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FBIS

OPERATION AND MAINTENANCE

(O&M)

R.O.M.

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1.0 INTRODUCTION

1.1 PURPOSE

This document will discuss the currently proposed Operations and Maintenance support concept. This concept covers the Integrated Logistic Support Group's best estimate of the support required for the Foreign Broadcast Information Service (FBIS) modernization operation and maintenance through the life of the system. This estimate is based on the system as it is proposed at this time.

The document will also discuss the proposed strategy to define, develop, and implement an Operation, Maintenance, and Logistic Plan (OM&LP) for the FBIS system modernization. The OM&LP will be the device which analyzes and documents the required strategy and plans to perform the support required to operate and maintain the system through the life of the plan. As such it will further define the information and data presented in the operation and maintenance estimate of this document.

The strategies and processes of the OM&LP will be in accordance with DRD M18 of the contract. This document has been developed based on the information which is currently available. Further definition of the operation and maintenance estimates, strategy, plans, and the actual OM&LP will be performed as part of the development process.

As with all systems of this nature, the design and concepts are very volatile and any plan to support them will have to maintain a high degree of flexibility. The aim of this document is to develop an operation and maintenance estimate for current use, and a proposal for developing an OM&LP when the system is built which will maintain a flexible approach and still complete the tasks required.

Logistics support is available through a wide variety of approaches. The approaches presented here are chosen based on current assumptions and best practice methodology. As the system becomes more defined the proposed strategy will remain flexible to re-evaluate the approaches and continue to select the best possible means of support.

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2.0 OVERVIEW

2.1 SPECIAL CONSIDERATIONS

One major difficulty in developing a logistics plan for the FBIS modernization is the geographical diversity of the sites in the FBIS network. Since most of the equipment is "off-the-shelf", ESL proposes a multi-level maintenance plan to compensate for the wide geographical diversity. Each site will have the capability to perform maintenance to a level in order to maintain a sufficient state of operational readiness so as not to cause mission degradation. Maintenance and logistics support functions that do not have as great an operational impact will be conducted at a higher level, namely at the flagship stations and the headquarters.

It is proposed that the flagship sites (Okinawa, Nicosia), and the headquarters site serve as the major logistics centers for their respective regions. Each of these sites will be equipped sufficiently (spares, special test equipment, etc.) to allow for central management of the logistics process. This will ensure that the required spares/units are available to the appropriate bureaus at the appropriate times. This will also eliminate the necessity of having each bureau carry a full complement of spares it may not need.

The flagship and headquarters sites also have additional maintenance personnel. Since the bulk of the maintenance staff is located at these sites, repair and replacement can be centrally controlled. Additionally, the training requirements will be easier to manage since the majority of logistics and maintenance functions are centrally located.

Another major concern is the level of technical experience of the maintenance personnel. The repair, replacement, and spares philosophies will be an outgrowth of an analysis of the ability of existing maintenance personnel to maintain the system equipment to the required level. In the event that the existing maintenance staff is unable to maintain system equipment to the required level, or if it becomes cost prohibitive, alternative means, i.e., service contracts etc., will be investigated.

The FBIS modernization poses a logistics support challenge. The system is a mix of commercial and industrial equipment with each site having a varying number of equipments. The equipments themselves vary in number from one to many per site. The individual equipment complexities vary from simple to complex; from electronic only to

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electro-mechanical. Further, the level of the maintenance staff will also vary from site to site. The maintenance concept must reflect these variances to be effective. The system will also have a software component. The maintenance plan must involve a configuration management approach to insure all changes, upgrades, and fixes are promulgated through the entire system. In addition, the Operating Systems (OS) and system programs for the computers will be improved over the life of the system. The OM&LP will cover an approach to maintaining a current OS while ensuring the changes to the OS do not impact the operations of existing software.

The FBIS modernization is a challenge in another area. This system will cross geographic, cultural and language borders. As such, the maintenance concept must evaluate these areas for their impact on the proposed system. Any process or system must be designed and developed with these factors in mind. In addition, it must be managed in such a manner as to involve each of the sites as much as possible to keep them a part of the process. The management of change, as applied to the operation and maintenance concept, must be planned and implemented so as to minimize the negative impact of the system. Special care will be taken to minimize the negative concerns of the system, such as; will it work, will it continue to work; can it be supported; how will it affect my job, how do I fit into the system. These concerns will be both in the development of the OM&LP and training.

2.2 PROCESS

The process of developing the OM&LP plan will occur during the preliminary design phase. It will consist of the following elements:

- Review of selected equipment
- Review of existing vendor documentation
(Service manuals, technical manuals, training materials etc.)
- Review of existing vendor world-wide maintenance contracts
- Review of existing FBIS maintenance capabilities
- Determining Test Equipment Requirements
(Based on the above items)
- Development of Spares Philosophy
(Based on the above items)
- Development of Repair/Replacement Philosophy
(Based on above items and existing FBIS capabilities)
- Analysis

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2.2.1 ANALYSIS

The analysis phase will seek to integrate all of the reviews outlined in the preceding paragraph. The outcome of each of the reviews will be the development a spares, repair, and replacement philosophy, along with any modifications to the FBIS training plan. The analysis phase will take into account all customer requirements and concerns and will occur during the Initial Design Phase. The outcome of the analysis phase will be the Preliminary OM&LP.

2.2.2 DOCUMENTATION

A copy of the Preliminary OM&LP will be submitted for customer review and comments prior to the development of the Final OM&LP. It will detail all vendor materials that have been reviewed, and will include, but not be limited to the following items:

- Spares philosophy
- Spares list
- Repair/Replacement Philosophy
- Required test equipment
- Recommendations for site installation and preparation plan

The final OM&LP will be based upon reaction to inputs from the review by the customer modernization program members It will include, but not be limited to the following items:

- Specific O&M requirements
- Final Test Equipment Requirements
- Software O&M responsibility
- Preliminary spares list
- Expendables plan
- Recommended inventory levels
(for all locations)

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3.0 PRELIMINARY OPERATION AND MAINTENANCE ESTIMATES

The following section provides an estimate for comparison of the operation and maintenance effort for the FBIS modernization. The data presented here is an estimate only, based on the best information available at this time. The Logistics Group has performed a brief analysis of the system as proposed based largely on past experience with the types of equipment suggested. The results of this analysis are presented here as an order of magnitude estimate of the effort required for this task. Given the time and the information available the data is a rough approximation of the types of support which will be required to support the system.

The support concept for the FBIS modernization is based on unit replacement at the bureaus as the primary fault isolation and repair process. For those units which cannot be unit replaced because of size or required effort, CCAs, modules or assemblies will be replaced to correct any faults. The failed items will be sent to the bureau's respective flagship station¹. The flagship stations and the headquarters site will function as a depot level maintenance facility. They will perform corrective maintenance and test of the failed units, returning them to spares inventory when they are repaired. The depot sites will also serve to track problems for trend analysis. Devices which require further service will be sent to the appropriate repair center from these depot sites. This allows better tracking and vendor interface since only one authority will be performing this function from each geographical area. The flagship stations will also report to the headquarters site for normal command and control functions. The headquarters site will serve as the clearing house for interfaces with the U.S. manufacturers and vendors supplying services to the system.

This maintenance concept is proposed for three major reasons:

- It minimizes the technical support function at the bureaus.
- It minimizes the test equipment and inventory required at the bureaus.
- It maximizes control and centralizes the high level technical support function at the flagship sites.

¹ Some sites will use the headquarters facility as the next higher level of maintenance, based on geographical location.

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By minimizing the level of maintenance performed at each site, the training and technical competence at the sites can be minimized. As discussed earlier in the special concerns, one of the challenges of this system is the varied level of technical support and the cultural differences at the bureaus. Minimizing the maintenance performed, reduces the level of technical competence required. The bureaus would still be required to fault isolate to the unit level, and perform standard preventive maintenance. Those devices which because of size or level of effort which could not be changed at the unit level would be repaired at the Line Replaceable Unit (LRU); Module, CCA or Assembly. One of the criteria for selection of equipment was the availability of Built In Testing (BIT) or Built In Test Equipment (BITE). This capability allows rapid fault definition and isolation. The BIT capability will be used for both unit isolation and, on those devices which require it, LRU fault isolation.

By using BIT or BITE and unit exchange to fault isolate and repair the bureau systems, the requirements for test equipment, piece/part spares inventory and the associated supply system is minimized. Expensive test equipment or fixtures can be centralized. The requirement to train the staff on the use of the equipment can be minimized.

The centralized maintenance support concept provides better control of inventory and allows management control of the resource. A central maintenance concept provides a tracking capability to the service and maintenance of the equipment. It allows the management of the system to identify and take appropriate action to correct problem areas. This concept also allows the use of a central maintenance group which can be better trained and qualified for the piece part and or LRU repair of the equipment. The special test equipment and fixtures can be acquired for three sites instead of 16.

The depot level maintenance group can select to repair the units or send them to vendor maintenance facilities as required for optimum performance. Calibration, board level repair, or unit repair can be provided by vendor support. The actual OM&LP will cover these options in detail.

The proposed support takes the form of a spares package and a factory support team. The spares package is based on minimum inventory at the bureau sites and a depot level support from the two flagship stations. For practical reasons of geographical position, the headquarters site will also serve as a depot level support group. In addition the headquarters will serve to control the support functions of the bureaus and flagship stations. In this control function it will provide the tracking, support and command functions normal to a headquarters group.

The factory support is estimated for 1 year. Extensions of this cost can be made as required. This support will be in

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the form of a field engineering crew, to aid bureaus in any maintenance problems which cannot be solved internally at the site.

The following sections detail these functions.

3.1 FACTORY MAINTENANCE SUPPORT

ESL proposes to provide a field engineering team to supply the FBIS modernization with a factory trained support staff to aid the bureaus in coming up to speed with the new system. The engineers would be available for on site maintenance and assistance as required to maintain the system for the first year. The first year is normally the period of greatest risk to the program. It is during this period the bureaus will learn how the system is to operate. If the system is to be successful, the bureaus must transition smoothly to the new process and equipment. The field engineering team will aid the bureaus to solve any problems with the maintenance of their systems. They will aid in the follow-on training with on the job training methods and assistance. In addition the engineering crew will supply the technical expertise to follow-up on any technical problems which crop up during this early phase of the system's life cycle. As a system resource, the field support crew will allow the bureaus to request extra support as needed until they feel comfortable with the new system and the procedures required to maintain it.

3.1.1 FLAGSHIP STATIONS

Each of the flagship stations will have one field engineer on site. The engineer will be technically qualified to maintain the system and the various pieces of the system. They will be available to support the maintenance effort at each of the stations as well as to travel to the bureau sites as required for direct support. The estimates provided include an amount for travel to each of the sites during the period of support provided. Travel was estimated with 3 trips to each bureau lasting 1 week to be performed during the one year period.

Under the proposed concept, the bureaus will exchange defective equipments isolated on site and send the defective unit to the flagship. Each of the flagship stations will be responsible for next level maintenance. The field engineers will also be available to support these tasks.

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3.1.2 HEADQUARTERS

The headquarters site will function as both a depot level maintenance group and the normal control group. A field engineer will be stationed at the headquarters site to provide the same function as the engineers at the field sites and to aid in the overall system maintenance task. In addition this engineer will be available to aid the specific headquarters maintenance functions. This field engineer can also serve as the technical liaison for the flagship maintenance staff to the suppliers and vendors in the U.S.

3.2 SPARES

The spares philosophy proposed for the FBIS system at this time revolves around the float concept. This concept uses unit level spares available at each site for exchange with defective units at that site. The defective unit can then be sent to the flagship station for further repair, or vendor support. By centralizing the support effort at this level, the bureau sites can operate with a less qualified maintenance staff. Also, special test equipment and fixtures can be centralized with a minimization of the costs involved. In addition, by centralizing the spares, the number required can be decreased, since each site does not require a complete complement. The concept also allows the allocation of inventory items to critical sites when the quantity available is less than the demand.

This approach also allows the central authority to maintain a better control and tracking of the repair items, failed units and other difficulties which would not be as apparent at the local level. It also simplifies the training and support requirements at the various sites.

The size of the spares inventory will be calculated for "just-in-time" delivery of items, based on bureau sizes, expected transit times, and criticality of the mission. A safety margin will be included to allow for the "unexpected" delays encountered when transferring items internationally.

The following charts are based on acquiring complete floats as identified. The complete units can be used for maintenance troubleshooting at the flagship stations as well as supplying the bureaus with working spares. For items such as the RF and audio matrices, the spare mainframe(s) would be used for troubleshooting the individual cards returned by the bureaus. The factors used for calculating the number of floats for each support period are based on the type of unit (electronic only, electro-mechanical, operator interface, etc.), the number of devices expected at

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each site, and the expected impact to mission accomplishment
a failure would cause.

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4.0 PRELIMINARY OM&LP

The preliminary OM&LP will be generated during the preliminary design phase of the FBIS modernization development process. Delivery of the developed documentation will be with the Preliminary Design Review. The information covered will include the basic maintenance philosophy, required test equipment, facilities requirements, basic spares philosophy, contractor operation and maintenance responsibilities, and expendables management concepts. All of the data will be based on the in-process design of the system, customer requirements, equipment selections and standard maintenance practices. In addition, the special requirements already discussed will influence the strategies and plans submitted as part of this plan.

The preliminary training development and OM&LP development will be performed coincidentally. Since training is directly related to the selected OM&LP the two processes will be closely linked for optimum information transfer.

The preliminary OM&LP provides the outlines and proposed strategies for support of the FBIS modernization for review both internally and by the customer. It will provide enough detail for all parties to determine its applicability to the system and its fulfillment of the customer's needs. After review, the plan will be completed to become the final version.

4.1 ANALYSIS

In order for the preliminary OM&LP to be a valid representation of the required support of the FBIS modernization, the Integrated Logistics Support group will be required to analyze the customer's concerns and requirements, each of the sites, the current maintenance concepts, the level of the maintainer, the required system availability, specific equipment and the degree of training. ESL proposes to perform this analysis during the initial design phase. Inherent in the analysis is the requirements of the contract for maintainability in mean-time-to-repair (MTTR) and mean-time-between-failure (MTBF). The Logistics Group will analyze the equipment proposed for selection to evaluate the MTBF to insure it meets the customer's requirements. Facilities requirements to meet or improve the MTBFs of the equipment and the system will be monitored as part of the analysis process.

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While the selection of equipment is the primary force in maintaining the required MTBF, it is only one of the factors in creating a desired MTTR. Selecting equipment which is modular, maintainable, and provided with adequate documentation is equally important. In addition, the Logistics Planners must also identify spares, training, test equipment and fixtures, as well as the required philosophies to create the desired MTTR.

The Logistics Staff must also provide the support to maintain the desired MTTR. The system required to provide spares, maintenance support and management must be designed and implemented to allow the bureaus to maintain the system.

During the preliminary design, the Logistics Staff will be an integral part of the process. The analysis and development of the preliminary OM&LP will require a full time logistics planner to provide all of the support and documentation for the FBIS modernization.

4.2 REQUIREMENTS

The Preliminary OM&LP will provide the customer with the following information as required by the contract. Each area will be provided with sufficient detail to allow the customer to evaluate the concept or strategy for its applicability to the project. Where insufficient information is available at the time of the submission, the preliminary document will supply the customer with a discussion of the applicable strategy for accomplishing the requirement. These To-Be-Supplied sections will be discussed in sufficient detail for the customer to evaluate the conceptual strategy for their performance.

- Maintenance Philosophy
- Test Equipment Requirements
- Facilities Requirements
- Contractor Responsibilities
- Spares Philosophy
- Expendables Management Concept

4.2.1 MAINTENANCE PHILOSOPHY

The maintenance philosophy selected for the FBIS modernization will cover the selected concept for repair or replacement for each equipment in the system. In addition it will cover the selected level of maintenance for each equipment. The maintenance philosophy obviously drives the

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test equipment, spares, and expendables requirements. It also drives the training concept, development, and implementation. As such it must reflect the expected level of the maintainer at each bureau as well as the level of the equipment and the support concept. For the FBIS modernization, a float system of maintenance is currently proposed to provide the optimum level of system availability. This concept requires a calculated number of spares at each site. These spares are exchanged into failed positions. This approach allows the maintenance staff to rapidly bring a position back to life after it fails. In addition, the level of training is decreased, since the repair or replacement of the failed unit in the device can now be isolated off line without an impact to the mission. For devices which cannot be easily exchanged, the proposed concept is to provide spare modules and the required test equipment, diagnostics, test fixtures and training to allow the maintainer to isolate the fault to a module or Circuit Card Assembly (CCA) for replacement. The local site would also be responsible for the periodic maintenance of the equipment in their inventory.

In addition, ESL proposes the flagship and headquarters stations can provide a second level of support if the local bureau could not isolate a fault or problem. This would allow the training of a core group of high level maintainers to cover unexpected or difficult problems at the local bureaus. This concept would allow the shared use, on an as needed basis, of this special maintenance staff.

The preliminary OM&LP will define and document the specific maintenance philosophies for each equipment in the system, as well as the overall maintenance philosophy for each bureau and their support.

4.2.2 TEST EQUIPMENT IDENTIFICATION

The maintenance philosophy and specific equipment selection will drive the identification and selection of required test and support equipment. The preliminary OM&LP will document the long lead items from the test equipment list. Those individual items requiring long acquisition cycles will be identified for early purchase. Test equipment required, but readily available, will also be identified during the analysis. However, since this equipment can be purchased within a smaller amount of time, its specific identification and purchase can be delayed. Included will be all forms of maintenance test and support equipment. This includes test equipment, test fixtures, and special tools. Since the final selection of the actual equipment occurs with the

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Critical Design Review (CDR), the test and support equipment will remain unfinished and open to change until then.

4.2.3 FACILITIES REQUIREMENTS

The Logistics Staff assigned to the FBIS modernization project will also be tasked with providing input to the site preparation and installation plan. Included in this input will be requirements of maintenance space, power and test equipment requirements. Special fixtures or other requirements based on the maintenance and support concept will be identified for the plan. Logistics engineering will also monitor the plan for its impact on the maintenance and support requirements for each bureau. Special requirements at individual sites may require the maintenance philosophy be modified to meet the site's special needs. The logistics plan will be flexible enough to accept these requirements as needed.

4.2.4 CONTRACTOR RESPONSIBILITIES

During the preliminary design phase, the Logistics Staff will analyze and document the individual responsibilities of the contractor for on-going support of the hardware and the software for the FBIS modernization. This analysis will include the selection of an upgrade and support process for each of these areas. For maintenance, this will include support approaches for the test equipment and unique or difficult to maintain devices. It may also include contractor support for unit or board repair, calibration, and technical assistance. For the FBIS system, the current approach would be to provide contractor support to the bureaus through the flagship and headquarters sites. This would allow the support to be managed at a higher level, facilitating a system level integration of the contractor resources, especially when there is a conflict of individual bureau requirements. It would also allow time to integrate the new maintenance tasks and processes into the system in a smooth, orderly fashion.

Software support would also be integrated into the support plan as part of this requirement. As the system matures, especially during the initial period of operation, it is imperative to provide an integrated plan for upgrading and supporting the software. Upgrades, elimination of bugs and improvements to operation can only be accomplished if they are performed and supported throughout the system. Without this system-wide support, the individual software at any bureau could be different from any other, with the obvious

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problems of trouble shooting and interchangeability. The specific requirements for the contractor and customer will be identified as part of this analysis.

4.2.5 SPARES PHILOSOPHY

The selection of a spares philosophy will be accomplished during the preliminary design phase. Specific selection of type, level, number and location of storage will be influenced by the maintenance concept, specific equipment selected, the difficulty in shipping the spares to the bureaus, and the required system availability for each bureau. The logistics approach to this area will include all of these areas of concern along with the special requirements documented earlier in this report.

Any maintenance concept for a system of this sort will be inadequate without the sparing and logistic support required to carry it out. Thus this part of the OM&LP will be critical to the success of the support concept. As such it will receive the attention it deserves. For the FBIS modernization, the normal logistics challenges of number and type of spares are further complicated by the wide geographical separation of the bureaus. In addition, the different sites will all have different missions, numbers of equipment and staff. These challenges support the current proposal for support of the spares largely at the centralized flagship and headquarters sites. This will permit better management of the resource as well as providing a centralized reporting agency to track problems, which may be occurring at all of the bureaus, but which may not be apparent at that level. ESL proposes to use component, module and CCA, as well as float or spare equipment as required to support the systems. The selection will be based on the number of units at each site, their complexity, and the staff. The spares selection process will be mutually influenced by the maintenance concept and the training plan. As with the rest of the equipment specific portions of the OM&LP, the final selection of spares, as well as the final spares philosophy will be defined as part of the critical design process to avoid duplication of effort as the design changes through CDR. Spares recommendations, once established, will be subject to customer review and approval prior to taking any procurement action.

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4.2.6 EXPENDABLES MANAGEMENT

The wide geographical separation of the bureaus coupled with the need for a strong management presence to control the system, influences the expendables selection process. A central source of supplies and ordering will allow the system to maintain tracking and control of the product quality of the expendables used as well as limiting the required inventory at the bureaus. It also allows management decisions to be made if the resources become critically short. The central source can monitor the entire system for problems such as supplier, quality, or acquisition times.

Specific expendables will be identified for operation and maintenance as part of the process, but again, since the preliminary design process is volatile, the effort will be limited to those areas where change of the equipment selected is not expected. Final selection and documentation will occur as part of the critical design process.

4.3 INTERNAL REVIEW

All of the OM&LP documentation will be subject to internal review. All the data generated by the logistics group will be internally audited for conformance to standard practices and internal quality standards. In addition the material will be reviewed with the engineering and project management staff to insure the data is valid and supports the overall FBIS project. This two step process allows the logistics group to maintain a high standard of excellence in the preparation of material of this type. The internal process consists of both formal and informal reviews at all levels. Once the document has been internally accepted it will be printed and distributed in accordance with the contract requirements for the preliminary submission.

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5.0 REVIEW

The Preliminary OM&LP will be submitted for customer review. The review will occur as a part of the overall Preliminary Design Review. As such, the customer will be able to evaluate the strategies, plans and lists included in the document along with the entire PDR package.

Comments, deletions, and additions will be returned to ESL for inclusion in the final document.

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6.0 FINAL OM&LP

The final OM&LP is developed as part of the critical design process for submission as part of the Critical Design Review. The final document continues the processes started in the Preliminary OM&LP while implementing any customer directives and improving any areas of customer concern. The final document will contain the finished version of the lists of required support items outlined in the preliminary. Updates required by changes to the preliminary design will be made as required.

6.1 EVALUATION

Evaluation and implementation of any customer directives created from the preliminary submission will be included as part of the final. During this process the logistics staff will also update the document with the final selections of equipment. The maintenance and spares concepts will be finalized as well as the specific data requirements for these items. As the final equipment selections are made, the logistics staff will finalize all of the data requirements in the document according to the finalized conceptual strategies. The Final OM&LP will include all of the areas included in the preliminary with the complete lists as required in the contract for support of the system.

6.2 REQUIREMENTS

The final version of the OM&LP will complete all of the requirements of the plan. Specifically, it will include the maintenance concept plan, required maintenance test and support equipment, definition of contractor responsibilities for on-going hardware and software support, spares philosophy and spares list, expendables plan, and recommended inventory levels for all sites. These requirements are all continuations of the versions presented in the preliminary document.

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6.2.1 SPECIFIC OM&LP DEFINITION

This section will provide the final information required to implement a maintenance and support system for the FBIS modernization. It will include maintenance concepts for the system and each piece of equipment in the system; a process to support the maintenance at the bureau as well as the flagship and headquarters levels. The formal document will include any customer comments as required and is a completion of the preliminary effort. Specific strategies, plans and processes will be included as required to document the O&M requirements.

6.2.2 TEST EQUIPMENT REQUIREMENTS

With the final selection of the equipments occurring during the critical design phase the logistics staff will finalize the requirements for maintenance test and support equipment. The list will include the equipments required to support each device in the system to the level defined in the maintenance concept. The list will include specific requirements, quantities, and suggested model.

6.2.3 CONTRACTOR RESPONSIBILITY

The contractor responsibilities for continued system support of maintenance and software will be finalized.

A list of support requirements on a piece by piece and task by task basis will be completed for individual equipment as required. This list will include specific equipment identifications, specific task, and selected support group. For the software, specific tasks for selected modes of support will be provided.

6.2.4 PRELIMINARY SPARES LIST

The preliminary spares list will provide a suggested level of spares required to support all of the systems fielded as part of the FBIS modernization. The list will be developed based on a 1 to 10 year support plan, based on the maintenance concept, system availability requirements, number of units, probability of failure and required time for repair or replacement. This provisioning list will allow the customer to acquire the required support parts,

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modules and CCAs, assemblies and spares to maintain the system for the period selected, i.e., 1, 5, or 10 years.

6.2.5 EXPENDABLES PLAN

The final expendables plan will identify the materials required to support the system based on the expected usage. The list will include both maintenance and operational supplies for the system. The data will include required specifications, suggested model or manufacturer's identifications and quantities. In addition a plan for the management and supply of these items will be developed which will cover aspects such as the multi-level concept, centralized management and ordering and the challenges associated with the geographical dislocation of the bureaus. The quantities provided will be calculated based on the special requirements already discussed.

6.2.6 RECOMMENDED INVENTORY

The recommended inventory developed for the spares and expendable items will include the levels required at each site as well as the levels at the support group. These levels will take into account the specific bureau and its mission, the criticality of certain missions, mean time for shipment of items including ordering cycle time, the size of the bureau and expected usage at each site. The logistics staff will project a system using standard models to provide just-in-time delivery of the inventory items, allowing maximum flexibility to all parties. Understanding the problems with some of the remote sites, the staff will factor in safety levels which will allow for the unexpected delays that become all too expected.

6.3 INTERNAL REVIEW

As with the preliminary document, the Final OM&LP will be reviewed as a two part process. The logistics group will review the document for conformance to standards and completion of contractual requirements. The document will also be reviewed by the engineering and project management group for technical quality and completeness as well as project support. Upon the successful completion of the internal review cycle the document will be printed and distributed in accordance with the contract.

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7.0 SUMMARY

This document has presented an approach for FBIS modernization Operation and Maintenance support. The information is based on current data and is provided as a rough order approximation to the support effort. The Data is provided for the life cycle of the system. As the system progresses through the actual design phase, the Integrated Logistic Support group will design, develop and upon customer approval, implement a support plan based on the process identified in the OM&LP portion of the document.

ESL recognizes the inherent problems in implementing and managing a support process for a system of this nature. The geographical, cultural, and language barriers to implementing a system of this nature must be identified and solved for a successful system. The plan will include these solutions as well as a management system to implement the changes in the most beneficial manner.

The OM&LP will be generated as discussed in the document. It will take into account the special challenges of the project and provide a comprehensive plan for the integrated operation and maintenance of the system.

PRELIMINARY