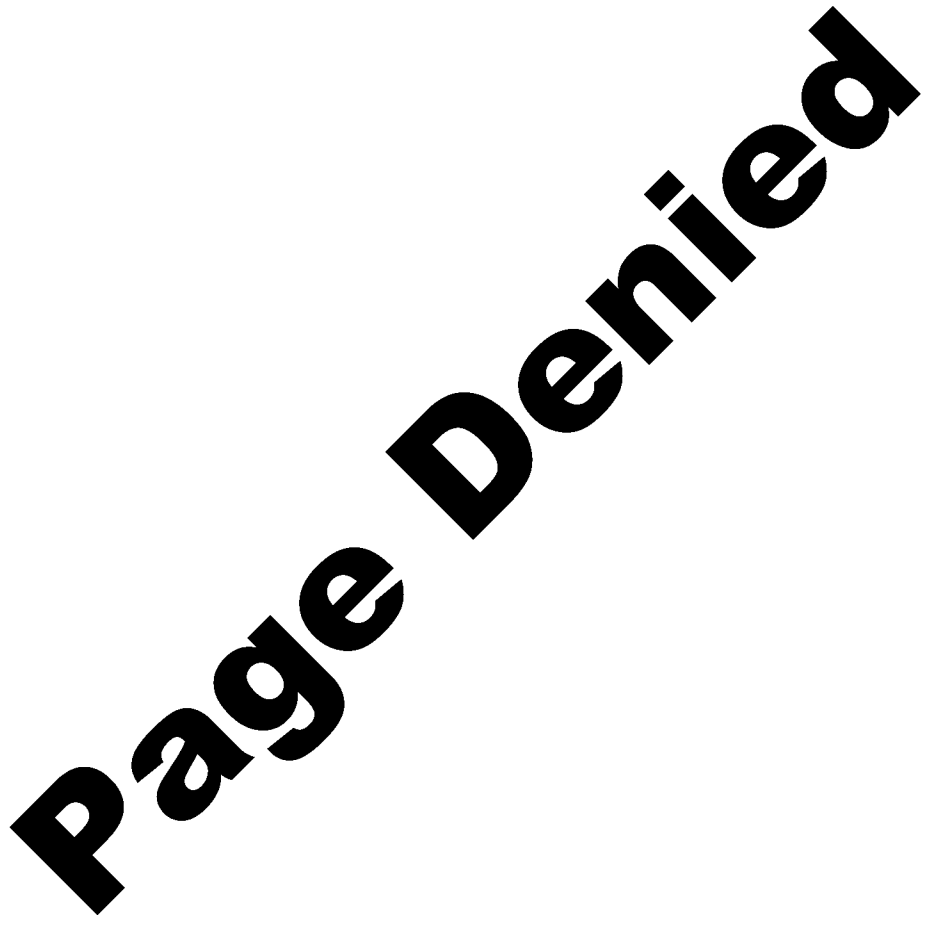
The Link Calculation Definitions and Link Calculation Form of Figure 3-2 shall be used when performing calculations to assess individual and composite link margins for each communication service provided.

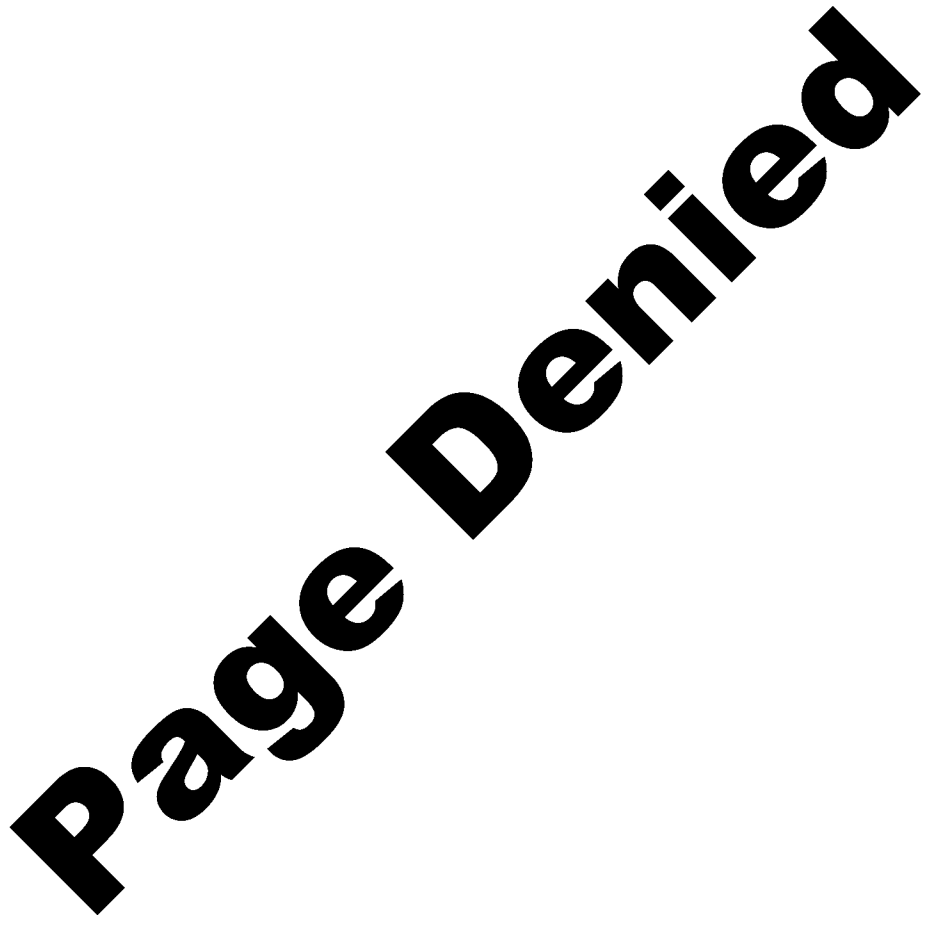
3.3 Frequency Assignment Criteria

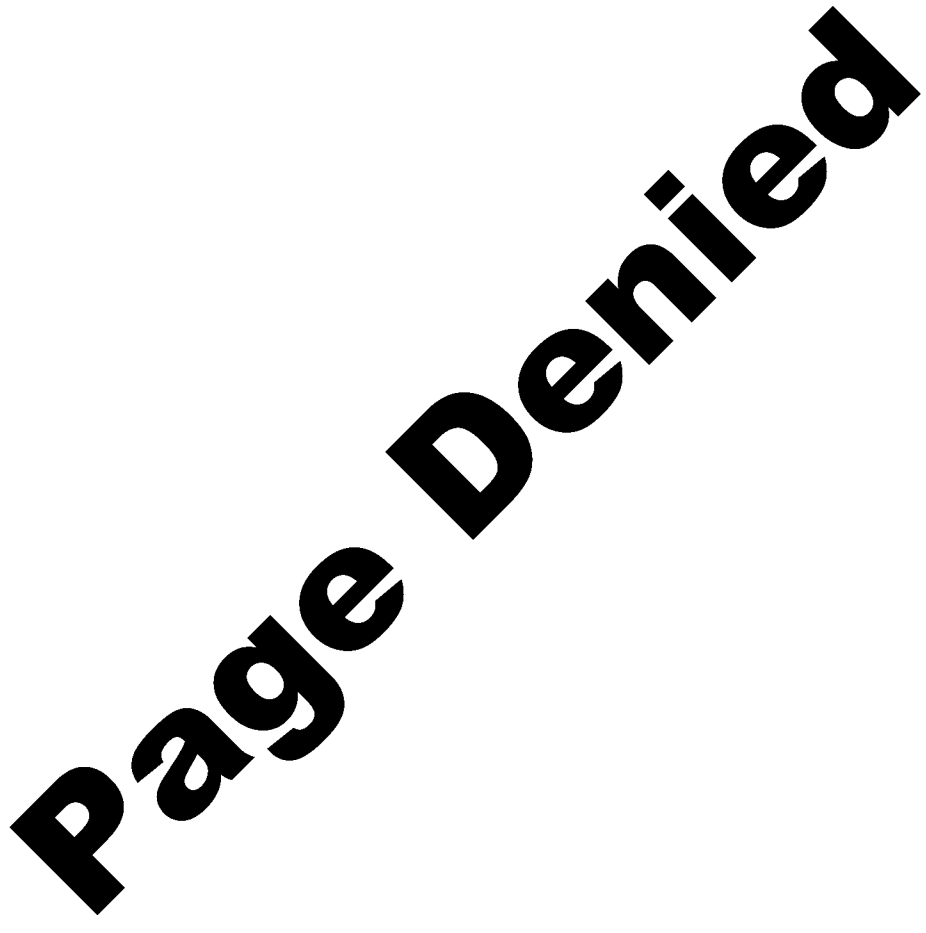
The frequency assignment criteria contained in "Frequency Assignment Criteria," 28 July 1970, Bif 107 20068-70A shall be utilized for the establishment of a coordinated set of criteria to be used in the selection of a frequency plan for the Electro-Optical Imaging System in conjunction with the Relay Satellite segment. It is imperative that I/S to R/S to R/F links use specific frequencies that are

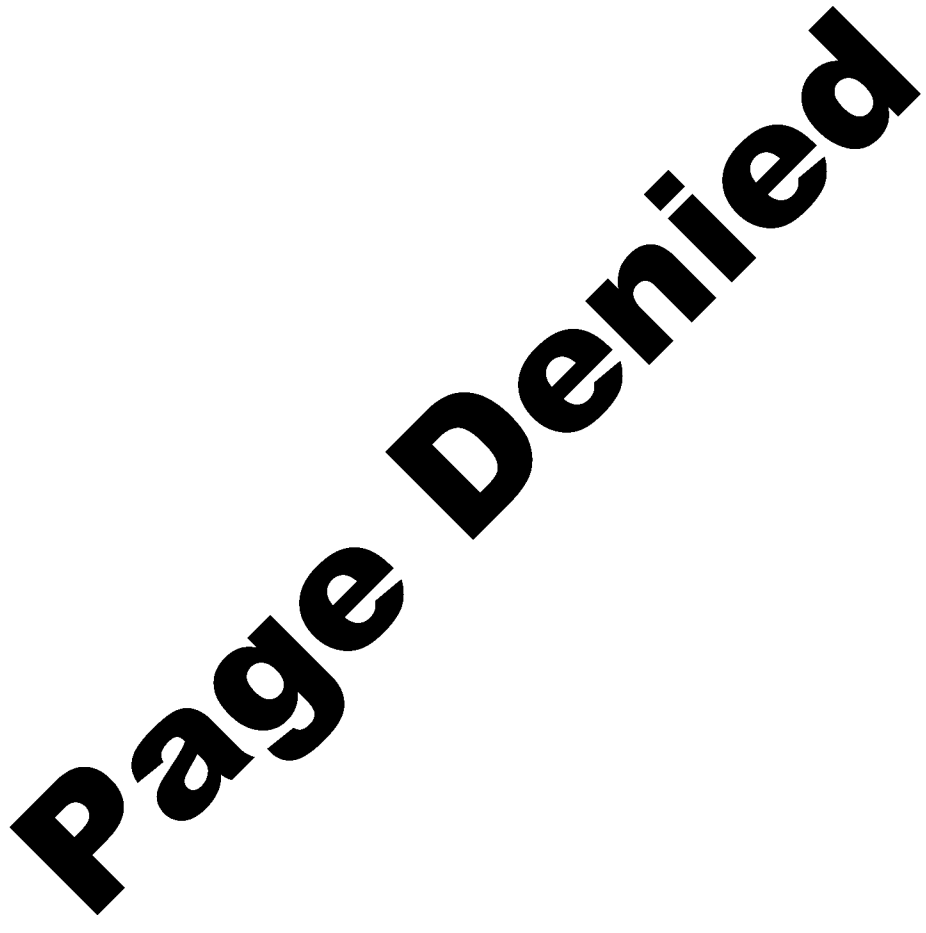
compatible from a total EOI system standpoint and which will permit the achievement of desired performance and privacy.

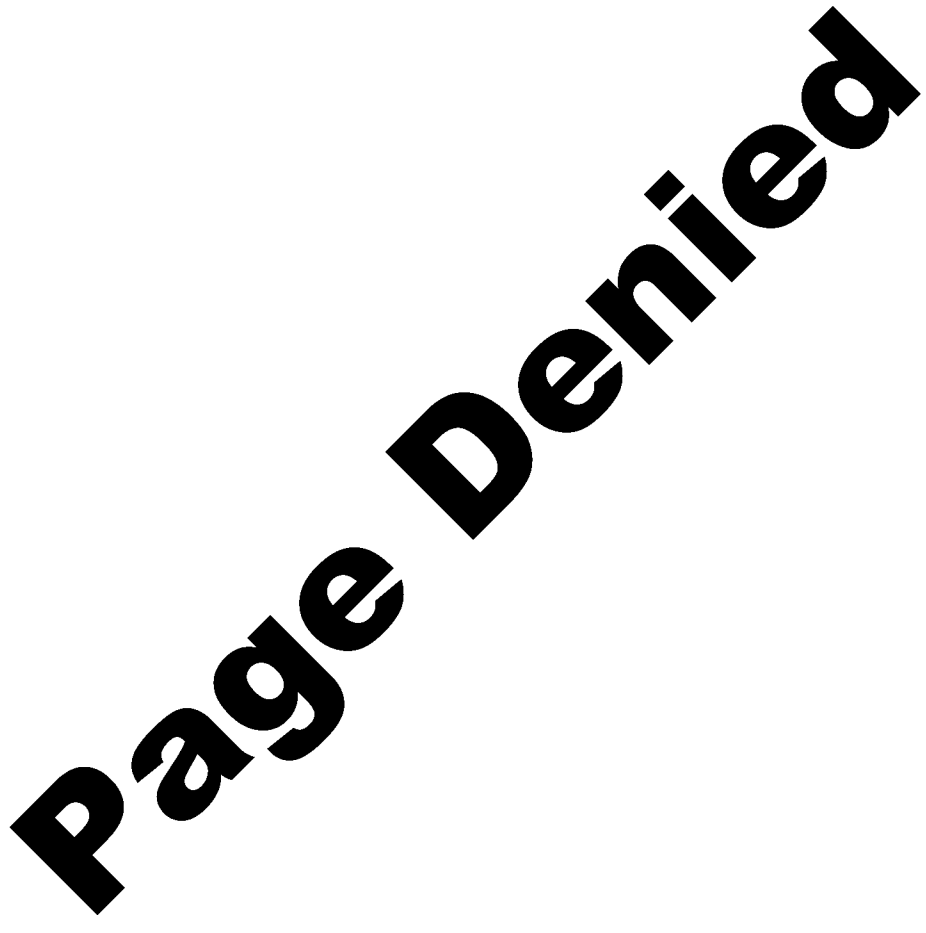
The major guidelines in establishing these criteria are to (1) avoid designing an electro-magnetic incompatibility into the system, (2) take maximum advantage of the protection afforded by the atmospheric oxygen absorption, (3) provide minimum loss in the wide band data channel and (4) not preclude the use of solid state oscillators (powers up to approximately 100 mw) for the tracking, telemetry and command services.

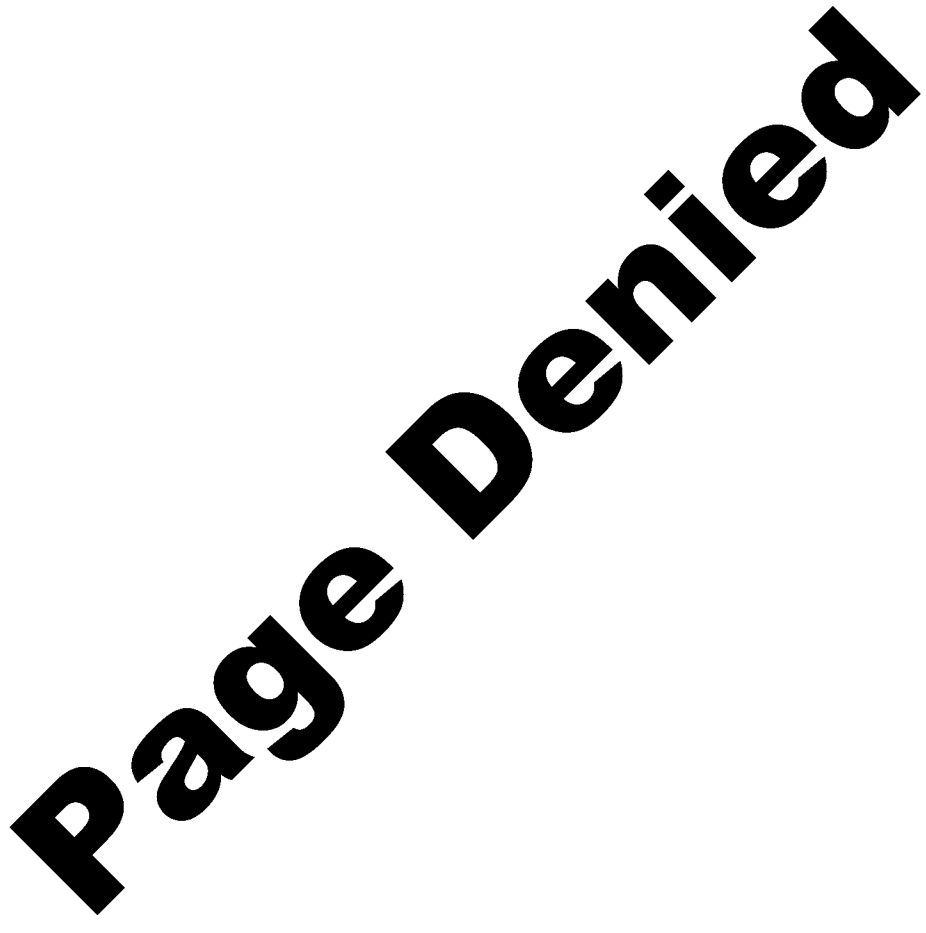












5.0 PHASE I SYSTEM DEFINITION EVALUATION

5.1 General

This section summarizes some of the criteria which will be used in the evaluation of the contractors Phase I work.

5.2 Basis for Evaluation

The basis for evaluation will be established from:

- Contractor's system study reports delivered at the completion of the System Study Phase.
- Phase I outputs including System Configuration study report, Preliminary Performance Requirements specification, Design Studies and Phase II Preliminary Plan.
- Contractor site visit after Phase I delivery.

5.3 Factors of Evaluation

The factors of evaluation include the demonstrated adequacy of the contractor's Phase I work in response to the specific set of tasks called out in the statement of work. Another factor included will be the demonstrated potential of the contractors to perform managerially and technically in both Phase II of System Definition and the System Acquisition Phase.

5.4 Criteria of Evaluation

The criteria of evaluation will include measures related to the contractor's engineering approach and understanding and management qualification.

5.4.1. Engineering Approach Measures

System Design

- o Understanding of performance requirements for basic mission success.
- o Arrival at a system design through logical trades that include alternatives versus cost.
- o Presentation of contractor's story in a manner that allows evaluation of mission/performance/cost factors.
- o Performance of experimental work to verify parameter selection.

Segment Design

- o Level of substantiation of performance characteristics data through comprehensive analysis.
- o Degree of assurance in design-to-cost values compatible with funds available versus time.

- Innovation and creativity and flexibility in test planning.
- Consideration of parallel developments in critical or high risk areas.
- Demonstrated understanding that proposed verification tests, in fact, confirm performance requirements.
- Degree of practicality and realism in software development considering function, equipment, schedules and costs.
- Demonstration of a practical approach to interface definition and controls.
- Demonstration that the specification preparation includes the technical quality and completeness required to implement the next phase.

Subsystem Design

- Degree of substantiation of subsystem performance.
- Demonstrated design compatibility with the allocated power, weight, etc. and budgets.

- Degree of realism in the incorporation of performance margins considering cost and risk assessments.

- Identification of unique solutions involved that warrant special recognition.

- Degree of subsystem interface definition and control.

5.4.2 Management Qualification Measures

Organization

- Degree to which the contractor has structured his organization to be able to commit his company quickly and authoritatively.

- Amount of applicable experience incorporated in his organization.

- Degree of minimization of the matrix influences of company structure.

- Indicated commitment of management personnel with evidence of stability of assignments.

Relation of Work Load to Available Capacity

- Availability of qualified personnel to meet schedule buildup.

- Identification and adequacy of production and test facilities to be used.

Previous Experience

- Degree of success in similar or related work.
- Evidenced capability to undertake large programs requiring an integration role.
- Ability to adhere to program schedules.
- Demonstrated ability to control sub-contractors.
- Evidence of the contractor's ability to control changes in a program cost effective manner.
- Evidence of ability to comply with customer technical direction and reporting requirements.

Security

- Demonstrated knowledge of security requirements of the program.
- Degree of cooperation with all customer requirements for security.

o Evidence that the contractor has implemented effective security measures on his own.