G-TES-3 REFERENCE DOCUMENT NO. 1816

OPERATION AND MAINTENANCE LORAN-C STATIONS-THAILAND SATTAHIP, LAMPANG, UDORN

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OPER
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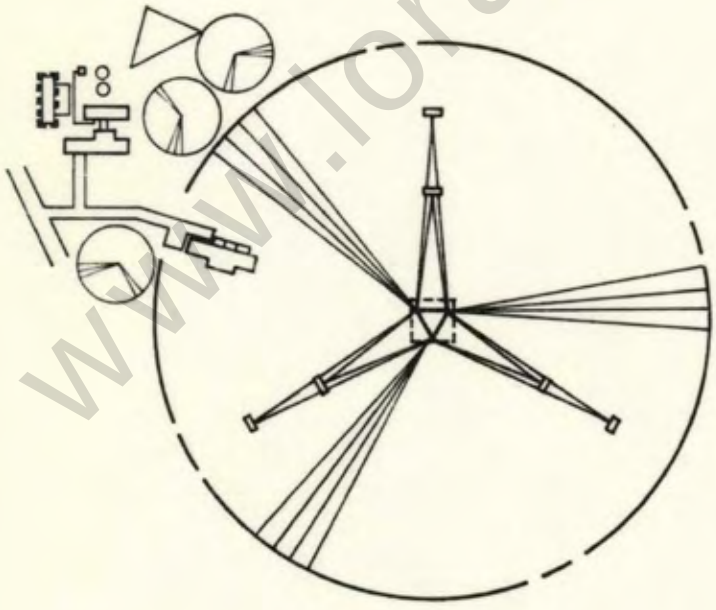
SERVICES

LORAN 'C' TRANSMITTING STATIONS-THAILAND
SATTAHIP, LAMPANG, UDORN



ITT FEDERAL ELECTRIC CORPORATION

UNSOLICITED PROPOSAL COVERING

OPERATION AND MAINTENANCE LORAN-C STATIONS - THAILAND

SATTAHIP
LAMPANG
UDORN

PREPARED FOR

U.S. COAST GUARD

ITT FEDERAL ELECTRIC CORPORATION

LORAN-C STATIONS - THAILAND

MAINTENANCE AND OPERATION SERVICES

TABLE OF CONTENTS

INTRODUCTION

ITT - Federal Electric Corporation (FEC) is pleased to submit to the U.S. Government this unsolicited proposal for Operation and Maintenance (O&M) of the three LORAN-C Stations in Thailand (Sattahip, Lampang and Udorn).

The SE Asia LORAN-C network consists of five stations:

Sattahip,	Thailand	(Master Station)
Udorn,	Thailand	(Monitor Station)
Lampang,	Thailand	(X Slave)
Con Son,	Republic of Vietnam	(Y Slave)
Tan My,	Republic of Vietnam	(Z Slave)

During January 1973 FEC assumed responsibility for the operation and maintenance of the electronics portion of the 2 U.S. Coast Guard LORAN-C stations in the Republic of Vietnam (Con Son and Tan My). The U.S. Coast Guard recently awarded FEC a contract for continued operation of the Electronics Systems and assumption of the related Facilities Engineering at these two stations.

This presentation outlines FEC's approach to a further expansion of that contract whereby FEC would assume the added responsibility for operation and maintenance of the 3 U.S. Coast Guard LORAN-C stations in Thailand (Sattahip, Lampang and Udorn). Under such an expanded contract FEC would therefore be responsible to the U.S. Government for operation and maintenance of the complete 5 station SE Asia LORAN-C network.

We believe that assigning FEC full responsibility for operation and maintenance of the complete 5 station SE Asia LORAN-C network will bear considerable benefits to the U.S. Government, including:

LOWER COST

REDUCED U.S. MILITARY MANNING IN THAILAND

IMPROVED SYSTEM RELIABILITY

Each of these aspects are explained in this presentation. We believe that these significant advantages to the U.S. Government and FEC's outstanding performance operating and maintaining the Vietnam LORAN-C stations justify expansion of our contract to include operation and maintenance of the LORAN-C stations at Sattahip, Lampang and Udorn, Thailand.

The primary performance criteria for LORAN-C operation is maximization of usable ("on air") time. In recognition of the on-going importance of this "Standard," the Coast Guard initiated a "Station of the Quarter" award. We take pride in the fact that the FEC operated LORAN-C Station at Con Son Island has earned this award for each of the past six quarters; an unprecedented accomplishment in the history of the Southeast Asia LORAN-C chain. As indicated in Table i, the Tan My Station has been a close second in recent competition for this award. Copies of these awards and other commendations are appended.

It should be noted that this proposed assumption of O&M responsibilities by FEC in Thailand would in no way affect our ongoing performance at the 2 Vietnam LORAN-C stations.

It should also be noted that the FEC manning rosters proposed in this presentation for operation and maintenance of the 3 Thailand LORAN-C stations, and the estimated attendant costs set forth herein, are subject to finalization and confirmation during negotiations between FEC and the U.S. Government.

SEA SEC LORAN - C Chain

Percentage of Usable vs Available Time

	SATTAHIP	LAMPANG	TAN MY (FEC)	CON SON (FEC)
DEC	99.69 %	99.93 %	99.89 %	99.94 %
JAN	99.85	99.96	99.98	99.98
FEB	99.83	99.84	99.91	99.99
MAR	99.80	99.98	99.99	99.97
APR	99.62	99.90	99.99	99.97
MAY	99.96	99.91	99.92	99.99
SIX MONTH AVERAGE	99.79 %	99.92 %	99.95 %	99.97 %

TABLE 1

SOUTHEAST ASIA SECTION

STATION OF THE QUARTER

AWARDED TO

Loran Station Con Son

FOR THE first QUARTER

OF CALENDAR YEAR 1973

1 July 1973
DATE

SIGNED: C.M.MAYES, CAPT. USCG
COMMANDER, SEA SEC

SOUTHEAST ASIA SECTION

STATION OF THE QUARTER

AWARDED TO

Loran Station Con Son

FOR THE second QUARTER

OF CALENDAR YEAR 1973

1 July 1973
DATE

C.M. Mayes
SIGNED: C. M. MAYES, CAPT. USCG
COMMANDER, SEA SEC

SOUTHEAST ASIA SECTION

STATION OF THE QUARTER

AWARDED TO

Loran Station Gonson

FOR THE Third QUARTER

OF CALENDAR YEAR 1973

1 Oct. 1973
DATE

SIGNED: C.M. MAYES CAPT USCG
COMMANDER, SEA SEC

SOUTHEAST ASIA SECTION

STATION OF THE QUARTER

AWARDED TO

Loran Station ConSon

FOR THE FOURTH QUARTER

OF CALENDAR YEAR 1973

18 MARCH 1974

DATE

SIGNED: ARA E. MIDGETT JR., CDR
COMMANDER, SEA SEC
ACTING

SOUTHEAST ASIA SECTION

STATION OF THE QUARTER

AWARDED TO

Loran Station Con Son

FOR THE 1st QUARTER

OF CALENDAR YEAR 1974

3 APRIL 1974
DATE

SIGNED: R E DOLLIVER, CAPT, USCG
COMMANDER, SEA SEC

SOUTHEAST ASIA SECTION

STATION OF THE QUARTER

AWARDED TO

Loran Station Con Son

FOR THE 2nd QUARTER

OF CALENDAR YEAR 1974

2 JULY 1974
DATE

SIGNED: R E DOLLIVER, CAPT. USCG
COMMANDER, SEA SEC

15502

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140 [illegible]

ACTION:

INFO: FEC

CR F

ATTUZYUW RHMFMTA4627 2402937-UUUU--RHMSMVA;

ZNR UUUUU

R 28[illegible]6Z AUG 73

FM COMCOGARD SECTION SOUTHEAST ASIA-BKK

TO ZEN/LORSTA CON SON RVN

INFO RHMSMVA/FEC SAIGON RVN

BT

UNCLAS

1, IT WAS A GREAT PLEASURE TO NOTE YOUR RECENT ACHIEVEMENT OF FIFTY-ONE DAYS OF 100 PERCENT ON AIR TIME;

2, CONGRATULATIONS ON SETTING A RECORD OF OPERATION FOR CON SON;

3, EXPRESS THANKS TO ALL HANDS FOR FINE TEAM WORK;.

BT

#4627

NNNN

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Address reply to:
Commander
Coast Guard Section
Southeast Asia
APO San Francisco 96346

1650
30 August 1973

DIRECTOR
COMVETS PROJECT
FEC/ITT SAIGON
APO SAN FRANCISCO 96393

Gentlemen:

It gives me great pleasure in awarding the Station of the Quarter Award to Loran Station Con Son for the first and second quarters of calendar year 1973.

During first quarter CY73 Con Son had 79 minutes unusable time resulting in 99.939 per cent usable time. The second quarter they improved to 47 minutes unusable time for a 99.964 per cent usable figure.

The inspections conducted by members of my staff and the operational results for the first six months of 1973 have shown that Con Son has an excellent record and has shown great improvement.

Please extend my congratulations, and thanks to all the personnel at Con Son.

Sincerely,

C. M. MAYES
Captain, U. S. Coast Guard
Commander, Coast Guard Section S. E. Asia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AERONAUTICAL SYSTEMS DIVISION (AFSC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

Office of the Commander

12 DEC 1973

SUBJECT: Appreciation

TO: Commander
United States Coast Guard/SEASEC
APO San Francisco, California 96346

I wish to express my sincere appreciation to the men of the U. S. Coast Guard (SEASEC) who have operated and maintained the LORAN C chain in Southeast Asia. The outstanding operationally-ready status record accomplished by your unit has been critical to the successful operation of a classified drone program over the recent months, and will remain so in the foreseeable future. Please pass on my congratulations to the men of the Coast Guard who contributed to this highly professional operation.

JAMES T. STEWART
Lt. General, USAF
Commander

Commander
Coast Guard Section
Southeast Asia
APO, San Fran. 96346

1600
20 December 1973

From: Commander, Coast Guard Section, Southeast Asia
To: Station Supervisor, Loran Station Con Son

Subj: Letter of Appreciation

1. A copy of Commander, Aeronautical Systems Division (AFSC) USAF letter of 12 December 1973 is enclosed for the information of all personnel at your station.

2. It is gratifying to receive such compliments on the good work of the Southeast Asia Chain. I would like to add my appreciation for your efforts in making these comments possible. Also I am sure you join with me in being glad to hear from a "satisfied user or customer".

C. M. MAYES

Encl: (1) Department of the Air Force, Headquarters Aeronautical Systems Division (AFSC), Wright-Patterson Air Force Base ltr of 12 DEC 1973

5/ PERSONNEL POLICY

1. MANAGEMENT & ORGANIZATION

2. STAFFING & MOBILIZATION

3. MANAGEMENT INFO SYSTEM

4. COMPANY QUALIFICATIONS

1. MANAGEMENT AND ORGANIZATION PLAN

1.1. INTRODUCTION

1.1.1 Federal Electric Corporation (FEC) is a wholly owned subsidiary of International Telephone and Telegraph Corporation. The business mission of FEC is to maintain and operate facilities and to provide services to government and industrial customers.

1.1.2 The International Telephone and Telegraph Corporation (ITT) is an American Corporation with headquarters in New York City. The ITT Corporation, a system of more than 300 companies and 428,000 employees, is engaged in the manufacture and operation of telecommunications equipment, production of industrial and consumer products, consumer and business services, natural resources development and participation in defense and space programs. The scope of its operations, the depth of its resources, and the number of its products and services make ITT one of the world's largest technical and service oriented corporations. Corporate benefits such as financial backing, manpower resources and research and development are obtained from the ITT system, thus ensuring an in-depth performance capability.

1.2 PROJECT/CORPORATE RELATIONSHIP

1.2.1 The proposed expanded LORAN-C Project organization and task management concept will be explained in following sections to illustrate FEC's endeavor to avoid redundancy in management and support personnel. The proposed expanded LORAN-C Project is comparatively smaller than other projects that are normally staffed with a full range of administrative support elements such as Contracts Administration, Employee Relations, Finance, and Telecommunications. FEC

proposes that project administrative services be provided by the COMTETS Project to the Thailand LORAN-C stations just as the COMVETS Project provides such services to the Vietnam LORAN-C stations. We believe this will afford a considerable cost savings to the Government. For example, a predetermined schedule of chargeable man-hours each month to provide administrative assistance in the areas listed above would represent a total cost that is considerably less than the cost of additional manning which would be required on the LORAN-C Project (permanent hire) to accomplish the same support requirements.

1.3 PROJECT ORGANIZATION

1.3.1 In compiling this proposal FEC management personnel have thoroughly analyzed the SE Asia LORAN-C system in order to recommend the most efficient and cost-effective means of operation and maintenance. The program we propose is an expansion of the existing FEC managed LORAN-C program in Vietnam which has achieved, and is maintaining, superior performance ratings for the US Government.

1.3.2 It is FEC's intent to provide the U.S. Government with a flexible, mission oriented and responsive organization which will interface positively and effectively in meeting all work requirements.

1.3.3 The Station Leaders at Sattahip, Lampang and Udorn will report directly to the FEC LORAN-C Project Director, who will manage the technical and administrative functions of the Project and provide liaison between station operations, FEC Project direction and the U.S. Coast Guard. FEC is confident that the Project Organization proposed will achieve complete fulfillment of all Government requirements.

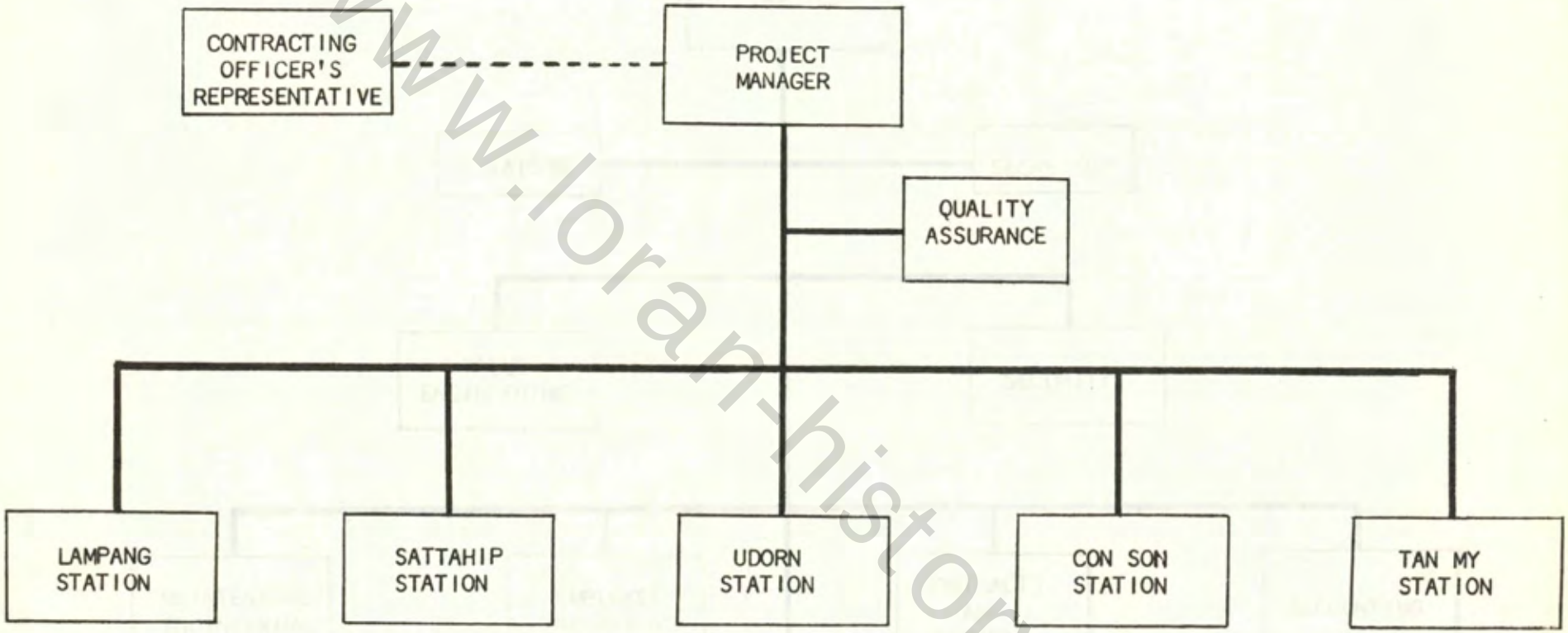


FIGURE 1.4-1 Proposed FEC O&M of the Southeast Asia LORAN-C System.

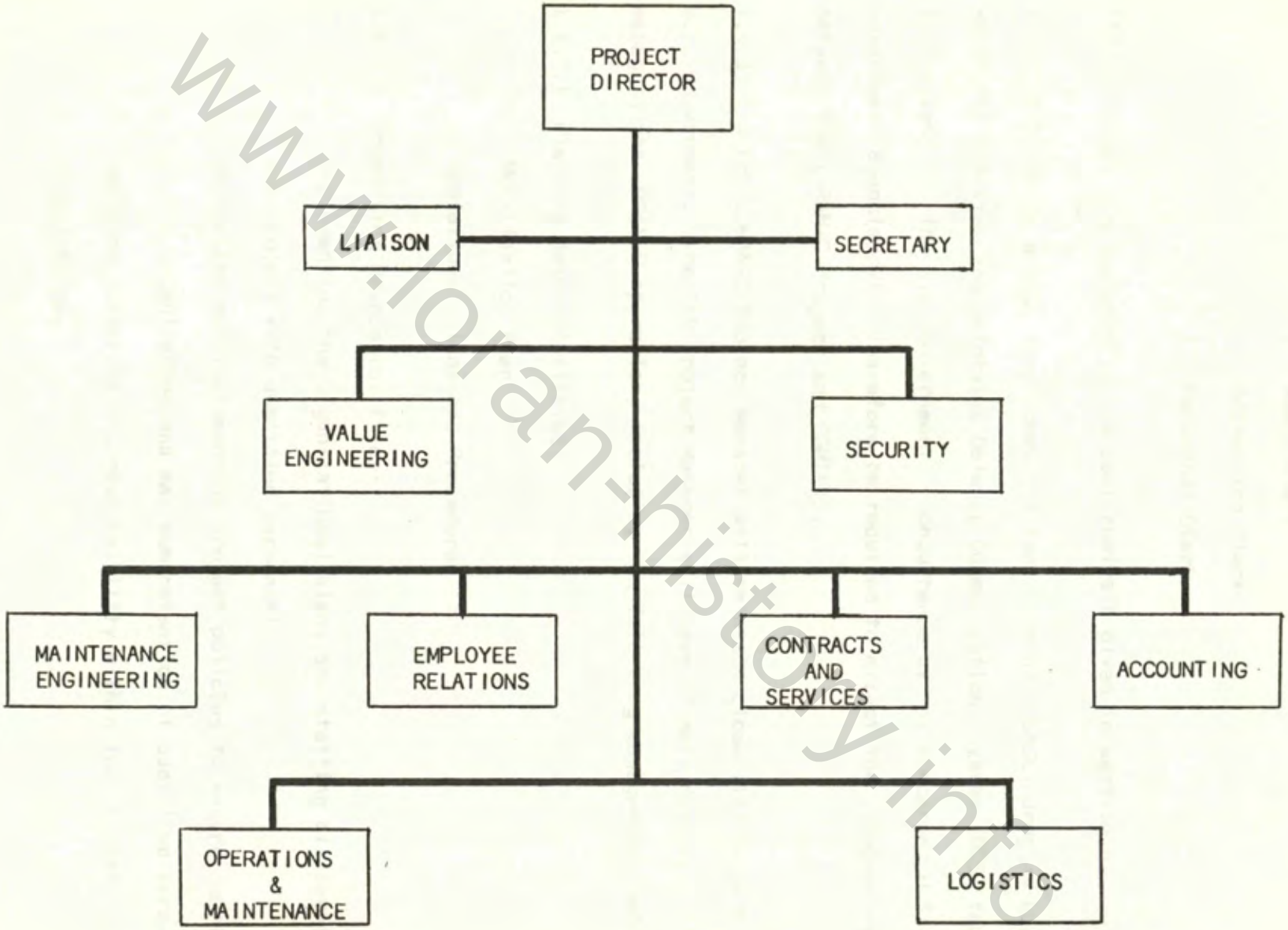


FIGURE 1.4-2 COMTETS Project Organization

1 Admin Clerk

1 Accounting Clerk

1 Personnel Clerk

These charges are included in the cost analysis given in section 8.

1.4.2 COMTETS is a U.S. Army Communications Command (USACC) program under which FEC operates and maintains Defence Communications System (DCS) facilities in Thailand for the U.S. Government. Concurrence by the concerned U.S. Government agencies will therefore be required to effect the proposed relationship between the LORAN-C Project and COMTETS.

1.4.3 The FEC LORAN-C Project Manager will maintain close liaison with the U.S. Government. The FEC Project Manager will have primary responsibility for managing the LORAN-C operation, including the following management functions:

1.4.3.1 Planning Responsibilities:

- Mobilization Plan
- Operational Plans and Procedures

1.4.3.2 Organizing Responsibilities:

- Implementing the organizational plans and staffing all levels of the project with qualified personnel.
- Developing and implementing project policies to ensure continuity of the organization and maximum retention of qualified personnel.
- Defining authority and responsibility within the project organization.

1.4.3.3 Interfacing Responsibilities:

- Developing and maintaining an effective liaison with USCG personnel and such other agencies and offices as may be necessary.
- Coordinating all FEC activities between departments to ensure maximum operational effectiveness.

1.4.3.4 Controlling Responsibilities:

- Developing and implementing necessary reporting and control functions in all operational areas.
- Developing and implementing necessary changes to plans, organizations, procedures and systems necessary to improve operations and or reduce costs.

1.4.3.5 Reporting Functions:

- Submission of appropriate contractually required reports.
- Submission of necessary internal reports to higher FEC management.

1.4.4 Techniques and concepts to be used in managing the project. The adoption of sound management techniques and concepts is necessary to implement and maintain a functional project organization. To accomplish the support required for this program, certain basic management concepts will be integrated into project operations. These management techniques, briefly stated here, are more fully described later in this proposal.

1.4.4.1 Technical Management - The Project Manager will hold monthly review meetings to ensure that correlation and communication between FEC and the USCG are clear and fully responsive.

1.4.4.2 Management Performance - The Project Manager will review monthly the reports provided by the various staff elements pertaining to operational and administrative performance and will perform an overall analysis of the services being provided by FEC.

1.4.4.3 Business Management - Overall Business Management - Effectiveness of project management will be continually monitored and audited by FEC Corporate Headquarters.

1.4.4.4 General Business Management - A monthly review of overall project status in regard to labor relations, safety, reports and procedures, personnel administration and contract compliance will be accomplished by the various staff organization heads. The results will be reported to project management.

1.4.4.5 Monthly Management Review - After thorough analysis of all the above mentioned data, the Project Manager will meet a minimum of once monthly with the Project Director and the USCG Contracting Officer's Representative (COR) to discuss their areas of responsibility and to determine the overall status of the project. A course of action to be taken to rectify any variations from optimum performance will be developed at these meetings.

1.4.4.6 Critical Areas - Certain overall program level areas will require special attention by the Project Manager. Major areas of this type will be cost control, quality control, procurement, safety, work control and customer interface. All potential problems or deviations from predetermined milestones, budgets or standards will immediately be brought to the attention of the FEC Project Director who will ensure that corrective action is initiated.

1.4.5 Development of Cost Savings Practices:

1.4.5.1 In addition to monitoring a cost control and reporting techniques program, the Project Manager will be alert, in all operational processes, for the development or initiation of policies or practices which will result in a cost savings to the Government.

1.5 STAFF FUNCTIONS

1.5.1 INTRODUCTION

Staffing reviews will be made at least monthly. The reviews will measure our adherence to overall manning requirements, excess or understrength areas, critical skills, review of technical qualifications of labor categories, and any required employment actions to meet changing customer requirements.

As explained in section 1.4, we propose that the Project Administrative responsibilities will be supported by existing FEC Project Employee Relations, Accounting and Contracts & Services Departments. A brief description of the staff functions follows:

1.5.2 EMPLOYEE RELATIONS

The Employee Relations Manager will be responsible for supervising the recruiting and retention of personnel of the LORAN-C Project. Employees will be hired at competitive labor rates, in accordance with local conditions and in compliance with applicable USCG and U.S. Government regulations.

1.5.2.1 A management audit of compliance with established personnel policies and procedures will be conducted at least once a month. The wage and salary structure will be continually controlled and monitored by the management.

a specific program will be established to ensure full compliance with equal employment opportunity requirements.

1.5.2.2 Status of labor relations will be reviewed at least monthly by management, as will the administration of the labor relations function. Timely notice of potential or actual labor disputes will, in all cases, be provided to the COR.

1.5.2.3 An aggressive safety and accident prevention program will be implemented and administered by Federal Electric Corporation under the direction of the Employee Relations Manager. In addition, our corporate policies and practices require safety and accident reports for all ITT companies on a specified time basis.

1.5.2.3.1 Federal Electric Corporation will insure that its staff assigned to this responsibility is thoroughly acquainted with all pertinent regulations, laws and directives governing this function in all aspects.

1.5.2.4 Federal Electric Corporation has considerable experience on many projects in the recruitment processes, setting up readily available application files, requisition/personnel controls and reports, referral and interview formats and forms, skill evaluation criteria, and aptitude and performance testing. We are sure that this will offer a high level of service in hiring qualified personnel.

1.5.3 ACCOUNTING

The Accounting Manager will be responsible for the financial control function of the Project. He will control, analyze, record, and report the financial position of the LORAN-C Project. Accounting will have three broad functional areas, each having a separate purpose, but interrelated to the entire

financial operation. The areas of responsibility are (1) Payroll, (2) Budgets/ Cost Accounting, and (3) General/Financial Accounting.

The responsibilities of the three sections are shown below:

1.5.3.1 PAYROLL

The payroll section has the overall responsibility for all salary and advance account transactions of persons assigned to this contract. More specifically, section responsibility includes:

The initial placement of all personnel on the payroll and the processing of payroll and per diem authorizations. The review and audit of all time sheet data except cost coding. Also -

- Preparation of payrolls.
- Distribution of payroll checks to authorized allottees and stubs to individual employees.
- Preparation of all related tax and insurance reports.
- Calculation and payment of applicable bonuses.
- Audit and control payroll cash allotment receipts and unclaimed wages.
- Audit and review payroll registers.
- Review and approve all employee requests for payroll advance and institute payroll deductions.
- Maintain a subsidiary ledger of all advance accounts by employee, and reconciliation to the general ledger account.

1.5.3.2 BUDGET/COST ACCOUNTING

Develop a total monthly contract budget based on the contract as negotiated and -

- Modification of the contract budget to reflect negotiated changes in scope of work.

- Distribute budgets at management levels having budget and cost control responsibility.
- Prepare actual versus budget cost reports on a monthly basis and assist management in the explanation of variances and corrective action to be taken where required.
- Review all Personnel and Purchase Requisitions for budgetary and contractual coverage.
- Prepare monthly Financial Status Reports.
- Maintain a cost distribution system which will provide the cost data detailed for the contract management and budgetary structure which makes it possible to financially manage the contract and to meet contractual requirements.
- Revise the cost system and/or provide additional task charge numbers to meet changing budgetary requirements and/or to segregate costs related to new efforts.
- Prepare distribution of all costs and assign cost coding in accordance with the contract management and budgetary structure.
- Analyze actual costs incurred and assist those persons having cost and budget responsibility in their analysis of actual versus cost variance.
- Review and/or assign all contract cost and expense account coding on original documents prior to processing for payment.
- Preparation of all contract billings in accordance with contract terms.

1.5.3.3 GENERAL AND FINANCIAL ACCOUNTING

- Processing for payment of all purchase orders and expense vouchers in accordance with project and corporate policies.
- Maintain corporate books and required subsidiary ledgers.
- Maintain files and audit trail on all expenses.
- Control and secure all cash funds.
- Reconcile all funds.
- Maintain liaison with Field Accounts.
- Provide cashier services.
- Coordinate cash requirements with concerned offices to ensure adequate funds are available.

Accounting will advise the Project Manager and other management officials on all matters pertaining to cost accounting.

1.5.4 CONTRACTS AND SERVICES

The principal area of responsibility in Contracts Administration is to ensure operational and administrative adherence to the terms and conditions of the contract. It is also responsible for purchasing activities.

1.5.4.1 The main function of the Contracts Administration Manager is to counsel project management and the project staff on contractual questions and requirements.

1.5.4.2 The Contracts Administration Manager will review and forward required reports to the COR on a scheduled timely basis and will maintain liaison with the Administrative Contracting Officer and execute all project correspondence,

reports and other required contractual documentation. He will prepare all items of contractual significance.

1.5.4.3 In accordance with corporate and project objectives, the Contracts Administration Manager will perform final negotiations of all contract modifications and renewals. He will establish and maintain coordination with other departmental staff elements to ensure development of contractual provisions which adequately express the intent of the Government and corporate management and facilitate compliance with applicable laws and regulations. The Contracts Administration Department will develop, control, and conduct the presentations and execute the final agreement.

1.5.4.4 Contract Services - The Contract Services provided will ensure project compliance with the contract requirement, applicable regulations in Vietnam and Thailand, Vietnameses law and Thai law and corporate policies and procedures. This will be done via continuous research of contractual requirements and review of project operations in performance and procedure. The section will recommend and institute action changes as appropriate.

2. STAFFING AND MOBILIZATION PLAN

2.1 GENERAL

FEC has for the past 18 months accomplished the technical requirements for both LORAN-C stations in Vietnam at a level of competency never before achieved by any agency or contractor in the Southeast Asia LORAN-C operation. By expanding this present contract to assign to FEC the added responsibility of O&M of the three LORAN-C stations in Thailand, it can be expected that the entire 5 station SE Asia LORAN-C system will function at this extraordinarily high level of reliability and efficiency. This prediction is made in view of the following factors:

a. Ongoing O&M by FEC assures continued excellent performance at the 2 Vietnam LORAN-C stations.

b. FEC would operate and maintain the 3 Thailand LORAN-C stations using equally qualified and experienced personnel, thereby ensuring excellent performance.

c. Having a single dedicated management team responsible for the complete 5 station SE Asia LORAN-C system will allow the most efficient and reliable fulfillment of the system's mission.

2.2 FEC PHASE-IN

We estimate that we could have the necessary manpower in place and be able to assume full operational responsibility at all 3 Thailand LORAN-C stations within 30 days after phase-in begins, assuming the phase-in starting day occurs 60 days after we receive contractual approval from the U.S. Government to assume these added O&M responsiblities. Details of this phase-in would be finalized during negotiations between FEC and the U.S. Coast Guard.

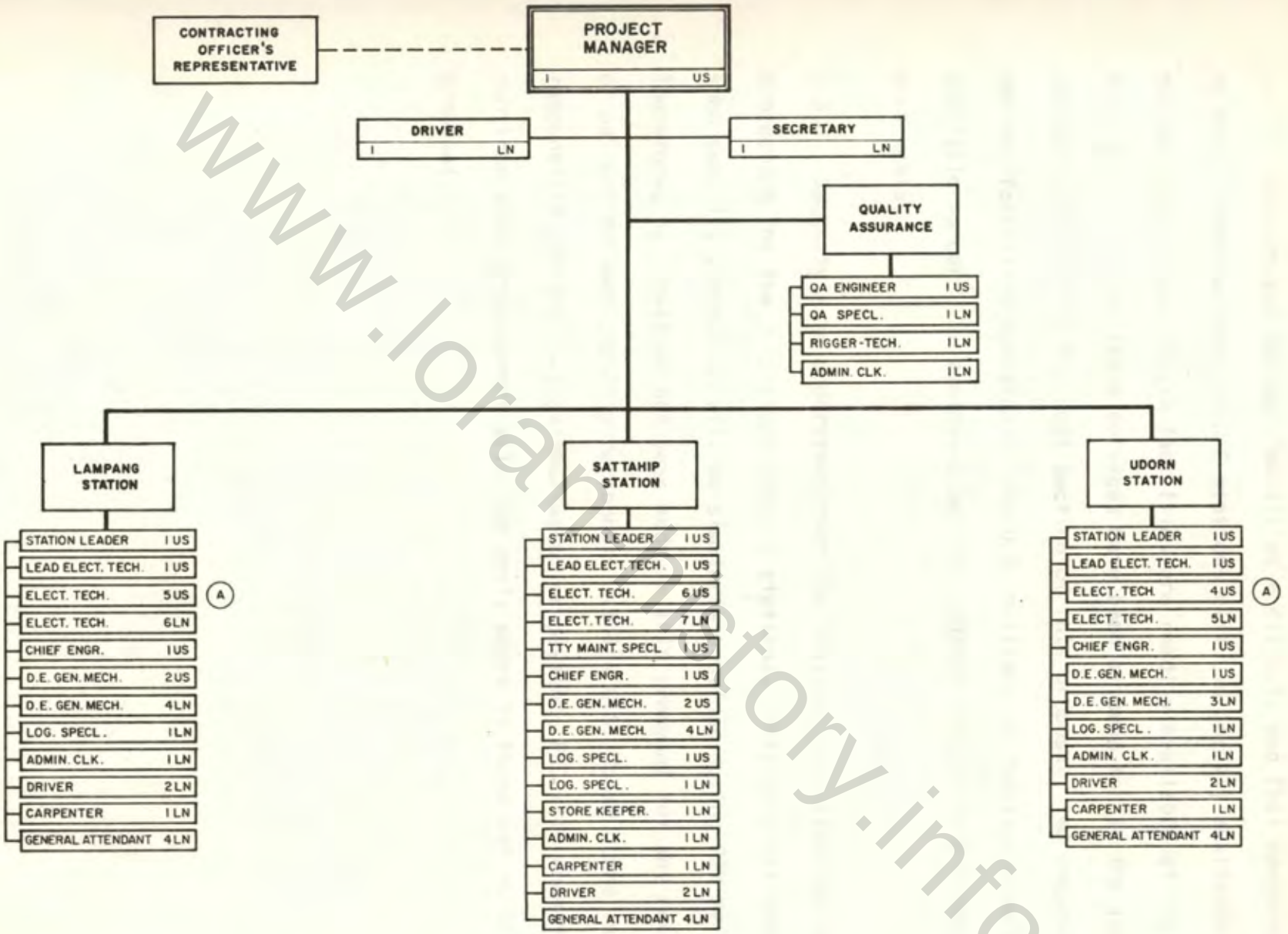
2.3 FEC STAFFING

2.3.1 Figure 2.1-1 illustrates our proposed manning for each station, and reporting channels. As explained in paragraph 1.3, the Project Manager will direct the complete 5 station SE Asia LORAN-C program. Figure 2.1-1 does not show the 2 Vietnam stations because this chart is intended to show details of the proposed manning at the Thailand stations only.

2.3.2 The staffing we propose has been carefully calculated based on our experience in operating and maintaining the 2 Vietnam LORAN-C stations, our experience with similar O&M projects around the world, and the availability and capabilities of Thai personnel. Utilizing Thai technicians and support personnel is a vital aspect of this proposed arrangement. FEC is eminently qualified in this regard, having operated and maintained the sophisticated U.S. Army communications system in Thailand since 1971 with a staff that has included an average of 700 full time Thai employees.

2.3.3 As figure 2.1-1 illustrates, we propose using qualified and experienced U.S. personnel to initially fill all supervisory positions. Qualified Thai personnel will be recruited to fill all remaining positions.

2.3.4 Recruitment - In view of the numerous large-scale C-E systems around the world on which FEC presently performs operation and maintenance services, especially the sizeable COMVETS and COMTETS programs in Vietnam and Thailand, we anticipate no difficulties in recruiting the U.S. and Thai personnel required by the LORAN-C Project.



(A) ONE E.T. AT LAMPANG AND UDORN WILL BE QUALIFIED TELETYPE REPAIRMAN.

RECAPITULATION

US	LN	TOTAL
33	63	99

THAILAND LORAN-C STATIONS
PROPOSED FEC MANNING

FIGURE 2.1-1

2.3.5 Messing and Medical Facilities - All U.S. and Thai personnel employed by FEC at the Thailand LORAN-C stations will use locally available mess and medical facilities. These facilities are readily available at the 3 stations. Costs of these services have been allowed for in the labor charges set forth in the Cost Section of this proposal. We request that medical facilities operated by the U.S. military in Thailand also be made available to our U.S. employees on this LORAN-C Project on a reimbursable cost basis.

2.3.6 Security - We understand that the Thai military provides security protection for the 3 Thailand LORAN-C stations. This proposal assumes that such security protection will be similarly provided during O&M by FEC. Therefore, no provision has been made in this proposal for any reimbursement or payment to such security personnel. If the U.S. Coast Guard is presently responsible for any such reimbursement or payment, FEC will endeavor to continue such arrangements with the costs added to those set forth in this proposal.

5/ PERSONNEL QUALIFICATIONS

6. INSPECTION PLAN

3. MANAGEMENT INFO SYSTEM

4. COMPANY QUALIFICATIONS

3. MANAGEMENT INFORMATION SYSTEM

3.1 GENERAL

3.1.1 To ensure highly reliable and cost effective operation of the LORAN-C System, FEC recommends maintaining the management information system presently in use at the 2 Vietnam stations. This management system places the burden for individual task management and accomplishment at the supervisory level yet furnishes to management the status control information needed to guarantee positive and efficient mission achievement.

3.1.2 The management information system provides the necessary information to assure management attention and responsiveness in the following key areas:

- Performance of work
- Technical management
- Business management
- Utilization of facilities and equipment

FEC project management will acquire this information through detailed analysis and utilization of personnel and records. The techniques and procedures of this Management Information System are presently employed by and known to FEC and the U.S. Coast Guard as part of O&M of the 2 Vietnam LORAN-C stations. In view of this awareness we feel it is not necessary to describe these functions here.

5. PERSONNEL QUALIFICATIONS

6. INSPECTION PLAN

7. OPERATIONAL PLAN

4. COMPANY QUALIFICATIONS

4. COMPANY QUALIFICATIONS

4.1 GENERAL

4.1.1 FEC has divided its business mission into four major areas: Operation and Maintenance Services, Engineering and Support Services, Aero Space Services, and Systems and Project Management.

4.1.2 While the LORAN-C Stations in Thailand and Vietnam require a broad range of experience, they fall principally in the Operation and Maintenance Services area, the mission of which is to provide logistics, outside plant, facilities, depot level, and administrative services as required to fulfill contract provisions; provide planning implementation and engineering services to the extent necessary to upgrade, modify or otherwise develop those systems presently under contract; and install, operate, maintain and support Government systems and facilities other than those activities covered by the range service product grouping. Primary emphasis is on work with a high technical content, or on large base support efforts. FEC's experience in this area is world wide, but is especially well developed in Thailand and Vietnam, as is further discussed in Section 4.3.

4.2 LORAN-C EXPERIENCE

4.2.1 ITT-FEC has engaged in various LORAN-C activities over a period of many years. These include: design and manufacture of LORAN-C equipment, training, installation and checkout, maintenance operation and support. Facility systems were of the following types: fixed ground, shipborne (surface and undersea) and airborne for LORAN-A, C and D systems.

4.2.2 Federal Electric Corporation presently operates and maintains the two U.S. Coast Guard LORAN-C transmitting stations located in the Republic of Vietnam. These stations are located at Tan My and Con Son Island. See Introduction for performance data and letters of commendation regarding FEC's operation of these two stations. LORAN-C contract responsibilities, in addition to these O & M services, include in-country airlift transportation to support electronic and facilities engineering services for both stations, physical security (Con Son), billeting and messing services for all station personnel and associated logistic/purchasing functions.

4.2.3 To further demonstrate our ability to perform all aspects of the work required at the 3 Thailand LORAN-C Stations, we have prepared three charts, (4.2-1, 4.2-2 and 4.2-3) which give a summary of applicable experience, both presently being performed and completed projects. Analysis of these charts and information presented in this section will show that FEC is eminently qualified to O&M the complete 5 station SE Asia LORAN-C system.

4.3 SOUTHEAST ASIA EXPERIENCE

4.3.1 Federal Electric Corporation's experience in Southeast Asia encompasses a wide variety of activities. In Thailand more than 1,000 employees have been engaged in these activities for more than two years, half of them local nationals recruited and trained by FEC. The operations and maintenance functions involved in the performance of activities on various communications related projects have required an extensive and diversified support system, including logistics, transportation, and facilities engineering. This accumulated expertise and experience is available to, and will be applied on, the LORAN-C effort. Some

STATION/FACILITIES

OPERATIONS AND MAINTENANCE

Project	Number of Stations	Location	Description
BMEWS	2 Sites	Greenland and Alaska	Missile electronic surveillance and warning system. Responsible for complete operation, maintenance, and support of these two large stations. Total personnel - 1000. Contract awarded in 1969.
DEWLine	65 Sites	Western hemisphere arctic area: Alaska, Canada, Greenland and Communication sites in Iceland and England.	Radar surveillance and communications system. Responsible for complete operations, maintenance and support of this network of isolated stations. Peak manning on-line, approximately 1400. Performed continually since 1956.
White Alice	83 Sites	Alaska	Tropospheric scatter and microwave communication network. Responsible for complete operations, maintenance, and support of this largely isolated network or stations criss-crossing the Alaskan state. Peak manning:600 Performed 1956 to 1959 and re-awarded 1969.
Western Test Range	Numerous land facilities; 10 instrumentation ships	California, Hawaii, Eniwetok	Missile range contractor, Responsible for O&M of all instrumentation and communications system, data processing, engineering and support services of the Western Test Range. Provided O&M of the electronic system aboard 10 range ships (5 Apollo ships and 5 range ships). Peak manning: 1940. Performed 1959 to present.
465L Program	4 Control Centers; over 100 remote sites	U.S.A. (virtually all states)	An electronic control system designed to collect, process, and display near real-time data of SAC forces. An ITT Turnkey System. FEC responsible for installation, test and checkout, interim O&M and for training of USAF personnel. Period 1960 to 1964. Peak FEC manning; 400.
486L Program	80 sites	Spain, Italy, Greece, and Turkey	A large USAF communications project composed of Tropospheric scatter and microwave facilities. FEC designed, installed, tested, and performed operation and maintenance services. Performed 1962 - 1967.
Atlantic Undersea Test and Evaluation Center	6 sites	Bahama Islands	Test and evaluation center of the U.S. Navy for Underwater and underwater/air weapon systems. ITT had overall system design, development, installation and checkout. FEC performed installation, checkout and interim operations. Performed 1964 - 1965. Manning: 75
Eglin Gulf Test Range	7 sites	Florida Gulf Coast	Test and evaluation of short range missiles. Instrumented to provide space position and telemetry data, acquisition, display, recording and transmissions for control and tracking of multiple targets and missiles. FEC peformed installation, test, training and interim operation and maintenance functions. Performed; 1958 - 1960. Peak manning: 200.

FIGURE 4.2-1

FUNCTION	Western Test Range	Comm & Instrm Support Svcs, NASA/KSC	Ballistic Missile Early Warning System	Distant Early Warning Line	465L Program SAC CMD & CONTROL	Atlantic Undersea Test & Eval. Center	Eglin Gulf Test Range	USNS Vanguard Support Services	Naval Missile Facility O&M (PMR)	McGregor Range	GRAIL Project, NASA/MSFC (Subcontract)
O&M Technical Systems											
USB (TLM, Voice, Tracking)	X							X			
Telemetry	X	X			X	X	X	X	X	X	
C Band Radar	X		X		X	X	X	X	X		
Data Transmission	X	X	X	X	X	X	X	X	X		
Display/Monitoring	X	X	X	X	X	X	X	X	X	X	
CCTV	X	X		X	X	X		X		X	
UHF Command	X				X	X	X	X	X		
Control Centers	X	X	X	X	X	X	X	X	X	X	
Acquisition Aid	X				X	X	X	X	X		
Timing	X	X			X	X	X	X	X	X	
Optical	X				X	X		X	X		
Ships Position & measuring	X						X	X			
Data Processing	X	X	X	X	X		X	X		X	
Comm - UHF, VHF, HF	X		X		X	X	X	X			
M/W	X	X	X		X	X		X	X		
Satcom	X						X				
TTY	X	X	X	X	X	X	X	X			
Intercom	X	X	X	X	X	X	X	X	X		
Test and Calibration	X	X	X	X	X	X	X		X		
Antennas, 30' or 85'	X		X			X					
O&M Facilities Utilities											
Power Generation			X	X				X			
Water Supply			X	X							
Sanitation			X	X							
Heating, Lighting, A/C			X	X							
Roads and grounds			X	X							
Vehicle O&M	X		X	X					X		
Fire & Site Protection			X	X							
Field Engr'g & Tech Support											
Install/remove systems	X	X	X	X	X	X	X	X	X	X	X
Equipment/Systems Modifications	X	X	X	X	X	X	X	X	X	X	X
O&M Procedures	X	X	X	X	X		X	X	X		
Station Logs	X	X	X	X	X		X	X	X	X	X
Operating Manuals/Plans	X	X	X	X	X		X	X	X		
Operating schedules	X	X	X	X			X	X	X	X	
Engineering surveys, studies	X	X	X	X	X	X	X		X		
Logistics											
Property Accountability	X	X	X	X		X	X	X	X	X	
Material Control	X	X	X	X		X	X	X	X	X	
Receiving, Issue and storage		X	X	X		X	X	X	X	X	
Inventory	X	X	X	X		X	X	X	X	X	
Training											
Formal	X	X		X	X		X	X	X		
Cross-trainign	X	X	X	X				X	X		X
OJT	X	X	X	X				X	X	X	X

FACILITIES O&M PROJECT-FUNCTION MATRIX

FIGURE 4.2-2

NAME OF PROJECT	DEWLINE	WHITE ALICE	BMEWS	TITAN	PALMDALE	KILMER
DESCRIPTION	NORTH AMERICAN AIR DEFENSE DETECTION REPORTING SYSTEM	INTEGRATED ALASKA COMMUNICATIONS SYSTEM	NORTH AMERICAN BALLISTIC MISSILE DETECTION	MISSILE BASE ACTIVATION & M & O	MAINTENANCE AND FACILITIES USAF PLANT #42	JOB CORPS TRAINING CENTER
CUSTOMER	USAF	USAF	USAF	MARTIN COMPANY	USAF	U.S. OFFICE OF ECONOMIC OPPORTUNITY
CONTRACT NUMBER	F04606-67-C-1425	F04606-69-C-0894	F04601-69C-0555	DEN-Y-99836	F04611-68-C-0001	CEO-1315
LOCATION	ALASKA CANADA, & GREENLAND	ALASKA	ALASKA/GREENLAND	MOSES LAKE WASHINGTON	PALMDALE CALIFORNIA	CAMP KILMER NEW JERSEY
NUMBER OF OPERATING LOCATIONS	65 (Peak)	45	2	4	1	1
CONSTRUCTED BY	USAF	USAF	USAF	USAF	USAF	USAF
ESTIMATED VALUE	$1,000,000,000	$254,196,000	149,498,000	$100,000,000	$17,000,000	$15,000,000
ANNUAL OPERATING COST	$ 30,000,000	$ 17,000,000	18,000,000	$ 9,000,000	$ 1,000,000	$12,600,000
ANNUAL A&E COST	$ 1,000,000	$ 100,000	0	$ 500,000	NONE	$ 10,000
ANNUAL CONSTRUCTION COST	$ 10,000,000	$ 350,000	0	$ 5,000,000	NONE	$ 100,000
CONTRACT DATES	1956-Present	1956-60;69-Pres	1969-Present	1961-1962	1964-Present	1964-1968
PEAK EMPLOYMENT	2400	565	650	1600	315	690
FACILITIES O&M						
BUILDINGS NO	415	180	82	8	8	190
BUILDINGS S.F.	1,500,000	500,000	1,380,059	1,350,000	90,000	700,000
ROADS MI.	232	143	11.0	10	19	10
RUNWAYS MI.	45	40	1	-	10	-
GROUNDS ACRES	124,000	31,000	37,143	150	5,800	230
WATERLINES MI.	10	10	6	15	8	15
WATER STORAGE GAL.	2,540,000	15,000	-	250,000	1,800,000	500,000
SEWER LINES MI.	5	-	2.9	15	3	15
TREATMENT PLANTS O.	62	28	1	4	1 (BMGD)	MUNICIPAL
POWER LINES MI.	81	139	18.4	15	6	15
POWER PLANTS NO.&KW.	(65)26,000	16,000	(2) 62,000	18,000	COMMERCIAL	COMMERCIAL
SUB STATIONS KVA	13,250	2,100	37,500	-	20,000	2,400
HEATING PLANTS BTU	150,000,000	14,500,000	526,080,000	40,000,000	3,850,000	165,000,000
STEAM LINES MI.	-	-	2.8	15	-	15
AIR CONDITIONING TONS	-	150	444	3,500	65	-
VEHICLES NO.	1,200	850	124	100	120	50
HEAVY EMPLOYMENTS UNITS	600	136	97	30	75	10
AIRCRAFT EA.	17	-	-	-	1	-
SHIPS EA.	38	-	-	-	-	-
RAILROAD MI.	-	-	3	-	-	1
SHOPS S.F.	70,000	73,000	65,600	10,000	21,000	36,000
WAREHOUSE S.F.	325,000	50,000	47,648	50,000	7,500	40,000
TELEPHONES NO.	1230	3500	775	200	76	500
RADIO COMM. MI.	8000	6800	139	100	-	-
COMM. CABLE MI.	112	85	30	115	7	-
FUEL STORAGE GAL	21,000,000	4,600,000	533,000	325,000	11,000	8,000
CONVEYORS MI.	-	-	0.1	-	-	-
FOOD SERVICE NO.OF MEALS	1,800,000/Yr.	150,000/Yr.	1,059,960/Yr.	-	-	2,625,000/Yr. (Based on full student complement)
EQUIP.CAL. NO. OF EQUIP.	2,650/Yr.	5,500/Yr.	6,881/Yr.	1,500/Yr.	-	-

FEDERAL ELECTRIC CORPORATION

MAJOR CONTRACTS SUPPORT INFORMATION

FIGURE 4.2-3

of the specific programs and contracts for FEC services in Southeast Asia are briefly summarized in the following paragraphs.

4.3.2 COMTETS PROJECT

4.3.2.1 This project includes the operation and maintenance of the long-lines communication system throughout Thailand. More than forty sites provide an integrated communications network which includes modern tropospheric and microwave point-to-point radio sites; dial telephone exchanges with outside plant cable distribution networks to subscriber installations; tributary and parallel radio links consisting of military tactical equipments, tandem switching centers, and AUTOVON and AUTODIN facilities. A significant aspect of this contract is the requirement that FEC train and site-qualify Thai civilian personnel to assume various operational and maintenance responsibilities at the various sites. This training program has been totally successful and to date several hundred Thai personnel have been trained to fill assignments as engineers and technicians.

4.3.2.2 Other responsibilities of the COMTETS Project include the operation of the Area Maintenance and Supply Facility (AMSF). This AMSF is the supply and maintenance facility which supports the more than 40 sites comprising the ICS communications network. The systems logistics functions are supported by a computerized supply system. A wide range of maintenance functions include an Electro/Mechanical Rebuild shop and a Maintenance Division staffed with highly skilled personnel for all trades in the Communication/Electronics maintenance field.

4.3.3 COMVETS PROJECT

4.3.3.1 This project is similar to the COMTETS Project. The primary mission is to provide operational, maintenance and logistics support of activities related to the longlines communication network throughout Vietnam. This area is also provided with an AMSF installation in support of the system. Special cross-border trunking between sites of each network provide for common usage of the COMTETS and COMVETS systems.

4.3.4 ICCS COMMUNICATIONS SYSTEM - This system provides for a voice communications network serving the ICCS Headquarters, regional sites, team sites, ports of entry, mobile teams, air to ground relays and manual switchboard and telephone operations. Operational, maintenance and installation personnel, repair facilities, replacement of parts and supplies and associated logistics support, power generation support, vehicle and equipment allocation control, and engineering and management services are provided by FEC at all ICCS locations in the system. The entire project concept and system specifications were designed by and are now being operated and maintained by FEC.

4.3.5 BOA - Under a Basic Ordering Agreement type contract with USASTRATCOM, FEC provides installation, operation, maintenance or repair services for any STRATCOM facilities and equipment throughout the world. Engineering studies, design plans, and major telecommunication system engineering tasks are assigned under this agreement. FEC currently is performing on assigned tasks within Vietnam.

4.3.6 VOF - This contract included the maintenance and repair of the studio transmitters and associated broadcasting equipment, antennas, guyed towers and supporting power generators, building and utilities maintenance, and air conditioners for the Voice of Freedom broadcast facilities in Vietnam, under direction of the US Embassy.

4.3.7 VOA (PROJECT BIG SQUIRT) - This contract includes the operation and maintenance of the Voice of America facility at Hue, Vietnam. Responsibilities include the support of all facility equipment listed in paragraph 4.3.6

4.4 SUPPLY EXPERIENCE AND CAPABILITY

4.4.1 GENERAL

Federal Electric Corporation can provide the complete range of integrated logistics support services, develop and operate logistics systems, and prepare detailed supply operating procedures for management and control of government property. We have provided this type of service for other governmental and commercial agencies during the past fifteen years and are currently engaged in furnishing logistics support throughout the free world. FEC currently has the depth of manpower and resources to staff and manage logistics programs with a minimum of delay and normally does not engage in any major subcontracting to fulfill program requirements.

4.4.2 SONDRESTROM

4.4.2.1 On July 1, 1968, FEC became one of the first civilian contractors to totally manage the logistics function at an Air Force Base, Sondrestrom Air Base, Greenland.

4.4.2.2 Our logistics management techniques, versatile as they were, were particularly suitable for the required interface with an Air Force operation and, in fact, resulted in far fewer problems than one would have expected. There were certain Air Force requirements (for example NORS reporting and requisitioning) that could not be changed and, therefore, whatever system was used had to provide for these unique requirements. FEC's logistics system not only smoothly interfaced with all Air Force requirements, it did the job more efficiently (as indicated, for example, by an increased requisition fill rate and a decrease in VDP volumes) and at less cost.

4.4.3 THULE AIR BASE

4.4.3.1 On 1 October 1969, FEC assumed contractual responsibility for the logistics management of Thule Air Base, thus assuming logistics responsibility for all "north-of-the-Arctic" Air Force Bases. Our management of Thule Air Base was an extension of our successful management of Sondrestrom Air Base. Both bases were managed in a similar fashion except that Thule Air Base is a much larger operation and provides supply support (indirect non-operational spares) to a BMEWS Site as well as to all base organizations. Again, integration of Air Force requirements/procedures with the FEC mode of operation as well as phase-out of the prior contractor's operation was accomplished with a minimum of effort and no disruption to base operations. This is particularly significant since key management positions had to be staffed, lower echelon positions had to be staffed, lower echelon positions vacated by former contractor personnel had to be filled, and former contrator personnel remaining at Thule with FEC required retraining in a totally new system.

The fact that this transition was smoothly accomplished attests to FEC's expertise in planning and phase-in as well as in the field of logistics. Our logistics operation has been quite successful over the years, progressing from an approximate 58% Fill Rate to a consistent Fill Rate of over 90%.

4.5 DEWLINE

4.5.1 Commencing in 1956, FEC had contractual responsibility for operation, maintenance and support of the USAF Distant Early Warning (DEWLine) system. The DEWLine is a 4100 mile radar and tropospheric scatter radio chain extending from the eastern coast of Greenland through Canada to the Northwest tip of Alaska. It was originally designed to detect and provide Early Warning of aerial attacks across the polar regions. In recent years it has also assumed vital defense communications functions.

4.5.2 Normal contractor responsibilities for the system include, in addition to the operation and maintenance of prime mission electronic equipment, the maintenance of buildings, utilities, grounds, roadways, airstrips, liquid fuel systems, water and sewage systems, heating and ventilating systems, refrigeration and air conditioning systems, vehicular and powered ground equipment, and AGE equipment. Further, the following were provided: refuse collection and disposal, custodial, fire protection, depot level maintenance, engineering and construction and entomology services.

We have operated a programs division which provided for programs development, planning real estate management, cost accounting material control and industrial engineering.

4.5.3 The data outlined below lists significant factors of the support provided.

4.5.3.1 AIRFIELDS AND AIR TRANSPORTATION - On the DEW System contract, we established and operated a "vertical" airlift to the DEWLine sites from staging areas in Fairbanks, Edmonton and Montreal (later Fairbanks and Winnipeg). Supplementing this, a lateral system was established and operated across the line which handled the needs of 34 stations (formerly 65) including the Greenland stations. The personnel at these facilities handle cargo and passengers; maintain communications systems, airfields, aircraft heating systems and perform other required tasks. The air carrier contractors under FEC management and scheduling make approximately 3,000 flights per year using DC-4, C-46 and DC-3 aircraft, as well as helicopters.

4.5.3.2 AIRFIELD, ROADS AND GROUNDS MAINTENANCE - FEC also maintained roads, grounds and airstrips on the DEW System project. Included was a total of 232 miles of roadways varying from 1/4 mile to 12 miles in length and a total of 1,617,695 square yards of airstrips, helicopter pads and associated taxiways. These airstrips varied from 2500 to 6500 feet in length.

4.5.3.3 BUILDING AND STRUCTURES MAINTENANCE AND CUSTODIAL SERVICES - Within the DEW System, FEC maintained 415 buildings comprising in excess of 1,500,000 square feet of floor space. These structures included personnel quarters, equipment buildings, warehouses, garages, powerhouses and hangars.

4.5.4 Other important aspects of Facilities Engineering functions performed by FEC were those relating to antenna towers, search radar radome, and 30, 60, and 120 foot Troposcatter antennas.

Specifically, routine preventive and corrective maintenance was executed diligently and expediently to ensure maximum operational effectiveness of prime mission equipment and maintain a reliability of 99.8%, required by contract.

4.5.4.1 Examples of related preventive maintenance were: checking and retensioning guy wires, replacement of worn hardware, tower painting, radome caulking, feedhorn support checks, inspecting tower foundations and anchors (concrete), and replacing worn insulators on all pole line communications equipment.

4.5.4.2 Skilled personnel executing the preventive maintenance programs successfully limited down time to those circumstances beyond our control (i.e., natural causes such as severe storms, or equipment/vendors design or manufacturing defects).

4.5.5 GENERATOR OPERATION AND MAINTENANCE - Total available generating capability under FEC's operations, maintenance and repair responsibility, was 20,754 kilowatts, which included approximately 160 individual generators.

4.5.6 DEPOT LEVEL MAINTENANCE SHOPS

4.5.6.1 To handle the depot level maintenance in the Arctic, FEC established and staffed two depot level maintenance facilities, one each for the eastern and western regions. These facilities handled the overhaul and repair requirements of all heavy transportation, electrical power generating units, construction equipment, various types of powered ground equipment, and AGE equipment supporting transient aircraft requirements.

4.5.6.2 Some details of the two depot facilities are of significance:

Each facility consited of 12,800 square feet of space devoted to such specialty shops as:

- Engine Rebuild
- Component Rebuild
- Magna-flux
- Welding - Sheetmetal
- Paint
- Tool Crib
- Dynamometer & Test
- Machine Shop (complete)
- Electrical Repair
- Glass Fabrication
- Fuel Injection & Governor
- Degreasing & Radiator Repair
- Carpenter

4.5.6.3 Approximately 200 to 250 electrical/mechanical units underwent complete overhaul each month from each of these facilities. These facilities were organized and managed to criteria and standards in USAF manuals, regulations and technical orders.

4.5.6.4 In addition to economical repairable items submitted to the DLM for rebuild, the DEWLine was actively engaged in an aggressive "repair and return" program which was supported by the DLM facilities.

4.6 WHITE ALICE SYSTEM, ALASKA

4.6.1 FEC was responsible for the operation and maintenance of the White Alice Communications Systems from its inception in 1956 until 1960, including the initial operation and system shakedown. FEC was again awarded the White Alice Contract in 1969.

4.6.2 The White Alice System comprises 79 tropospheric scatter and microwave communications stations - some manned, some unmanned - and extends from Cape Lisburne north of the Bering Strait, in the Arctic Ocean, 1400 miles southeast to Smuggler Cape in lower Alaska, and from Shemya on the western tip of the Aleutian island chain 1800 miles west to Tok junction near the Canadian border.

4.6.3 In addition to the operation and maintenance of communications equipment, the full range of facility and utility systems were also operated and maintained as shown in Figure 4.2-3. (Note: the number of stations in this system has increased from 30 in 1956 to 79 at present.) Power generating plants in the system include prime power plants; remote control operation at unmanned sites; automatic start and stop plants; prime power plant that automatically starts, transfers load, and stops; and no-break power units.

4.6.4 Other operation and mainteanance functions performed by FEC, such as facility services, maintenance of air strips and outside plant services are essentially the same as performed on the DEWLine with the exception of the operation of the two Depot Level Maintenance shops.

5. PERSONNEL QUALIFICATIONS

5.1 FEC has operated and maintained the 2 Vietnam LORAN-C stations since January 1973. The US Coast Guard and other US Government representatives associated with the SE Asia LORAN-C program are familiar with FEC's accomplishments and the FEC personnel involved. FEC will operate and maintain the Thailand LORAN-C stations with similarly qualified personnel.

6. INSPECTION PLAN

6.1 LORAN-C Station Inspection Plan

6.1.1 FEC will perform an initial inspection to include a physical inventory of all real property facilities, real property installed equipment and utility systems at the LORAN-C Stations at Sattahip, Lampang, and Udorn. A technical inspection will be perfromed on each unit of equipment to establish its present condition code and to develop a list of repair parts for requisitioning action. This information will also be used for guidance in establishing required repair parts stock levels.

6.1.2 FEC Headquarters Project management will make periodic inspections to all LORAN-C Stations. These station visitations will promote coordination between management and station operations on problem areas, O&M activities and other significant items.

6.2 Quality Assurance Program

6.2.1 A Quality Assurance Program will be maintained to assure that all services provided by FEC are subjected to the inspections and evaluations needed to determine compliance with both contract and equipment technical specifications. The QA inspections and evaluations will be conducted by the Quality Assurance section, with deficiencies reported to the Station Leaders for action and FEC (Project Manager) for information and action.

6.3 Quality Assurance Procedures.

6.3.1 FEC presently follows a comprehensive Quality Assurance (QA) Program as part of our O&M of the 2 LORAN-C stations in Vietnam (Tan My and Con Son). We propose to establish and follow a similar QA program as part of O&M of the 3 Thailand LORAN-C stations. QA engineering check lists, activity reports, and standard operating procedures will follow and comply with applicable USCG directives and manufacturers' technical manuals.

7. OPERATIONAL (TECHNICAL) PLAN

7.1 LORAN-C MISSION

7.1.1 The SE Asia LORAN-C system consists of one Master Transmitting Station, three Slave Transmitting Stations, and one System Area Monitor Station which maintains system accuracy. Station locations are as follow:

Sattahip,	Thailand	(Master Station)
Udorn,	Thailand	(Monitor Station)
Lampang,	Thailand	(X Slave)
Con Son,	Republic of Vietnam	(Y Slave)
Tan My,	Republic of Vietnam	(Z Slave)

7.1.2 The mission of the SE Asia LORAN-C system is to provide precise radio position fixing and navigation aid to military and civil aircraft and surface vessels.

The operational control and logistic and administrative support of these LORAN-C Stations is the responsibility of the USCG Section Office in Bangkok, Thailand.

7.1.3 FEC, under contract with the US Government, presently operates and maintains the LORAN-C transmitting and receiving equipment, and ancillary equipments at the Con Son and Tan My stations in the Republic of Vietnam.

USCG personnel presently operate and maintain these equipments at the Sattahip, Lampang, and Udorn stations in Thailand.

This proposal sets forth FEC's approach to adding O&M of the 3 Thailand stations to FEC's responsibilities.

FEC will then operate and maintain all 5 of the US Coast Guard SE Asia LORAN-C stations. This shall be accomplished at the optimum level of operational efficiency within equipment design specifications, providing electronically synchronized pulse rate and coding delays as determined and assigned by the USCG and accuracy of signal frequencies as determined by atomic (Cesium) standards at each station.

7.1.4 FEC will operate and maintain a continuous 24-hour communications watch and radio transmission over assigned frequencies.

7.2 COMMUNICATION-ELECTRONIC EQUIPMENT OPERATION AND MAINTENANCE

7.2.1 FEC shall perform uninterrupted twenty-four-hour-per-day, seven-day-per-week operation and maintenance for all USCG electronic systems equipment located at Sattahip, Lampang, and Udorn.

7.2.2. FEC shall maintain and/or submit operational and maintenance records and reports in accordance with applicable USCG technical publications. Minimum records and reports to be maintained and submitted by each station are:

- Cesium Comparison Readings (daily)
- Equipment Status Report (weekly)
- Report of LORAN-C Stations Operation and Electronic Engineering (monthly)
- LORAN-C Pulse Analysis (monthly & after each transmitter switch)
- Casualty Reports (as required)

- Electronic Repair Parts Allowance List (ERPAL) Management Update (quarterly)
- Electronic Plot Plan Update (semi-annually)
- Form 3134 Update (as required)
- Electronic Installation Change and Maintenance (EICAM) Report (as required)

FEC shall operate and maintain the communication-electronic equipment at each station so as to sustain equipment condition and performance to meet or exceed design criteria.

7.2.3 EQUIPMENT MAINTENANCE CONCEPT

7.2.3.1 FEC shall provide on-station maintenance for each LORAN-C operating station in Thailand. On-station maintenance functions to be performed include:

7.2.3.1.1 Performance of routine maintenance and scheduled services on all communication-electronics equipment plus ancillary equipment used in the operation and maintenance effort as prescribed by the applicable technical manuals, manufacturer's manuals or other appropriate maintenance reference publications. Scheduled and corrective maintenance that requires down time or places the LORAN-C system in a hazardous condition will be scheduled in accordance with COMSEASEC OPLAN NO. 1 (YR) and other applicable USCG directives.

7.2.3.1.2 Maintenance of ancillary equipment which includes all antennas; whip, loop, probe and the Granger model 747CA-7 log periodic and ground systems. The level of maintenance shall be performed, as required, to maintain equipment and antennas at their optimum performance.

7.2.3.1.3 Teletype Equipment Maintenance - Station preventive maintenance will be performed (by one Electronic Equipment Operator/Teletype Repairman assigned at each station) to the extent possible with the special tools, test equipment and parts provided by the Government. Major maintenance (Depot Level) of teletype equipment must be performed on a scheduled basis to ensure reliable performance and to minimize the possibility of breakdowns and down-time. We therefore propose to establish a semi-annual schedule to perform major maintenance on teletype equipment at all LORAN-C Stations. This major maintenance is estimated to require 40 manhours for each station semi-annually. The Cost section of this Proposal reflects these charges.

7.2.3.1.4 Testing, operational check-out, adjustment and alignment of C-E and ancillary equipment shall be in accordance with applicable USCG manuals and directives.

7.2.3.1.5 Corrective repair through fault isolation and replacement of plug-in type repair parts and components.

7.2.3.1.6 Maintaining a log for daily entries to show maintenance performed during each 24 hour period. The entries shall be initiated by the Lead Technician for such work performed and shall indicate:

7.2.3.1.6.1 Scheduled preventive maintenance tests, inspections and lubrications.

7.2.3.1.6.2 Regularly scheduled maintenance.

7.2.3.1.6.3 Emergency maintenance as required.

7.2.3.1.6.4 Job Record Sheet (JRS) which details parts replaced, actual work performed and nature of the trouble.

7.2.3.1.6.5 EICAM Report. Electronic Installation Change and Maintenance performed.

7.2.4 MAINTENANCE AND OPERATING PROCEDURES

7.2.4.1 FEC shall use applicable USCG directives in the performance of the various operation and maintenance tasks, along with commercial literature or technical manuals for the pertinent equipment. Each station will maintain up-to-date copies of all applicable publications (including changes and supplements thereto). Supplemental local standard operating procedures to provide direction to operating and maintenance personnel will be implemented.

7.2.4.2 MAINTENANCE TEST EQUIPMENT AND CALIBRATION CONCEPT

7.2.4.2.1 FEC shall perform authorized maintenance on all electronic support test equipment assigned, to include periodic maintenance services and minor adjustments and repair in accordance with applicable technical publications or manufacturer's manuals. In-shop calibration of test equipment will be performed within the capability of each station, (i.e. to the limit of the standards provided by the USCG). Repair and PMEL calibration services will be provided by a COMEASEC-designated repair/calibration facility for test equipment beyond the station capability. Repair and calibration services for all VHF-FM equipment (except antennas) will also be provided by the USCG.

7.2.4.2.2 The USCG, or designated support activity, will be responsible for the coordination, scheduling and preparation for shipment of test equipment and calibration standards necessary to calibrate station test equipment when

the test equipment cannot be moved from the station due to size, weight, or essentiality. FEC personnel will be responsible for preparation for shipment of all test equipment and calibration standards being evacuated from each station to the USCG.

7.2.5 BILLETING AND MESSING RESPONSIBILITIES

7.2.5.1 All FEC personnel, US and LN Thai, employed at the Thailand LORAN-C stations shall utilize locally available Billets and Mess Facilities. These costs have been allowed for in the estimated O&M costs set forth in this proposal.

7.2.5.2 The costs estimated in this proposal assume that US personnel employed by FEC at the Thailand LORAN-C stations shall be allowed access to the Post Exchanges and Commissaries operated by the US military in Thailand.

7.2.6 MEDICAL

The estimated costs set forth in this proposal assume that US military medical facilities in Thailand will be available to FEC US employees on a reimbursable basis.

7.3 FACILITIES ENGINEERING MAINTENANCE SERVICES

7.3.1 FEC will furnish labor for the operation and maintenance of each station's physical plant. The proposed manning rosters and estimated O&M costs set forth in this proposal reflect our estimation of the manning levels required to achieve satisfactory O&M of the Thailand LORAN-C stations.

Firm manning rosters and O&M costs will be finalized during negotiations between FEC and the US Coast Guard. These will provide for O&M of physical plant as well as communications electronic equipment at each Thailand LORAN-C station.

7.3.2 FEC will utilize applicable USCG manuals to provide direction to maintenance personnel to perform assigned tasks and responsibilities.

7.3.3 The station utility systems, machinery, equipment, buildings and structures will be operated and/or maintained in a manner which will protect the Government's investment therein, and will insure reliability and continuance of service consistent with the established mission of the LORAN-C Stations.

7.3.4 Depot level maintenance of major components, beyond station capability, will be furnished by FEC through maximum utilization of Government sources, or through vendors, local or CONUS as appropriate, on a reimburseable basis and as approved by the COR. All work performed shall be on a work order basis so as to ensure proper accounting.

7.3.5 FEC will advise the Government by providing pertinent information of necessary non-scheduled major maintenance and/or repairs to structures, grounds and equipment, and perform such maintenance and/or repairs as directed.

7.3.6 FEC maintenance shops will employ methods and techniques designed to insure the safety of personnel and equipment, obtain the highest practical operating economy and prevent the deterioration of shop equipment and the installed plant facilities.

7.3.7 An initial FEC task will be to conduct a physical inventory of all real property facilities, real property installed equipment and utility systems at each Thailand LORAN-C station. A technical inspection will be performed on each unit of equipment to establish its present condition code and to develop a list of repair parts for initial parts requisitioning action. This information will also be used for guidance in establishing required repair parts stock levels.

7.3.8 BUILDINGS, STRUCTURES AND FENCES - FEC maintenance personnel will make periodic inspections to ensure that structural components are sound; battens, panels and flashings are tight and properly caulked; building penetration are not leaking; and doors, windows and associated hardware are not jammed, warped or broken.

The condition of paint will be inspected periodically; blistered, chipped and flaking paint will be scraped and spot painted for preservation. Structural steel and other metal areas which are corroded will be cleaned to bare metal and zinc chromate, or equivalent, applied.

7.3.9 ROADS AND GROUNDS - FEC will perform routine maintenance on paved and unpaved areas to include access roads, parking areas and sidewalks so that they will be capable of being utilized at their rated capacity, for the purposes for which they were constructed. They will also maintain ditches, culverts and drainage systems on each base. To accomplish this task, FEC will provide an efficient inspection and routine upkeep program.

The maintenance of grounds will include grass cutting and seeding, maintaining grass in the antenna field at under 6 inches in height, watering of grass and shrubs, trimming and pruning of shrubbery and trees, raking soil and gravel areas, and the continuous task of cleaning trash, rocks and other foreign material from the entire area of the Loran Stations. Grounds services will include trash pickup on a daily basis.

7.3.10 MAINTENANCE RATIONALE - Scheduled inspections and maintenance will be performed on a day-to-day basis with station assigned maintenance personnel. In addition, FEC will provide each station with a local national labor pool to be drawn against as required, to perform tasks such as carpentry, plumbing, painting, roads and grounds, etc. Work load peaks may occur as the result of storm damage, sewerage system repair, or seasonal work which would not justify specific full time personnel.

7.3.11 RODENT AND INSECT CONTROL - FEC will provide these services as required for the prevention, fumigation, and extermination measures necessary against insects and rodents in or near the occupied premises.

7.3.12 TOWER INSPECTION AND MAINTENANCE - FEC will routinely inspect and maintain the top loading element guys and anchors, the tower guy anchors, the complete tower lighting system and lamps, tower base, tower structural guides and the ground system in accordance with the Coast Guard Manual, CG-358, Chapter 3-2-4, Station Level Inspection and Maintenance, and applicable instructions contained in Chapter 3-6, General Inspections and Maintenance;

Chapter 4, Tower Materials and Equipment; Chapter 5-3-1, Inspection and Maintenance of Wiring; and Chapter 7-6-1, Visual Check Method, for determining tower alignment.

7.3.12.1 Tower Inspection and Maintenance Rationale - One Rigger Technician will be responsible for the antenna towers for all LORAN-C stations. He will periodically perform the visual inspections for all the tower structural elements and electrical systems. The inspection results will be further evaluated by the Station Manager to determine the scope of maintenance required and the urgency thereof. Maintenance will be performed on the electrical system and corrosion control procedures will be applied to applicable structural elements (in accordance with Chapter 4 of CG-358), component repair of the top loading element guys and anchors, and other recurring work required to keep all tower hardware in good operating condition to reduce the frequency of major repair projects. The Rigger Technician will employ assistance from the station Electrician/Mechanic in the performance of certain tasks and to conform with standard safety measures. During periods when he is not productively engaged in tower maintenance work, such as during the rainy season, he will assist with other station maintenance functions.

7.3.12.2 Annual Tower Inspection Rationale - FEC will comply with the "Inspection and Maintenance Standards," established for 625-foot towers and enumerated throughout the USCG Manual CG-358. FEC will be guided by such other factors as the necessity for timely detection and correction of deficiencies to preclude the need for major repairs and the safety requirements and elevation hazards associated with inspection and maintenance of energized

towers. The time required to perform the annual inspection by a qualified engineer is estimated to be four (4) days for each tower. This is based on our actual experience on the Vietnam LORAN antennas and on similar antennas and towers utilized in the Integrated Communication System (ICS) and guyed towers associated with Voice of America (VOA) and Voice of Freedom (VOF). The Sr. Civil Engineer to be assigned has extensive experience in the design and construction of both communication and broadcast sites and prior to this served as a Field Project Engineer for the erection of 1000 to 1300-foot VLF towers. Our capability for this specialized task will reduce costs at the Thailand stations to 12 man days annually. Therefore, our Cost Estimates reflect only this charge, which represents a direct cost savings to the Government.

7.4 STATION FIRE PREVENTION AND SAFETY

7.4.1 FEC shall provide maximum fire prevention/protection with the GFE provided at each LORAN Station. All station personnel will be instructed in approved fire fighting methods and ground safety techniques. We will develop and provide an adequate Fire Prevention/Protection and Ground Safety Program for approval by the COR in accordance with applicable USCG directives. This program will be implemented and maintained by each Station Manager.

7.5 STATION SECURITY

7.5.1 Security - We understand that the Thai military provides security protection for the 3 Thailand LORAN-C stations. This proposal assumes that such security protection will be similarly provided during O&M by FEC.

No provision has been made in this proposal for any reimbursement or payment to such security personnel. If the U.S. Coast Guard is responsible for any such reimbursement or payment, FEC will endeavor to continue such arrangements with the costs added to those set forth in this proposal.

7.6 EMERGENCY ENGINEERING SERVICES

7.6.1 FEC Headquarters in Saigon and Bangkok can provide an experienced Engineering Services Department, highly qualified in engineering and technical support. These services can be provided, as required, on a negotiable reimbursable basis. Capabilities include On-base and Off-base engineering assistance on -

- High powered transmitters.
- Digital Systems.
- Receivers.
- H F and multichannel communications.
- Civil Engineering of structures, utility systems and AC/DC power systems.

7.7 LOGISTIC SUPPORT

7.7.1 FEC shall provide on-station supply and the required elements of off-station logistic support for the operation and maintenance of each LORAN-C operating station in Thailand except for the items supplied by the US Government and/or USCG as specified in the proposed contract.

7.7.2 On-Station Electronic Equipment Supply Functions

7.7.2.1 Identification and stockage of on-station essential repair parts, modules, system peculiar parts and components necessary to perform the required maintenance function.

7.7.2.2 Quarterly inventory of parts in accordance with ERPAL management directives.

7.7.2.3 Insuring that daily replenishment requisitions are submitted to USCG for repair parts expended in the maintenance program.

7.7.2.4 Maintaining accurate records of repair parts, assemblies and modules due-in from other USCG stations.

7.7.3 Off-Station Electronic Equipment Logistic Support:

7.7.3.1 Replacement repair parts for communication-electronic equipment and mechanical equipment associated therewith, replacement equipment, replacement technical manuals, supply catalogs and all required USCG forms will be provided through the central supply center at Sattahip.

7.7.3.2 Tools and Test Equipment - All electronic tools and test equipment and replacement thereof will be furnished by the USCG.

7.7.4 Logistic Support to the Facilities Engineering Maintenance Services

7.7.4.1 This support includes the provision of an accounting for items of supply and property at the 3 Thailand LORAN-C stations. The following will apply:

- All stocks will be warehoused on-station.
- Supply administrative support for stations will be a coordinated effort with the C-E supply functions.
- The LORAN Station at Sattahip will be utilized as the receiving point and shipments will then be forwarded to each station as appropriate.

7.7.4.2 Stock levels will be established for repair parts and consumable items at each station based upon:

- Consumption rate
- Major overhaul schedules
- Order/Shipping time

Initially, stock levels will be based on an estimation of these three factors utilizing FEC experience and station historical data.

7.7.4.3 FEC shall maintain sufficient stock level to satisfy the station needs while enforcing controls to prevent unnecessarily high inventories which are costly and affect manpower capabilities and warehousing space. For example:

Repair parts for a diesel generator engine major overhaul can be scheduled months in advance with proper planning. With this type of planning a complete major overhaul parts kit is not required to be on-station until the scheduled overhaul time is due, plus order/shipping time.

7.7.4.4 Inventory management will include physical inventories to be conducted at each station as follows:

7.7.4.4.1 Property - A joint inventory will be taken of all items of property that are to be transferred. Simultaneously, ownership (title) of all items will be determined for future accounting actions. Transfer documents will be prepared by the transferring activity. An FEC representative will sign for all property items and ensure that the items are fully described, priced, and the condition annotated. Property items for each station will be recorded on the Central Property Book at LORAN Project Headquarters or as directed by the COR. Hand Receipts will be prepared and the signatures of the Station Managers obtained to establish accountability and responsibility for this property.

7.7.4.4.2 FEC will provide the Government with an objective statement of any adverse condition of GFE within ninety (90) days after assumption of custody of property at each station. Approvals for disposition or for additional requirements of property will be obtained from the COR.

7.7.5 Supply Stocks

FEC assumes that all items on hand at the 3 stations will be transferred to FEC custody. Based on this assumption a joint inventory of all repair parts

and consumable items will be taken of warehouse stocks that are to be transferred. These items will be recorded, priced and extended. This inventory will not include items which are in a bench stock category, for which operating personnel will take possession. The warehouse stocks will be recorded on Stock Record Cards and will include quantity and unit price information. These stocks will be utilized for the support of station requirements.

7.7.6 Off-Station Facilities Engineering Services Logistic Support:

7.7.6.1 Replacement parts, materials, supplies and maintenance support will be furnished by FEC utilizing US Government sources, supplemented by use of local and off-shore commercial sources on a reimburseable basis.

7.7.6.2 The US Government shall be responsible for providing, on site, all POL requirements for all stations. Station Managers will be responsible for the submission of requirements to designated supplying agencies along with the required delivery dates.

7.7.6.3 We understand that the USCG presently employs government furnished vehicles at the 3 Thai stations. We recommend that these be replaced by locally rented vehicles. The amount shown for "Vehicle Support" in Section 8 of this proposal reflects our estimation of these costs. FEC will however retain and operate and maintain the existing government furnished vehicles if the US Government so desires.

7.7.7 LOGISTIC SUPPORT (Sattahip)

7.7.7.1 FEC will provide logistic and administrative support functions for the operation and maintenance of each LORAN-C station.

7.7.7.2 We recommend that the Sattahip LORAN-C station be utilized as focal point for Logistic Support to all 5 of the LORAN-C stations.

7.7.7.3 The Logistic Specialist assigned to the Sattahip station will supervise Logistic support to the Lampang and Udorn stations in addition to administering the Sattahip Logistic functions.

7.7.7.4 One Logistic Specialist will be assigned to the Lampang station and one will be assigned to the Udorn station.

7.7.7.5 The Logistic Specialist assigned to each station shall administer all supply and logistic functions at that station. He will be responsible for storage and warehouse activities and will ensure that receipts and stocks are properly documented and accounted for.

7.7.7.6 FEC will maintain coordination with USCG and US Government respresentatives regarding delivery/shipment of equipment between Thailand and Vietnam. Such coordination shall also be maintained regarding facilities engineering support, and processing/pickup-delivery of components and repairable items.

7.7.7.7 All necessary local market purchases and equipment requisitioning shall be arranged with cognizance by and approval of the USCG COR.

7.7.7.8 Vehicular transportation required to support all aspects of the LORAN-C O&M program in Thailand, including logistics, shall be finalized and arranged during contract negotiations between FEC and the US Coast Guard.

7.7.7.9 US Mail and Payroll Courier service will be employed to ensure the security of US mail and employee payrolls.

7.7.7.10 Transportation - The US Government will furnish transportation between Bangkok and Saigon for electronic repair parts, materials and test equipment.

7.7.7.11 The US Government will furnish in-country transportation for personnel traveling on contract business between stations and to provide logistic support to each station.

8. COSTS

8.1 GENERAL

8.1.1 This section sets forth our estimation of the costs to be incurred under FEC Operation and Maintenance of the 3 Thailand LORAN-C Stations. It should be noted that the manning rosters proposed herein and the attendant estimated costs are subject to finalization and confirmation during negotiations between FEC and the U.S. Government.

8.2 COST SUMMARY

8.2.1 Figure 8-1 gives a summary of all estimated costs.

8.3 LABOR COSTS

8.3.1 Labor costs have been estimated based on a projected contract period covering 1 January 1975 to 1 January 1976. The actual contract period shall be agreed upon during negotiations between the US Government and FEC. Labor costs for a longer contract period can be estimated by extrapolating costs shown for this period.

8.3.2 Figure 8-2 shows the projected number and types of personnel to be provided. As previously mentioned, the Project Manager shall administer the complete 5 station SE Asia LORAN-C system. The 2 Vietnam LORAN-C stations are not shown on Figure 8-2 because this chart addresses manning at the Thailand stations only.

8.3.3 Labor Costing has been estimated using the following considerations:

8.3.3.1 The Project Manager and his LN secretary will each work 48 hours per week.

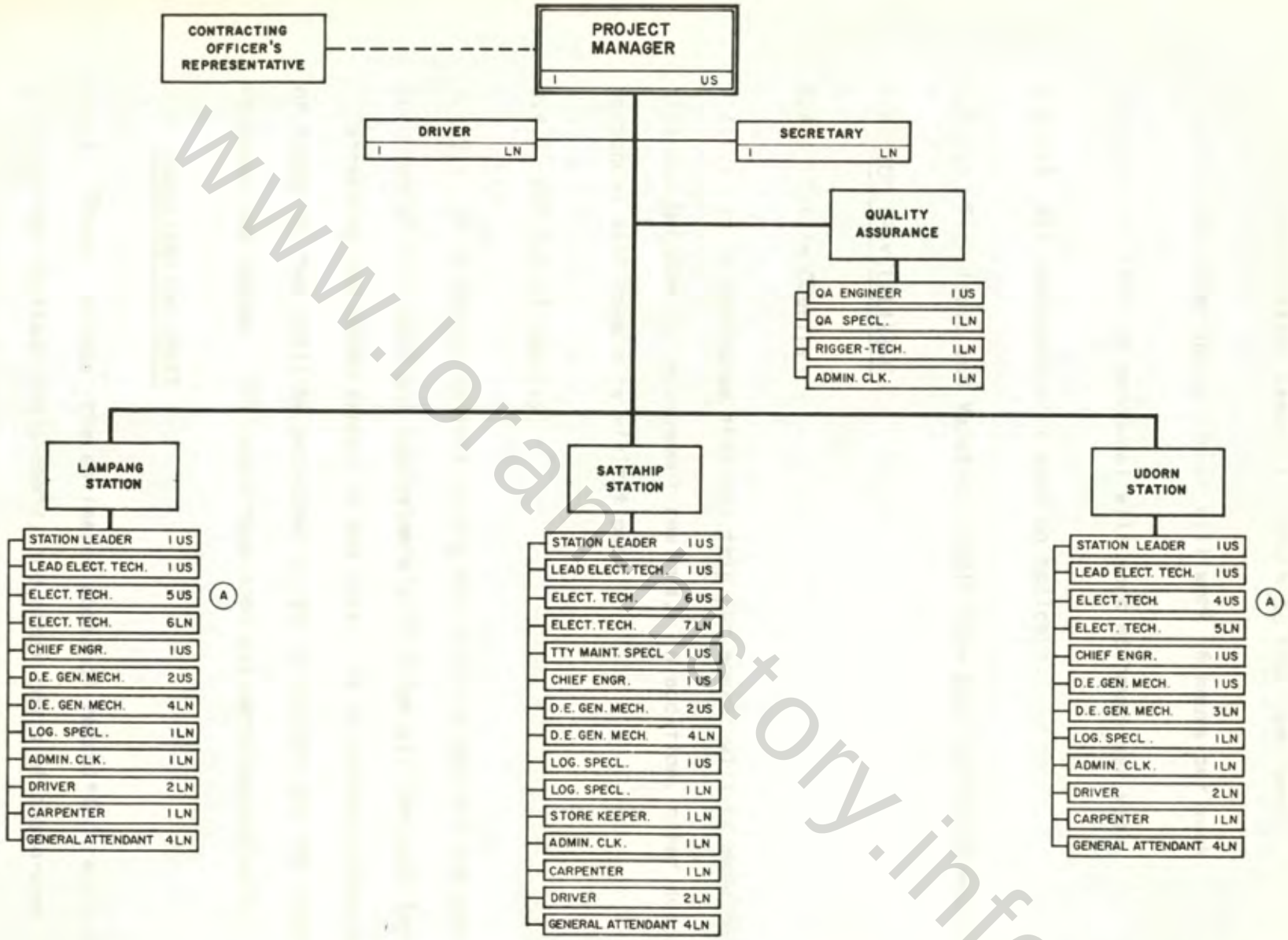
THAILAND LORAN-C O&M

COST SUMMARY

1 JANUARY 1975 TO 1 JANUARY 1976

DESCRIPTION	U.S. EMPLOYEES NO.	U.S. EMPLOYEES $ AMOUNT	THAI EMPLOYEES NO.	THAI EMPLOYEES $ AMOUNT	TOTAL NO.	TOTAL $ AMOUNT
SCHEDULED LABOR	33	$391,843	63	$132,470	96	$524,313
ADDITIONAL HOURS		4,193		2,808		7,001
BONUS 5%		19,802		-		19,802
SUB-TOTAL		$415,838		$135,278		$551,116
BONUS		27,450		9,968		37,418
BENEFITS		99,427		15,516		114,943
PER DIEM		83,512		-		83,512
FAMILY ALLOWANCE		5,780		-		5,780
QUARTERS ALLOWANCE		4,400		-		4,400
SUB-TOTAL		$636,407		$160,762		$797,169
TDY - TVL, LIV.						22,420
PCS - NEW HIRES/ATTRITION						14,946
CONUS SUPPORT						17,457
DAILY HIRES - CASUAL LABOR						2,400
RECRUITING						21,760
MATERIALS & SUPPLIES						26,400
MISCELLANEOUS COST						5,634
DIRECT SUPPORT						5,200
MANAGEMENT & ADMINISTRATION						9,719
VEHICLE SUPPORT						34,260
SUB-TOTAL						$957,365
G & A 9.8%						93,822
SUB-TOTAL						1,051,187
FEE 10%						105,119
TOTAL						$1,156,306

FIGURE 8-1 COST SUMMARY



(A) ONE E.T. AT LAMPANG AND UDORN WILL BE QUALIFIED TELETYPE REPAIRMAN.

RECAPITULATION

US	LN	TOTAL
33	63	99

THAILAND LORAN-C STATIONS
PROPOSED FEC MANNING

FIGURE 8-2

8.3.3.2 Each Station Leader will work 56 hours per week.

8.3.3.3 All other US personnel will work 56 hours per week.

8.3.3.4 All Thai LN personnel will work 48 hours per week.

8.3.3.5 All employees will work on holidays.

8.3.3.6 Sick leave and Vacation credit have been estimated and allowed for.

8.4 TDY TRAVEL/LIVING

8.4.1 TDY In Country

8.4.1.1 It is estimated that one trip per month will be made between each site and Bangkok for management reviews. In addition, other supervisory personnel will make site visitations.

8.4.2 TDY Out of Country

8.4.2.1 It is estimated that during Mobilization and the one year projected duration of this contract approximately 11 trips will be made for the purpose of attending the LORAN school in New York. It is further estimated that of these 11, two shall be personnel hired in Bangkok and the rest hired in Paramus, New Jersey. TDY costs have been estimated accordingly.

8.5 MOBILIZATION COSTS

8.5.1 These include the estimated costs of recruiting required personnel, placing them at their assignments, and other costs of phase-over from USCG to FEC operation and maintenance.

8.6 NEW HIRES

8.6.1 It is estimated that 3 Conus hired US personnel will be needed as replacements for LORAN employees due to attrition.

8.7 MATERIALS AND SUPPLIES

8.7.1 Estimated cost for repair parts and consumables for the contract period is as follows:

Repair Parts	$ 18,000
Consumables	8,400
Total	$ 26,400

8.8 MISCELLANEOUS CHARGES

8.8.1 The miscellaneous charges will consist of postage, passport and I.D. photo service and other miscellaneous charges.

8.9 TRAINING

8.9.1 It is assumed that newly hired LORAN technicians will be allowed to attend the USCG LORAN School in New York with no charge or fees levied for such schooling. Travel and associated living expenses to be incurred during such training periods have been estimated and included under "TDY Out of Country."

8.10 DIRECT SUPPORT

8.10.1 Direct Support cost includes the estimated cost for the following functions:

Antenna Inspection

Depot Level Teletype Maintenance

8.11 MANAGEMENT AND ADMINISTRATION

8.11.1 Management and Administration cost cover those services to be provided by the COMTETS Project, as explained in paragraph 1.4 of this proposal.

8.12 VEHICLE SUPPORT

8.12.1 We recommend that the government furnished vehicles presently utilized at the 3 Thai stations be replaced by locally leased vehicles. The amount shown for this item represents our estimation of the cost of such leased vehicles. FEC will however retain and operate and maintain the existing government furnished vehicles if the Government so desires.

8.13 G & A

8.13.1 A proposed G & A rate of 9.8% has been added to all costs.

8.14 FEE

8.14.1 FEC proposes a fee of 10%. This fee is based on the total estimated cost.

8.15 COSTING CONSIDERATIONS

8.15.1 The estimated costs set forth in this proposal have been calculated under the following assumptions:

8.15.1 Access to Post Exchanges and Commissaries operated in Thailand by the US Military will be available to FEC US employees.

8.15.1.2 Use of the U.S.Military operated APO Mail service will be available to FEC and its US employees.

8.15.1.3 US Government sponsored visas will be provided to the FEC US employees.

8.15.1.4 This LORAN project will have US Government sponsorship to exempt US employees and FEC from all Thai individual and corporate taxes and duties. Work permits or other such documents required by the government of Thailand will be provided by the US Government.

8.15.1.5 US military MAC air transport will be utilized for project personnel traveling between Bangkok and San Francisco. Commercial air transport will be utilized for travel between San Francisco and New York City.

9. SAVINGS TO U.S. GOVERNMENT

9.1 GENERAL

9.1.1 This section shall demonstrate that the U.S. Government will realize a substantial dollar savings by assigning O&M of the 3 Thailand LORAN-C stations to FEC. Those savings can be demonstrated by comparing the estimated cost of O&M by FEC (as set forth in section 8 of this proposal) with the costs presently incurred under the existing US Coast Guard O&M program.

9.2 SAVINGS COMPUTATION

9.2.1 Section 8 of this proposal presents the estimated costs for O&M of the 3 Thailand LORAN-C stations by FEC.

9.2.2 We have compiled an estimate of the cost to the U.S. Government for the existing US Coast Guard O&M program at these same 3 stations. FEC is familiar with the numbers and types of US Coast Guard personnel presently employed at each of the 3 Thailand LORAN-C stations and at the section office in Bangkok. This awareness stems from our having assumed O&M of the two Vietnam stations by replacing USCG personnel, and from having worked closely with the USCG stations in Thailand during the past eighteen months.

9.2.3 The U.S. Government has contracted to have FEC operate and maintain many of their Communications - Electronics and related facilities where cost

analysis has proven that such civilian contractor operation is less expensive to the government. We have participated in many such cost analyses and are able to calculate with a high degree of accuracy the actual total cost which the U.S. Government incurrs for various types of military and civilian employees: salary, benefits, medical and insurance, training, family support, housing and subsistence, travel and relocation, provision for retirement, etc.

9.3 ESTIMATED SAVINGS

9.3.1 We estimate that the cost to the U.S. Government for O&M of the 3 Thailand LORAN-C stations by US Coast Guard personnel, for a 12 month period, is ..... $ 1,674,933

9.3.2 As shown in Section 8 of this proposal, FEC will operate and maintain the 3 Thailand LORAN-C stations for a 12 month period for an estimated cost of 1,156,306

9.3.3 By assigning O&M of the 3 Thailand LORAN-C stations to FEC for this 12 month period, FEC estimates a cost savings, to the US government of approximately ..... $ 518,627

9.4 PROJECTED SAVINGS

9.4.1 Although the U.S. Government has effected a reduction of military presence in SE Asia, it appears that the Government intends to retain a significant force in this area to assist our Asian allies in developing strong and reliable self-defense capabilities. The nature and scope of these military assistance and support programs indicate a probability that a significant US military structure will remain in SE Asia for at least five more years. A major aspect of this structure is US military airpower - tactical and logistic. The SE Asia LORAN-C network is a vital part of this structure, being the only long range precision navigational system available to aircraft and ships of the United States and its allies.

9.4.2 It is therefore extremely likely that it will be in the best interests of the U.S. Government to keep the SE Asia LORAN-C network operational for a minimum of five additional years. By assigning O&M of the 3 Thailand stations to FEC, the U.S. Government may, therefore, anticipate a total savings, over a 5 year period, of:

$ 2,593,135