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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

AGENCY FOR INTERNATIONAL DEVELOPMENT

WASHINGTON, D.C. 20523

PROJECT PAPER AMENDMENT

Project 263-0117

May 1982

EGYPT - TELECOMMUNICATIONS III

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: C (A = Add, C = Change, D = Delete) — Amendment Number: 1 — DOCUMENT CODE: 3

2. COUNTRY/ENTITY: EGYPT

3. PROJECT NUMBER: 263-0117

4. BUREAU/OFFICE: NE / 03

5. PROJECT TITLE (maximum 40 characters): TELECOMMUNICATIONS III

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 12 DD 31 YY 85

7. ESTIMATED DATE OF OBLIGATION (Under "B." enter 1, 2, 3, or 4): A. Initial FY 80 b. Quarter 1 C. Final FY 82

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. Total	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. Total
AID Appropriated Total	80,000		80,000	122,000		122,000
(Grant)	80,000		80,000	122,000		122,000
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1.						
Other U.S. 2.						
Host Country		20,000	20,000		23,000	23,000
Other Donor(s)						
TOTALS	80,000	20,000	100,000	122,000	23,000	145,000

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) SA	664B	8.27		80,000		42,000		122,000	
(2)									
(3)									
(4)									
TOTALS				80,000		42,000		122,000	

10. SECONDARY TECHNICAL CODES (maximum 3 codes of 3 positions each): 700 — 11. SECONDARY PURPOSE CODE: 754

12. SPECIAL CONCERNS CODES (maximum 4 codes of 4 positions each): A. Code: B. Amount:

13. PROJECT PURPOSE (maximum 480 characters):

Support and strengthen ARENTO's ability to more efficiently manage and operate the present Egyptian Telecommunications System in order to improve service to customers.

14. SCHEDULED EVALUATIONS: Interim MM 12 YY 82; MM 12 YY 83; Final MM 12 YY 85

15. SOURCE/EXPLANATION OF GOODS & SERVICES: [X] 000 [ ] 941 [ ] Local [ ] Other (specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of 1 pages): 2nd Amendment

The original project is being amended to provide additional funding for technical assistance and telecommunications installations.

17. APPROVED BY — Signature: /s/ — Title: Donald S. Brown, Director — Date signed: MM DD YY 050982 — DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W TRANSACTIONS, DATE OF AUTHORIZATION: MM DD YY 051082

AID 1330-4 (3-79)

EGYPT - TELECOMMUNICATIONS PROJECT III
AMENDMENT

TABLES OF CONTENTS

DEFINITIONS AND ABBREVIATIONS

ADLI/CTIC	The Project Consultant to ARENTO (see Consultant)
A.R.E.	Arab Republic of Egypt
ARENTO	Arab Republic of Egypt National Telecommunications Organization, formerly ARETO
ATTI	American Telephone and Telegraph International, the successful bidder for the A.I.D. financed ESS contract
Consortium	A consortium of German, Austrian and French telecommunications firms joined for the purpose of contracting for telecommunication installations in Egypt
Consultant	Arthur D. Little International and its subcontractor Continental Telephone International Corporation; also abbreviated as ADLI/CTIC
ESS	Electronic Switching System(s), analog stored program control central office telephone exchanges
FACII	Ford Aerospace and Communications International, Inc., the successful bidder for the A.I.D. financed outside plant contract
GOE	Government of Egypt
IFB	Invitation for Bid
LE	Egyptian Pound, now officially valued at LE 0.83168 = U.S.$ 1.00
MDF	Main Distribution Frame, the wiring frame in telephone exchanges where switches and outside plant are interconnected
OSP	Outside plant, including all telephone network equipment from the main distribution frame in an exchange building to the telephones
T-Carrier	A multiplex system permitting transmission of 24 voice channels over 2 telephone lines
TTRI	Technical Training and Research Institute in Cairo

EGYPT - TELECOMMUNICATIONS III PROJECT AMENDMENT
I. SUMMARY AND RECOMMENDATIONS

1. Borrower: The Government of Egypt (GOE)

2. Executing Entity: Arab Republic of Egypt National Telecommunications Organization (ARENTO)

3. Amount of Grant Amendment: $42,000,000

4. Terms:

   To the GOE: Grant of $42,000,000
   To ARENTO: Regrant of the $42,000,000 in FY 1982

5. Description of the Project: The purpose of this Amendment is to improve the present telecommunications system in Egypt by: 1) providing additional funding necessary to finance seven Electronic Switching Systems (ESS) as set forth in Telecommunications I, II and III Project Papers plus an additional 40,000 to 50,000 expansion lines within the Project exchange areas; 2) providing additional technical assistance for improving ARENTO's training, project management, financial management, technical planning, tariff structuring and warehousing capabilities; for planning and surveying selected segments of ARENTO's transmission system; and for planning and design studies related to telephone exchange and network expansion; and 3) providing approximately 95 person-months of U.S. training for all levels of ARENTO personnel.

NOTE: Project as originally proposed was for a grant of $42,000,000 to the GOE and a regrant of these funds to ARENTO. As subsequently authorized by the Administrator, $42,000,000 was approved as a grant to the GOE with $20,000,000 passed on to ARENTO as a grant and $22,000,000 as a loan on terms and conditions satisfactory to A.I.D.

USAID PROJECT COMMITTEE

F. J. Bieganski, Project Officer
G. West, Loan Officer
F. J. Bieganski, Telecommunications Engineer
A. El Abd, Telecommunications Engineer
W. Loris, Legal Advisor
J. La Pittus, Economist

AID/W PROJECT REVIEW COMMITTEE

NE/PD, A. Hotvedt, Chairperson
NE/PD, D. B. Reese
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NE/E, G. F. Gower
NE/TECH, G. D. Self
GC/NE, T. Carter
PPC/PB, J. Segal

II. INTRODUCTION AND BACKGROUND

2.01 Existing Project Components

As a result of recommendations set forth in the AID-financed Telecommunications Sector Study (1978-79) and subsequent requests for assistance from the GOE, A.I.D. has signed one Loan Agreement (Telecommunications I, 263-K-047) for $40 million and two Grant Agreements (Telecommunications II and III, 263-0075 and 263-0117) for $80 million each to finance the U.S. dollar costs of:

A. Replacing seven existing rotary exchanges in Cairo and Alexandria with new, higher capacity ESSs.

B. Replacing existing buried outside plant facilities and interconnecting junction cables in six Cairo and Alexandria exchange areas with modern conduit, filled cable and T-carrier outside plant systems.

C. Providing technical assistance necessary for contracting and supervising the above-mentioned installations.

D. Providing technical assistance related to improving a wide variety of management and operations functions within ARENTO.

E. Providing selected equipment, tools and test gear necessary to upgrade the general physical plant in Cairo exchanges.

While the Telecommunications Project Papers I, II and III identified discrete project activities, contracting requirements for the common components of each Project have necessarily diminished the distinction between the three Projects. As an example, the Zamalek (Cairo) ESS in Telecommunications I, the Maadi, Heliopolis and Bab El Louk (Cairo) ESSs in Telecommunications II, and the Auto, Ibrahimia and Gleem (Alexandria) ESSs in Telecommunications III have been combined because of price minimization and contract management considerations, into one ESS contract for seven exchanges. Therefore, while financial and administrative considerations dictate this to be a Telecommunications III Project Amendment, this Amendment is directly related to the total A.I.D. telecommunications sector commitment as represented by all three Projects.

2.02 Prior Covenants

The major covenants under all three Telecommunications Project Agreements may likewise be conveniently considered in aggregate. The GOE and ARENTO have covenanted to:

A. Reorganize ARETO as an autonomous entity.

B. Propose a Tariff Rate Structure for 1980-85.

C. Revalue ARENTO asset accounts on the basis of replacement value less depreciation.

D. Freeze the number of ARENTO staff.

E. Transfer certain ARENTO funds from a liability account to an equity account.

F. Maintain a debt to equity ratio of 70:30.

G. Implement the Service Improvement Plan as set forth in the Telecommunications Sector Study Report.

H. Take steps to assure GOE organizations make payment for telecommunications services.

2.03 Status of Covenants

The progress/status of the GOE with respect to the covenants set forth in Paragraph 2.02 above is described below.

A. As indicated by its new acronym, the former ARETO organization has been formally changed into the autonomous entity ARENTO by enactment of GOE Law 153 in July of 1980. While ARENTO still has a reporting obligation to the Minister of Communications, the authority granted ARENTO is consistent with the types of authorities enumerated in the covenant, e.g. power to set employment quotas, to establish accounting and inventory systems, to appoint top managers and discharge unproductive workers.

B. Concerning a proposed tariff rate structure for 1980-85, a request for increased tariffs was sent by ARENTO to the GOE Parliament in August 1981. New rates were subsequently approved and implemented on January 10, 1982. The new rate structure is set forth in Annex F. The new rates are the result of a six month

initial tariff study jointly conducted by ARENTO and the Consultant. These rates are considered 'intermediate', pending more detailed long-range tariff analysis to be conducted by ARENTO and the Consultant under a proposed extension of the technical assistance contract. In light of ARE President Hosni Mubarak's pledge to eliminate subsidies to all but the most needy, we are confident the new tariffs are the beginning of a continued effort to equate tariffs with the cost of service. To deal with longer term tariff requirements, the Consultant has proposed that ARENTO establish a permanent Sector Office for Rates and Tariffs, and ARENTO is now reorganizing on the basis of this recommendation.

C. ARENTO has taken three steps to correct its valuation of assets. It has valued all newly acquired land and plant at market value rather than purchase price; all assets previously valued at old exchange rates have been revalued to the current exchange rate; and the total value of assets has been revalued less depreciation for the purpose of loan collateral. While the above steps do not constitute a total revaluation of assets in ARENTO financial statements, they represent a significant improvement. ARENTO's Committee of Capital Revaluation is committed to making continued revisions of asset accounts consistent with the Sector Study recommendations.

D. The number of ARENTO employees at the beginning of the Telecommunications I Project was approximately 50,000. After enactment of Law 153 creating ARENTO, the Chairman publicly announced he was refusing to accept additional employees assigned to ARENTO. In conjunction with the Consultant's Task A-7 Training team, ARENTO has also begun a thorough manpower analysis to determine what further steps are necessary for the development of sound staffing policies and procedures. As an initial result, the total ARENTO staff has declined from 50,000 to 48,000 employees. Additional measures to be undertaken in this important effort are described in the Training section, Paragraph 2.04D.

E. The transfer of LE 20 million from a debt to equity account on ARENTO's books was recommended under Telecommunications I primarily to achieve a debt/equity ratio of 70:30. However, the LE 20 million transfer, an assumption by the GOE of LE 20 million in ARENTO debt, is in fact an accounting procedure only and not debt relief. Such a transfer would result in an offsetting reduction of ARENTO's annual budget from the GOE for pass-through payment of domestic debt. (While most of ARENTO's 'foreign' debt is contracted directly with lenders, a significant portion of ARENTO's 'domestic'

debt, generally classified as local LE expenses including LE payments for the Consortium projects, will continue to be partially assumed by the GOE until ARENTO can cover its capital expenditures.) Therefore a transfer of debt to equity appears as a reduction in ARENTO's annual state budget. In light of the fact that ARENTO's long-term debt has increased, and will continue to increase during this critical construction period, the LE 20 million transfer would no longer be adequate to establish a 70:30 debt/equity ratio. ARENTO, on November 3, 1981, did request a transfer of LE 127 million from debt to equity, the amount currently needed to change their present debt/equity ratio to 70:30. Even with this transfer, however, it is not likely that the covenanted ratio can be maintained as long-term debt relating to the European Consortium contracts accrues. Since this transfer exercise does not really alter the basic system and operations of ARENTO, we recommend that this covenant be deleted, and that emphasis instead be placed on the tariff structure, the chart of accounts, billing and other efforts which impact on the actual finances of ARENTO rather than pursue additional transfers of funds between accounts. The efforts of the Project Planning and Management Office (PPMO) will also assist through determining the financial and operational capacity of ARENTO to uncertake additional loans.

F. The maintenance of a 70:30 debt/equity ratio is discussed in (E) above. While the June 30, 1980 long term debt for ARENTO of LE 336 million was lower than forecasted in Telecommunications III Annex E, the equity of LE 35 million is also much lower than anticipated. Part of the equity estimated in Telecommunications III was comprised of AID grant monies, none of which is reflected yet in ARENTO's equity account because AID funding is not recorded until contracts are signed. In addition, the amount of equity is lower because the revised tariffs which would have improved the net earnings of the last few years had not yet become effective. While the addition of the greatly needed equity — from this and prior A.I.D. grants and from the new tariffs — will not entirely resolve ARENTO's currently poor financial condition, it is felt that continued tariff revisions and financial and operational assistance provided through this Project will all contribute toward the long term resolution of balancing ARENTO's expansion needs with capital resources.

G. The Service Implementation Plan for Cairo as set forth in the Telecommunications Sector Study consisted of steps necessary to improve 1) exchange building environment, 2) operation and maintenance of local switch equipment, 3) records and maintenance of

toll, junction and exchange networks, 4) station wiring operations, 5) customer services, 6) procurement procedures, and in particular a recommendation to change to plastic cable, 7) vehicle maintenance, and 8) general management of the system as a whole.

Since completion of the Sector Study, the Service Improvement Plan (SIP) has become synonymous with the "Quick-Fix" Program, which is the basis of all the Consultants "B" Tasks, these being nine separate sub-tasks focussed on the above-noted SIP operations areas. Considerable progress on all the SIP items has been achieved as described in the Task B review, Paragraph 2.04 below.

H. Significant progress has also been made by ARENTO in collection of GOE telephone service payments. This was the result of several letters from the ARENTO Chairman to top-level GOE officials. However, the military and Ministry of Interior still owe about LE 5.3 million and LE 1.4 million respectively, and ARENTO efforts to settle these accounts continue. Past due accounts have also been brought to the attention of the Ministry of Economy and Economic Cooperation.

2.04 Status of Existing Project Components

The progress/status of the existing Project components (A through E in Paragraph 2.01 above) is as follows:

A. On October 21, 1981 a notice of award was issued to American Telephone and Telegraph International (ATTI) for the design, furnishing, installation, testing and maintenance of the seven new ESSs along with their requisite monitoring, air conditioning, fire detection, and power systems. The ATTI bid price for evaluated items, primarily consisting of in-place switching equipment, was $60,506,399 and LE 1,221,027. The non-evaluated (optional) bid items, consisting of training, extended maintenance, repair center, documents center, security systems, computerized operations center, and an additional switching system for New Maadi, were valued by ATTI at approximately $21,000,000. These non-evaluated items were then negotiated and a contract was signed for $80,904,793 on February 20, 1982. The scheduled completion of the ESS installations are staggered, one every two months, with the cutover of the Maadi Exchange 18 months from the effective date of the contract, and the simultaneous cutover of the three Alexandria exchanges 30 months after the effective date of the contract. Additional description of the ESSs can be found in the Technical Analysis, Paragraph 4.01.

B. The Invitation for Bid for turn-key construction of the six outside plant systems was issued to prequalified bidders on

October 23, 1981. Three bidders -- Ford Aerospace & Communications Int'l;; American Telephone and Telegraph International (ATTI); and Harbert Construction Corp./Teleconsult Inc. submitted bids in March, 1982. In May, the Contract was awarded to Ford Aerospace (FACII), this lowest responsive base bid for evaluation being $45,937,541 and LE 23,287,212. The proposed turn-key contract involves: final engineering, supply, installation, testing and maintenance of the complete outside plant systems from the main distribution frames to the distribution cable terminals (ARENTO will be responsible for the telephone connections); approximately 1,085 km of installed jelly-filled, T-screened and submarine junction cable; supply only of much of the service cable and hardware needed by ARENTO for telephone installations; and extensive training by the contractor to prepare ARENTO for take-over of the new systems. This is to be a fixed unit price contract, with an estimated bill of quantities. The completion schedule for outside plant exchange area acceptances are also staggered, every two months. The initial exchange (Zamalek) is scheduled for completion 15 months from the effective date of the contract, with the final exchange (Ibrahimia) to be completed in 25 months. Depending on the actual progress of work under the ESS and outside plant contracts, schedules may need to be adjusted to ensure compatible switching and outside plant cutover dates for each exchange area. Further description of the outside plant systems may be found in the Technical Analysis, Paragraph 4.02.

C. The ARENTO/ADLI/CTIC (Consultant) Contract I-80, signed March 23, 1980, in addition to providing for many Service Improvement Plan tasks as described in (D) below, also included 123 person-months of consultant effort for IFB preparation, evaluation of the ESS and outside plant bids and for supervision of the ESS and outside plant installations in Cairo only. The actual task of IFB preparation and bid evaluation for ESSs and outside plant is now estimated as having required 222 person-months. The Consultant's inability to prepare a definitive technical specification for the ESS invitation, ARENTO's lack of adequate System Plan drawings for the outside plant invitation and an initial underestimation of the difficulty of the entire task, were the primary causes for the increased person-months needed for invitation preparation and bid evaluation. The supervision of ESS and outside plant installation, with the additional supervision of work in Alexandria not included in the original contract budget, is now being negotiated as part of a Phase II of the contract to begin about May 1982. The increased person-months for the IFB preparation and for the addition of ESS

and outside plant supervision services in Alexandria comprise a significant portion of the increased technical assistance budget line item in this Amendment.

D. The second major focus of the Consultant's contract is institutional development with respect to management and operations of the telephone system. A brief summary of progress on the various sub-tasks is as follows:

A-1, Organizational Structure: The primary task of A-1 is to restructure ARENTO's internal organization according to the guidelines contained in the Sector Study. In August 1981, the A-1 report, "Recommendations for a Modified ARENTO Organization", was submitted to ARENTO. These are the main recommendations:

1. Create an additional Vice Chairman for Finance to consolidate all financial aspects of ARENTO, including all billings, collections, payments, auditing, and tariff administration.

2. Place all operations — national and international telephone, telegraph and telex — under the Vice Chairman for Operations and Maintenance.

3. Strengthen the Projects, Planning and Engineering group by adding a Sector Chief - Projects and Program Management Office (PPMO) to manage projects until they are accepted by Operations.

4. Assign Operations personnel to projects during the implementation phase to bring their field experience to the project and to give them training in the project technology to facilitate operations after acceptance.

5. Consolidate personnel-related functions into a single Human Resource group with responsibility for training, organization development, manpower planning, and personnel.

6. Strengthen Operations by adding a Sector Chief - Methods and Practices to be responsible for developing all practices and reporting procedures used by Operations.

7. Establish a performance reporting system for the continuous measurement of quality of service and level of productivity.

8. Create the position of Zone Plant Manager to manage telephone exchange maintenance, installation, and repair. Add Zone Customer Service and Operator Service Managers.

These and other lesser recommendations have been officially adopted by ARENTO and are now being implemented. A chart summary of the new structure is set forth in Annex G.

A-2, Program Management and Control: The initial scope for this task involved broad planning and project control systems improvement. However, in light of the great need for better management of ARENTO's rapidly growing project portfolio, this task was revised to focus primarily on project management only. The Consultant has organized and trained a completely new Project Planning and Management Office, which now prepares monthly computerized analyses of current and planned ARENTO projects. This new Office has worked closely on project budgeting with Task A-3 Financial Management personnel to develop better data collection procedures and to incorporate data analyses into the management decision-making process. With the very recent establishment of a Corporate Planning Office reporting to the ARENTO Chairman, the A-2 team is now expanding its efforts to include organization-wide planning.

A-3, Financial Management Systems: This task focuses on improving ARENTO accounting and financial functions and to work with other ARENTO offices to improve budgeting procedures. A new project accounting system is already in effect for a large number of current projects, and will soon be operational for all projects. A new computerized payroll system for ARENTO employees is gradually being expanded from its initial trial audience to all employees. The recommended Financial and Accounting Policies submitted to ARENTO by this task is in the final review stage and provides the basis for ARENTO to augment the standard government accounting system to accommodate modern corporate accounting and reporting. An overview of steps required to implement the new Financial and Accounting Systems Policies and a chart on the project accounting system can be found in Annex H.

A-4, Commercial Operations: This task focuses on preparing new commercial office and billing practices, and for establishing a new model commercial office. The practices have been prepared and accepted and the Dokki (Cairo) model office will open shortly. The proposed billing system is now being implemented on a trial computerized basis.

A-5, Purchasing and Inventory Control: A new purchasing and inventory system recommended by the Consultant has been adopted by ARENTO, and is currently being implemented in one major stores sector under this task. This successful initial work will be extended to all stores, the next procurement cycles remaining under Consultant assistance.

A-6, Technical Standards for ARENTO Systems: This task did not start until December 1981, the scope of work having been rewritten to better state ARENTO's specific standardization needs. The work on technical standards will necesarily extend beyond the current task expiration date but will not require additional person-months.

A-7, Managerial and Technical Training: The managerial and technical training task is being carried out under the auspices of the Technical Training and Research Institute (TTRI). While historically the TTRI has trained both newly hired ARENTO employees (primarily craft training) and high school graduates prior to entrance into university (sponsored by the Ministry of Higher Education), Task A-7 has sought to establish a greatly improved training capacity in terms of telecommunications supervision and management and of in-service training to ARENTO employees. As a first step, there was a requirement to establish the actual training needs of ARENTO which heretofore had no relationship to courses offered at the TTRI. The Human Resources Management Committee was created in ARENTO to specifically define ARENTO training needs and to establish the basis for more comprehensive personnel management planning. This committee, with the Consultant's assistance, has so far tackled several major issues in a professional manner, and resulting actions should greatly benefit ARENTO operations. This committee, for example, has worked closely with the Task A-2 Project Planning and Management Office to determine future ARENTO labor requirements for the many proposed ARENTO projects.

A second area of emphasis at the TTRI has been to establish the expertise of course development using modern training techniques and equipment. Whereas the pre-project TTRI technical courses were comprised primarily of lectures, courses have now been designed and

implemented using on-the-job laboratory kits on which actual installations and repairs are performed with electronic feedback given as to whether or not the task was performed correctly. Management training courses, previously non-existent in TTRI, have now been developed and over 60 ARENTO exchange and office managers have completed the initial course. These initial courses directly reflect the new management roles which ARENTO personnel will assume under the Task A-1 revised organizational structure.

With progress to date being very encouraging on Task A-7, the continued upgrading of training for ARENTO employees should be a top priority in technical assistance to the telecommunications sector.

A-8, Electronic Data Processing Center: This task focuses on improving the ARENTO in-house data processing capability. Through the conduct of billing, payroll and accounting automization under other tasks, it became evident that service bureau contracts for EDP is currently, and will be in the near future, the more attractive option for ARENTO's needs. The poor condition of ARENTO's current computer center and the lack of qualified computer personnel on ARENTO's staff have contributed to the decision to use service bureau contracts. While Task A-8 has prepared recommendations to upgrade ARENTO's in-house capabilities, the priority for such may be several years hence once ARENTO has gained experience with the newly installed billing, payroll and accounting systems.

B-1, Environmental Control: The B-1 task focuses on upgrading the air-conditioning, power, fire protection and other related environmental plant in the Cairo exchanges as part of the "Quick-Fix Program". To date, air-conditioning spare parts have been procured, with IFB package for air-conditioning replacement units, stand-by diesel and D.C. power battery units, and fire detection packages being currently prepared. The Consultant has also worked with ARENTO under this task to prepare and rennovate the exchange buildings in which the USAID-financed ESS equipment are to be installed. It is envisaged that a great deal of the environmental upgrading responsibility for individual exchanges will shift from central ARENTO control to individual exchange managers under the new ARENTO organization. The ARENTO training offices will therefore work closely with exchange managers to further improve the planning and provision of upgraded working and equipment environments in exchanges.

B-2, B-3, B-4, B-5, B-6 and B-7, Telephone System Operations and Maintenance Improvement: These tasks, dealing separately with Cairo exchanges, national and international tolls, junction plant, outside

plant, service to major clients, and subscriber station equipment, respectively, have focused on improving craft training at the training center, on improving the systems used for fault locations and maintenance dispatch, and on providing on-the-job experience with tools and equipment supplied under the AID Projects. These tasks have all been directed at areas highlighted in the Service Improvement Plan. ARENTO counterpart personnel under these various tasks have also been or are scheduled to go to the United States for training in their respective jobs (see Paragraph 3.04). The ARENTO maintenance performance has shown significant improvement as a result of these various tasks. In light of the large operations and maintenance training components included in the USAID-financed ESS and outside plant procurements, there will most likely be no need to extend these tasks.

B-8, Engineering and Operating Practices: This task has been coordinated closely with other operations tasks to develop, edit and produce appropriate technical standards and practices for ARENTO. The task has been performed well and does not need to be extended.

B-9, Goals and Objectives: Work under this task had a very slow start, and only recently have some central issues been defined with respect to goals and objectives in ARENTO. The major requirement is now felt to be the need for performance measurement on a regular basis throughout ARENTO. Most data now being used by ARENTO and the Consultant was generated through the Sector Study, which is already quite outdated, or by ARENTO and the Consultant through conduct of the various tasks. Since the need to establish regular data collection and analysis for performance measurement is critical to the establishment of ARENTO operations goals and objectives, performance measurement should become an integral component of the proposed amendment for additional technical assistance. Future work in this area will be greatly assisted by the analytical capacity of the AID-financed ESSs, by the Traffic Measuring Systems now being purchased through AID for specific Cairo exchanges, and by data collection procedures developed through the project accounting, tariff studies and operations tasks.

E. The provision of selected equipment, tools and test gear necessary to upgrade the general physical plant in Cairo exchanges was a primary component of the Telecommunications Project Paper I. From Project Paper I, Annex P, "Illustrative Equipment List of Items to be A.I.D. Financed", the top six priority items are already being supplied to ARENTO. These items include air conditioning spare parts, the Traffic Measuring Systems procured for the Opera

Exchanges, the tools and test equipment procured for all of ARENTO's Cairo operational tasks, and a sizable amount of subscriber-related cable, hardware and tools being furnished through the outside plant procurement. In addition, items related to improvement of the exchange physical environment, e.g. replacement air conditioning units, fire detection systems, and D.C. and stand-by diesel power units as mentioned above, are to be procured in the near future.

2.05 Status of Other Major ARENTO Projects

The European Consortium of Siemens (Germany), Thompson C.S.F. (France), and Siemens (Austria) is currently pursuing contracts for telecommunications projects with ARENTO under concessional loan protocol umbrella agreements. Siemens (Germany) is initially pursuing a contract for supply of 120,000 lines of switching and outside plant for Cairo. Price negotiations are expected to be completed in early 1982. Thompson C.S.F. and Siemens (Austria) have not yet entered into price negotiations on their contract for supply of 96,000 lines of switching and outside plant in Alexandria and of transmission facilities for Upper Egypt. Such negotiations should follow finalization of the Siemens (Germany) contract. Several exchange boundary discrepancies relating to USAID and Consortium-financed exchange equipment have been satisfactorily resolved, and assuring satisfactory interface between the U.S., European and other ARENTO systems does not appear to be a problem.

Under the Commodity Import Program (CIP), A.I.D. has financed the equipment for the Greater Cairo Microwave System to provide radio junctions among the Cairo exchanges. This system has proven very successful in improving the inter-exchange telephone service by replacing nearly 100% of the deteriorated underground junction cable plant. The last phase of this $60 million activity is now being completed.

The World Bank (IBRD) is proposing to enter into a $64 million loan to ARENTO for installation of 67,500 lines of semi-automatic exchange equipment and 60,000 lines of manual exchange equipment in rural areas, along with 180,000 lines of outside plant network and related transmission equipment. The IBRD is also considering provision of management technical assistance. The World Bank and USAID staffs have worked closely together to ensure compatibility of efforts and to reinforce the common covenants and conditions precedent considered important for improved ARENTO operations.

Japanese O.E.C.F. and the Saudi Development Fund are installing 47,000 lines of Hitachi crossbar equipment for the Canal area, with O.E.C.F. also supplying a large portion of the 60,000 lines of mobile automatic telephone exchanges ARENTO is now procuring.

ARENTO will be procuring and installing on its own approximately 235,000 lines of crossbar switching equipment throughout Egypt over the next three years. ARENTO is also replacing a large percentage of its old junction plant and is expanding telex exchanges and overseas submarine cable routes with the assistance of IDA and the Export-Import Bank of Washington respectively.

A summary of ARENTO's 1980-85 exchange installation program and funding sources is set forth in Annex I.

III. THE PROJECT AMENDMENT

3.01 Additional Funds for ESS

The first component of this Amendment is to increase the total funding available for ESS and related equipment and training by $33 million from the prior total of $62 million ($8 million in Project Paper I, $27 million in Project Paper II, $27 million in Project Paper III) to $95 million. This increased amount not only reflects the cost of the basic switching systems, but also the procurement of 40,000 expansion lines and additional and related ESS facilities and training. The ATTI U.S. dollar bid price of $60,506,399 for ESS evaluated items, which included the seven basic exchanges, HVAC, fire detection, standby power and one year maintenance, was within the original Project cost estimate for the ESSs. Also included in the contract as non-evaluated, optional items are: (1) an additional one year maintenance contract; (2) turn-key installation of the New Maadi exchange; (3) a repair center; (4) a documentation center; (5) security systems for the exchanges; (6) Centralized Operations and Maintenance (COM) centers for Cairo and Alexandria; and (7) a training program to include the training of 75 ARENTO engineers and technicians and the installation of a small-scale training switch in ARENTO's Cairo training center (TTRI). All of these items are deemed essential to the efficient operation of the seven exchange areas (see Technical Analysis, Paragraph 4.01). The ATTI contract, including these non-evaluated items, was executed on February 20, 1982 in the amount of $80,904,793 plus LE 1,612,179. Upon subsequently receiving a very competitive and low bid for outside plant, ARENTO wished to take advantage of the very favorable ESS and outside plant prices by providing between 40,000 and 50,000 expansion lines in the existing Project exchanges in Heliopolis, Auto, Gleem and subject to further investigation, perhaps Bab-el-Louk and Zamalek. The number of lines to be provided in these high demand exchanges were previously intentionally limited to stay within the A.I.D. Project budget. However, USAID and the Project Consultant now fully concur with the demand for and advisability of procuring at least 40,000 expansion lines at this time. The budget for a proposed contract amendment for the additional ESS lines is $10 million. Allowing a reserve for price adjustment due to realignment of the ESS schedule to coincide with the outside plant schedule and for contract amendments, we are proposing a total ESS contract budget of $95,000,000.

3.02 Reduction of Funds for Outside Plant

The second component of this Amendment is to decrease the total funding available for outside plant and related equipment and training by $3 million from $80 million ($10 million in Project

Paper III) to $77 million. The basic cost for 168,000 lines for the six exchange area outside plant is now estimated at approximately $46 million. The outside plant contract will also include approximately $3 million worth of additional junction plant to adequately tie the six exchanges into the Cairo and Alexandria networks, bringing the equipment subtotal to $49 million. The actual installed quantities under the fixed unit price contract for outside plant may vary up to 15 percent from the initial estimates, so an allowance of $8 million over the life of the contract (approximately 15 percent of $49 million) is added to the estimate of $49 million for equipment. This budgeted allowance will not be reflected in the initial contract amount, but will be reserved for installed quantity adjustments over the life of the contract. The training of 13 engineers, 34 technicians and 175 crafts persons, a one-year maintenance contract, and final delivery of system spares are also integral parts of the proposed contract. The above-totalled $57 million plus an estimated $8 million for related training, maintenance and spare parts, and possible change orders required throughout the Contract brings the outside plant estimate to $65 million. Based on actual bid prices from FACII, the 40,000 expansion lines for Heliopolis, Auto, Gleem, Bab-el-Louk and/or Zamalek would require an outside plant expenditure of approximately $12 million, bringing the total outside plant budget estimate to $77 million. This estimate is less than the current allotment of $80 million, the difference of $3 million to therefore be reduced from the total Project budget.

3.03 Additional Funds for Technical Assistance

The third component of this Amendment is to increase the total funding available for technical assistance/consulting services by $24 million from $20 million ($7.5 million in Project Paper I, $7.5 million in Project Paper II, $5.0 million in Project Paper III) to $44 million. The original ADLI/CTIC contract with ARENTO contains a cost reimbursable contract estimate of $17,436,187 for the provision of tasks as stated in Paragraphs 1.04 C and D above. A $3 million modification to this original contract has just been approved which provides additional funds to cover the increase in costs associated with finalization and award of the ESS and outside plant bids, the tariff study and other task expenditures expected prior to May 1982. The work completed by this date will be referred to as Phase I of the technical assistance. The modification to complete Phase I is estimated to increase the existing Consultant contract estimate by $4.0 million to a total of $ 21.5 million. It is also anticipated that another major contract modification will be signed in May 1982 to fund Phase II. While there is ongoing discussion of whether to retain the current cost reimbursable and task format of the contract or to restructure the contract in favor of a time-rate contract with more broadly defined responsibilities for the Consultant, the proposed content of this second major modification

a. supervision of Alexandria ESS and outside plant installations (which is not included in the ongoing contract Phase I) and additional Cairo supervision as may be necessary;

b. preparation of network designs which may also establish the economic feasibility of installing new local or tandem exchanges and outside plant within the ARENTO system;

c. assistance in transmission planning and surveys, including microwave links within Egypt;

d. the second phase of the tariff work, including determination of long-term revenue requirements, data management for ongoing tariff review and support of the new Rates and Tariffs Sector in ARENTO;

e. continued upgrading of the ARENTO training and personnel systems;

f. expansion and improvement of the project management system with emphasis on the entire ARENTO project portfolio and long-range planning; and,

g. administrative and management assistance relating to recently established re-organization, finance and accounting, warehousing and purchasing, customer billing and performance measurement systems.

This second modification is estimated at approximately $15.5 million for a total technical assistance package of $37.0 million. This total is exclusive of contract amendments for U.S. training of ARENTO employees (see 3.04 below) and tools and test equipment purchased through the technical assistance contract.

3.04 U.S. Training for ARENTO Employees

In conformance with the training priorities set forth in Annex S of Telecommunications Project Paper I, a technical assistance contract modification has also been executed specifically to provide U.S. training opportunities to ARENTO employees. This training, separate and distinct from training programs conducted under Task A-7, will provide valuable experience for ARENTO financial, tariff, budget, project, purchasing, engineering and administrative personnel. The total budget for this U.S. training is $1.0 million.

3.05 Related Equipment

The total budget for rehabilitation and environmental control equipment to date is $22 million ($14.5 million in Project Paper I, $7.5 million in Project Paper II). However, much of the equipment originally to be procured has either been procured through the Commodity Import Program or has been determined to be a lower priority in the telecommunications sector (such as PABX's and mobile station vans.) The tools and test equipment, air conditioning spare parts and replacement units, the traffic measuring systems, the stand-by diesel and D.C. power units and the fire detection systems, which have been or are currently being procured for Cairo exchanges not affected by the ESS procurement, will result in an expenditure of approximately $10 million: No additional major equipment procurements are envisaged under this Amendment. The rehabilitation equipment line item estimate is therefore decreased from $22 million to $10 million.

3.06 Contingency

The contingency budget line item of $16 million ($8 million in Project Paper II; $8 million in Project Paper III) is being reduced in this Amendment to $10 million, or approximately 5 percent of the equipment-related expenses, to reflect more firm budget estimates as the procurement cycle progresses.

3.07 The Summary Cost Estimate and Financial Plan is set forth in Table III-1, showing the above-mentioned Amendment components and related host country LE contributions.

TABLE III-1: SUMMARY COST ESTIMATE AND FINANCIAL PLAN
($000)

		PROJECTS I,II,III[a]		AMENDMENT		TOTAL	
		AID(FX)	GOE(LC)	AID(FX)	GOE(LC)	AID(FX)	GOE(LC)
ESS:	Exchanges						
	Zamalek	7,000		1,400		8,400	
	Maadi	8,000		300		8,300	
	Babelouk	8,000		500		8,500	
	Heliopolis	12,000		4,400		16,400	
	Auto	12,400		2,150		14,550	
	Ibrahimia	7,300		500		7,800	
	Gleem	7,300		2,150		9,450	
	New Maadi	-		7,300		7,300	
	C.O.M Centers	-		3,450		3,450	
	Training	-		9,300		9,300	
	Repair/Doc. Centers	-		290		290	
	Add. Maintenance	-		510		510	
	Manual Trunk Test	-		750		750	
	SUBTOTAL	62,000	8,500	33,000	(2,000)	95,000	6,500
OSP:	Exchanges						
	Zamalek	11,000		(3,000)		8,000	
	Babelouk	11,000		(3,000)		8,000	
	Heliopolis	18,000		-		18,000	
	Auto	18,000		(1,500)		16,500	
	Ibrahimia	11,000		(3,000)		8,000	
	Gleem	11,000		(1,500)		9,500	
	Junctions	-		3,000		3,000	
	Training	-		2,000		2,000	
	Maintenance	-		1,000		1,000	
	Spares	-		3,000		3,000	
	SUBTOTAL	80,000	23,400	(3,000)	5,000	77,000	28,400
TECHNICAL ASSISTANCE:							
	Procurement/installation	4,000		10,000		14,000	
	MGT, TRNG (A.R.E.), C&M	16,000		14,000		30,000	
	Training (U.S.)	-		1,000		1,000	
	SUBTOTAL	20,000	5,375	25,000	0	45,000	5,375
RELATED EQUIPMENT:							
	Air Conditioning	4,000		-		4,000	
	Stand by Power	1,500		-		1,500	
	Traffic Measurement	2,000		-		2,000	
	Fire Detection	500		-		500	
	Test Equip/Tools	2,000		-		2,000	
	Other	12,000		(7,000)		5,000	-
	SUBTOTAL	22,000	6,475	(7,000)	0	15,000	6,475
CONTINGENCY		16,000	4,750	(6,000)	0	10,000	4,750
GRAND TOTAL		200,000	48,500	42,000	3,000	242,000	51,500
Funding by Project							
Telecommunication I		40,000	8,500	—	—	40,000	8,500
Telecommunication II		80,000	20,000	—	—	80,000	20,000
Telecommunication III		80,000	20,000	42,000	3,000	122,000	23,000
	GRAND TOTAL	200,000	48,500	42,000	3,000	242,000	51,500

IV. TECHNICAL ANALYSIS

4.01 Electronic Switching Systems (ESS)

As noted before, the Electronic Switching Systems (ESS) to be installed in accordance with Telecommunications Project Papers I, II and III have been combined into one ESS contract. The Technical Specifications for the ESS contract bid required a switching system which: 1) is part of a family of exchanges of different capacities, 2) includes exchanges, concentrators, satellite exchanges and subexchanges, and 3) has the capability of combining tandem and local exchanges. Stored-program-control (SPC) electronic switching systems having analog selection and concentration matrices were called for. ARENTO also preferred switching matrices having full availability in the concentration and selection matrices. The exchanges and other offered equipment had to be of the same design and composed of identical modular components for both Cairo and Alexandria locations.

The ESS bid included as an option the installation of a second exchange in Maadi, called New Maadi. The new requirement for this second exchange to serve the Maadi area, realized late in the ESS procurement cycle, stems primarily from the two wire center design of AEG Telefunken's recently installed outside plant for Maadi. Because no techno-economic solution could be found to provide service through the second 13,000 line wire center from a single Maadi exchange, it was decided that an additional 13,000 line exchange was necessary to provide service through the second wire center to Maadi's rapidly expanding population. ARENTO and A.I.D. have subsequently agreed to finance the New Maadi exchange under the ESS contract.

Upon receipt of the ESS and outside plant bids, it was also determined that the prices for expansion lines, both ESS and outside plant, were extremely favorable, offering an ideal opportunity to increase the capacities in certain exchanges where considerable excess demand exists. Of particular concern were Heliopolis and Auto, where current held orders for telephone service date back to 1962. The ARENTO demand forecasts for all exchanges were carefully reviewed by the outside plant engineers, who have recently performed street-by-street surveys for mapping exchange area outside plant, and it was determined that an additional 20,000 lines for Heliopolis, 15,000 lines for Auto, and 5,000 lines for Gleem were needed. This raises the originally planned intermediate capacities for these three exchanges from 30,000 to 50,000; 30,000 to 45,000; and 20,000 to 25,000 respectively. In addition, there may be a requirement for 5,000 expansion lines in each of Bab-el-Louk and Zamalek, which would bring the total of expansion lines to 50,000. The expansion of each ESS will primarily require MDF and line card additions, and alteration of computer software, costing aproximately $250 per line.

The required exchange capacities and diagrams of the Cairo and Alexandria exchange associations are set forth in Table IV-1 and Exhibits IV-2 and IV-3. The intermediate capacities listed in Table IV-1 refer to two stage cutovers required for certain exchanges due to the limited space available in the respective exchange buildings.

TABLE IV-1
ESS EXCHANGE
LINE CAPACITIES

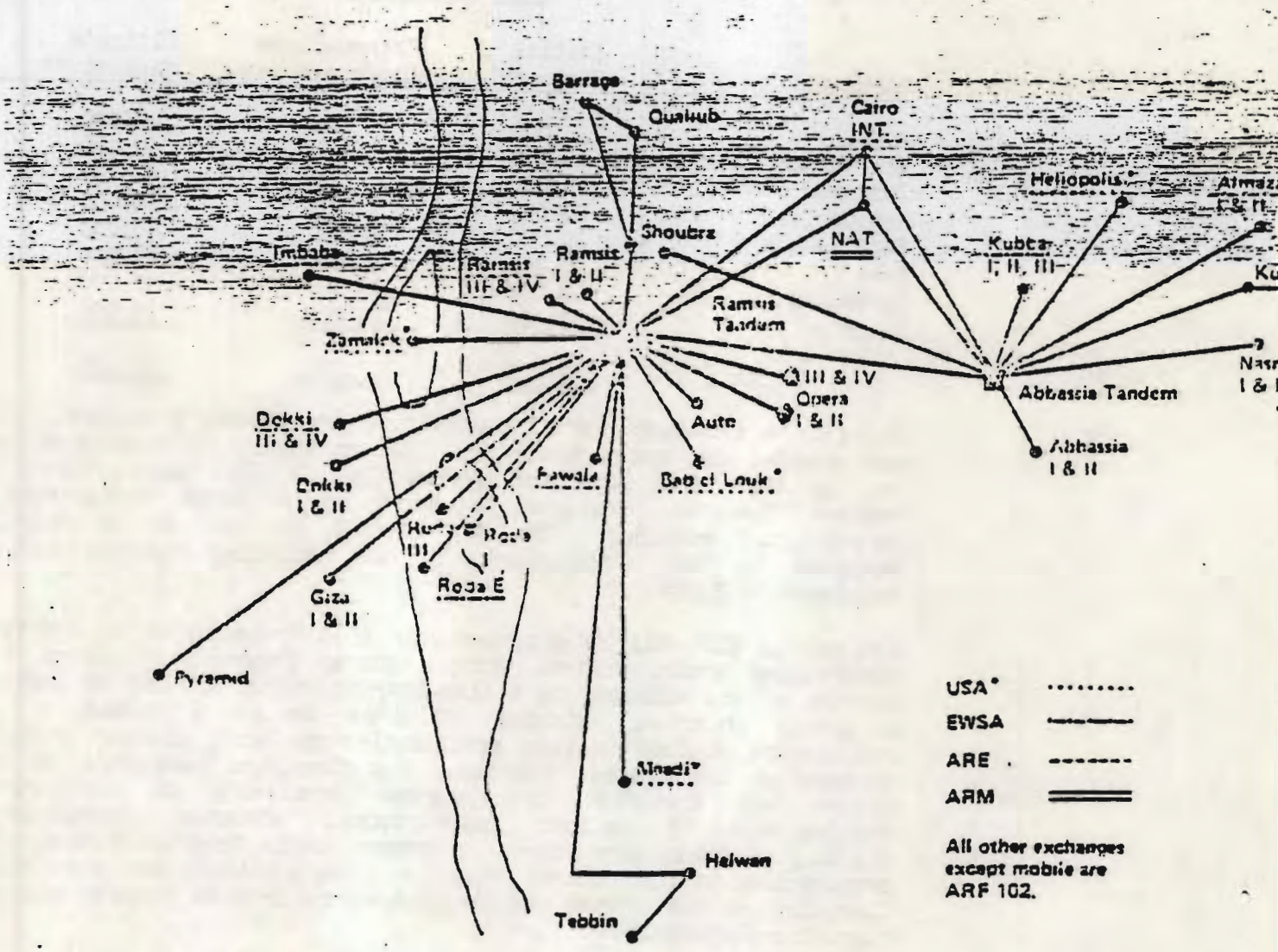
Exchange	Initial Capacity	Intermediate Capacity*	Ultimate Capacity**
Maadi	20,000	20,000	40,000
New Maadi	13,000	13,000	30,000
Zamalek	20,000	20,000	40,000
Heliopolis	20,000	50,000	50,000
Bab-El-Louk	20,000	20,000	40,000
Auto	20,000	45,000	45,000
Ibrahimia	10,000	20,000	40,000
Gleem	10,000	25,000	40,000
Totals	133,000	213,000	325,000

Based on a two-stage formal competitive procurement procedure, ATTI was awarded the contract for the ESS exchanges. ATTI offered the No. 1A Electronic Switching System (No. 1A ESS) manufactured by Western Electric, designed to serve as a large local/transit metropolitan exchange. The No. 1A ESS is, or can be readily modified to be, compatible with all existing central office equipment in Egypt.

The No. 1A ESS will be equipped with a 1A Processor which provides centralized system control with a stored program to control the actions of the exchange on a time-sharing basis, and may be used as a growth unit in existing buildings or as a direct office replacement without station modification and with minimal trunking changes at the distant offices. The functions performed by the system are specified by programs consisting of appropriate combinations of defined instructions. Program instructions, suitably encoded, are stored in memory units from which they are transmitted to the control unit for interpretation and execution. Operation of the system can be altered by program changes without circuit modifications.

* Refers to capacity after second cut-over under ESS contract.

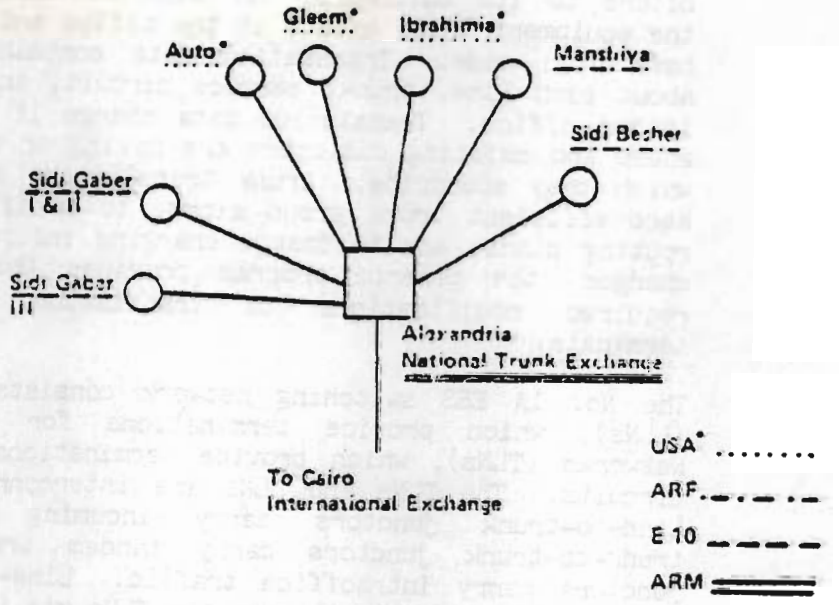
** These are ultimate planned capacities. Each 1AESS actually has the capacity for approximately 56,000 lines given the current traffic parameters.



NOTES: Interexchange trunks are not shown for simplicity

For terminating traffic, each tandem is connected to every exchange.

EXHIBIT IV-2: Simplified Exchange Associations for Originating Traffic at Completion of Phase I Expansion - Cairo Area



NOTES: The National Trunk Exchange is not an Alexandria tandem. Interexchange trunks are not shown for simplicity

EXHIBIT IV-3: Primary Alexandria Exchanges at Completion of Phase I Expansion

The system equipment is concentrated in a small number of units, each specialized in a system function such as control, input, output, memory, etc. System units are provided in modular blocks for convenience of office growth. A major portion of the system units are plug-in units, allowing the units to be replaced quickly and conveniently.

The software that controls the No. 1A ESS contains the generic program and a data structure that consists of parameter data and translation data. Parameter data includes the engineered part of the data that defines, for each office, the services that office offers to its customers. It also contains information concerning the equipment which exists in the office and what memory allocations have been made. Translation data contains the specific details about each line, trunk, service circuit, and other equipment units in the office. Translation data change if new customers are being added and existing customers are moving or changing the services to which they subscribe. Trunk translations are similarly changed to keep efficient trunk group sizes, to modify routing and alternate routing plans, and to change charging information. To effect these changes, the generic program provides the ability to input the required modifications to translation data via input/output terminals.

The No. 1A ESS switching network consists of Line Link Networks (LLNs), which provide terminations for lines, and Trunk Link Networks (TLNs), which provide terminations for trunks and service circuits. The TLNs and LLNs are interconnected by junctor paths. Line-to-trunk junctors carry incoming and outgoing traffic, trunk-to-trunk junctors carry tandem traffic, and line-to-line junctors carry intraoffice traffic. Line-to-line junctor overflow traffic may be routed through the TLNs via intraoffice trunks.

The No. 1A ESS network will support a maximum of 129,024 lines, the total number of line terminals being determined by the line concentration ratio of the LLNs. The total traffic load presented to the network consists of the following types of paths: service circuit-to-line/trunk paths, reserved path during call setup, and talking path during the call. The network traffic capacity depends on the number of LLNs and TLNs, and on the junctoring configuration. The maximum network capacity is 10,167 switched erlangs.

The maximum call capacity of the No. 1A ESS is 450,000 peak busy-hour call attempts. The call capacity in a particular

application is determined by the equipment needed to carry the expected traffic load and the call mix presented to the switch.

The dc power system offered by ATTI will supply +24V and -48V to the Stored Program Control (SPC) and ancillary equipment. The system will operate without interruption, developing the dc voltage levels, storing the energy in batteries, and distributing the direct current. Basic components of the dc power system are a power plant containing sufficient rectifiers to carry the load, batteries with replaceable cells, suitable controls, and distributing equipment. All rectifiers share the load at all times and substantially reduce the time required to recharge the batteries after an ac power failure. In the event a rectifier should fail, the remaining rectifiers serve the additional purpose of maintaining power plant output capacity and battery recharge capability.

An important support facility for the ESS equipment is diesel electric standby power systems to be installed in each exchange in order to generate ac power when it is not available from the commercial source. The power system provides ac potential for the office facilities, i.e., office lighting, power, heating, ventilating, and air conditioning. The ac power system is an on-site electrical generating plant consisting of a standby diesel generating set, power transfer equipment, suitable controls, and a fuel supply. Fire protection and prevention equipment will also be installed in the telephone exchanges. The system offered by ATTI includes detectors, manual stations, control panels with modular units, audible alarm devices, remote alarm lamps, and remote annunciations.

Two Centralized Operations and Maintenance (COM) Centers, one at Cairo and one at Alexandria, have been included in the bid package to centralize operation, surveillance, administration and maintenance for the No. 1A ESS exchanges. The ATTI equipment will consist of:

Switching Control Center System (SCCS)
Engineering and Administrative Data Acquisition System (EADAS)
Computer System for Mainframe Operations (COSMOS)
Centralized Building Security System
Remote Dial Administration

The SCCS provides for the establishment of switching control centers for the effective centralization of the surveillance, control, administration, problem analysis and maintenance of the No. 1A ESS

exchanges. The No. 1A ESS output report messages will be automatically analyzed at these centers in real-time by the SCCS minicomputer as they arrive. Messages will be examined for significant conditions that must be immediately attended to by the maintenance personnel. Each attendant at a CRT work station can access this history information and review the status of any ESS exchange for use in the interpretation of a current condition. Because the maintenance of several No. 1A ESSs is centralized into one work center, the SCCS will allow maintenance personnel to specialize in certain work activities. This functional work grouping will provide efficient and improved service and will reduce requirements for technical training.

EADAS will provide computerized real-time access of No. 1A ESS traffic data, validating the collected data and providing near real-time traffic exception and traffic summary reports as scheduled or on demand. These traffic reports will help the user understand the No. 1A ESS call flow and can be used to engineer the network, trunk circuits, switch processor and service circuits. The traffic exception reports will be generated only when user set thresholds are exceeded and thus can be used to pinpoint trouble spots.

The EADAS software operating system includes two subsystems: data collection and the Network Operations Report Generator (NORGEN). The data collection program scans the traffic data acquisition channel for data, writes the buffered information onto the disk, and polls the appropriate No. 1A ESS exchanges for data. The NORGEN feature performs calculations on network data and includes a capability for reporting traffic loads on the trunking network for all No. 1A ESS exchanges covered by No. 1A EADAS.

COSMOS is a real-time minicomputer system to mechanize subscriber line equipment and related wire center activities, designed to prevent or minimize MDF congestion and solve record-keeping problems by the computer preparation of "shortest path" MDF cabling lists. It will increase control in managing service orders, thereby improving the ability to utilize equipment and facilities terminated on the MDF. COSMOS will be compatible with all mainframes, and will serve several wire centers up to its service order load capacity.

COSMOS maintains an accurate and comprehensive data base with an up-to-date inventory of subscriber information and the physical items terminated on the MDF. COSMOS will bring a variety of services to all departments associated with the administration and assignment of local subscriber circuits. Users may communicate with

the centralized computer via remote terminals (CRT with keyboard and hard copy terminals) to speedily obtain information on the status and configuration of subscriber and special service MDF connections, make assignments, process service orders and work orders.

The ESS bid also includes security systems for the Cairo and Alexandria facilities. The security systems are to have a central control unit, an operator's terminal, a printer, proximity card readers, and individually coded command keys (user cards). The central control unit will process and report access and egress requests and alarm activities, store key codes, time codes and access levels, and provide operator communications.

A modern telecommunication system's effectiveness is dependent upon reliable and up-to-date documentation. Therefore a documentation center has been proposed as a part of the ESS procurement to perform the support functions of receiving, reproducing, storing, controlling and distributing all ARENTO telecommunications operations and maintenance documentation for the ESSs and associated equipment. The four major categories of documentation that will support necessary ESS activities include:

- Exchange and Network Engineering Documentation
- Standard Drawings
- Operation and Maintenance Documentation
- Exchange Records

A Repair Center has been included in the bid package to provide for screening and performing repair by connector cleaning and lubrication of the Printed Circuit Boards (PCB) and other component parts of the No. 1A ESS. A typical 30,000 line No. 1A ESS contains approximately 23,000 PCBs representing over 500 different codes. The Repair Center will be equipped to both screen and repair those codes of PCBs with expected high failure rates. The capabilities of the Center will be to screen 12 percent of the PCB codes, which account for 25 percent of expected failures, and to repair by connector cleaning and lubrication over 50 percent of those screened. Screening tests and connector cleaning capabilities will significantly reduce the number of PCBs returned for repair.

The training plan set forth in the IFB was designed to provide ARENTO with trained personnel to effectively operate, maintain, and administer the ESS and COM center equipment. The training plan provides for the following deliverable items:

- U.S. training of ARENTO personnel
- Domestic training of ARENTO personnel
- Maintenance course materials and documentation
- Instructor training
- New Course development: on-the-job, remedial, and advanced training programs for domestic use
- Training switch, training tools and test equipment

While this extensive training program was bid as an option to discourage price cutting in this most important item, training is an essential requirement for successful operation of the ESSs in the future. The training courses proposed by ATTI are standard Bell System courses used to train Bell System operation, maintenance, and administration personnel. The training plan is summarized in Table IV-4.

The ATTI package has been thoroughly reviewed by all parties and, subject to completion of the amendment necessary for the 40,000 expansion lines, turnkey installation can be expected to proceed in a timely manner. Primary technical concerns which will be followed closely will be the interface with the outside plant schedule and the readiness of ARENTO staff to assume full operational responsibility upon contract completion.

4.02 Outside Plant

In accordance with the plans set forth in Telecommunications Project Papers I, II and III, ARENTO has selected Ford Aerospace (FACII) as the low bidder for engineering, furnishing and installing telephone outside plant facilities for the three exchange areas in Cairo and three exchange areas in Alexandria, totalling 168,000 MDF subscriber appearances and the associated junction plant. The contract requires (1) detailed engineering, furnishing, installation and testing of complete outside plant systems including conduit systems, manholes, serving area interfaces, exterior distribution cable terminals, interior distribution cable terminals, cables and closures in accordance with the System Plan Drawings, (2) furnishing wire, mounting hardware, special test equipment and spare parts, and (3) provision of professional services such as training, documentation, project management and maintenance.

Detailed requirements and responsibilities of the proposed outside plant contract are set forth in Table IV-5.

With respect to the design of the outside plant systems, the following guidelines have been employed:

- Distribution cable terminal (DCT) locations and the number of terminated distribution pairs are based upon recent field surveys by ARENTO and the application of factors such as the number and age of held orders, estimates of the mix of business and residential units, and the apparent income level of the tenants of each building.

- The average ratio of terminated distribution pairs to terminated feeder pairs is 1.5:1.0. Distribution pairs are not terminated at more than one DCT.

- The ratio of terminated feeder pairs at the MDF to ESS subscriber line ports is 1.2:1.0. Feeder pairs are not terminated at more than one SAI.

- The size of conduit runs is based upon long range estimates of total cable requirements rounded up to 4, 6, 9, 12, 16, 20, 24, 28, 32, 36 or 40-way conduits. An occasional 2-way conduit is shown where estimated future growth is limited.

Feeder and junction pair requirements for the outside plant are summarized in Table IV-6. As noted on Table IV-6, the 40,000 to 50,000 line ESS and outside plant expansion proposed in this Amendment (see Paragraph 4.01 above) has not been shown on the Table. The standard ratio of 1.2 feeder pairs per ESS port would set at 48,000 the number of feeder pairs required for the expansion of Heliopolis, Auto and Gleem. While the cost estimate of $250 per line for expansion of outside plant is based on ratios of 1.2 and 1.5 for feeder and distribution cable respectively, a contingency must be included for variations determined in the course of final engineering. In Heliopolis, for example, the distribution system prior to addition of the proposed 20,000 expansion lines is much more complete than the feeder system. No new conduit for feeder a distribution cable is required for the expansion because of the 40-year design capacity of the new conduit system.

The engineering specifications for outside plant were jointly prepared by the Consultant and ARENTO based on U.S. industry standards. The specifications require all local loops to be based upon REA Standard Resistance Design methods. The copper pair loop resistance limit for Cairo and Alexandria Exchange Area Outside Plant are to be 1650 ohms at 68 F (20 C). This is based on the Central Office design limit of 1900 ohms including the telephone instrument. Feeders will leave the Exchange vault using 26 AWG or 24 AWG cable pairs. One gauge size change will be allowed, as required, to keep all loops within the 1650 ohms limit. The general configuration of a typical outside plant segment is set forth in Exhibits IV-7 and IV-8.

As noted earlier, a significant amount of junction cable has been included in the outside plant bid to adequately tie the systems into the ARENTO grid. The junction cables and all associated equipment and materials in the six exchange areas are to be fully installed by

Table IV-4: PROPOSED TRAINING UNDER ESS CONTRACT

JOB CATEGORY	U.S. TRAINED	DOMESTIC TRAINED	CLASSROOM TRAINING DAYS PER TRAINEE
COM Center Manager	2	2	186
Control and Analysis Supervisor	2	2	185
Field Supervisor - Days	2	2	183
Field Supervisor - Evenings/ Nights/Growth	0	4	183
Trunk and Translations Supervisor	2	0	185
Dispatch and Administration Supervisor	2	0	27
Dispatch and Administration/ Trunk and Translations Supervisor	2	0	189
Maintenance Technician	12	33	177
Network Administrator	4	0	75
Dial Administration/Recent Change Supervisor	4	0	55
COSMOS Data Base Manager	2	0	25
EADAS Data Base Manager	2	0	6
Building Systems Engineer	6	0	25
Building Systems and Diesel Maintenance Technician	0	27	0
O&M Instructor-Peripheral	3	0	203
O&M Instructor-Processor	3	0	208
O&M Instructor-System	3	0	213
Repair Center Training	0	6	26 (OJT)
Documentation Center Training	0	6	26 (OJT)
TOTAL NO. OF TRAINEES	51	82	

TABLE IV-5: OUTSIDE PLANT CONTRACTING PLAN
Summary of Requirements and Responsibilities

Description	Engineer	Furnish	Install
LOCAL CABLE NETWORK			
Main Distribution Frames and Tip Cable	A	A	A
Cable:			
Feeder	C	C	C
Distribution	C	C	C
T-CXR Tip	C	C	C
Voice Tie	C	C	C
T-Screened	C	C	C
Wire:			
Buried Service	A*	C	A*
Aerial Service	A*	C	A*
Service Entrance	A*	C	A*
Station	A*	A	A*
Jumper	A*	C	A*
Splices and Enclosures	C	C	C
Conduit:			
Plastic	C	C	C
Plastic Flexible	C	C	C
Metal	C	C	C
Manholes/Handholes	C	C	C
SAI Housings	C	C	C
Distribution Cable Terminals			
EDCTs	C	C	C
IDCTs	C	C	C
Building Terminal Blocks	A*	C	A*
Station Terminal Blocks	A*	A	A*
Telephone Instruments	A*	A	A*
JUNCTION NETWORK EXPANSION			
Junction Cable	C	C	C
Submarine Cable	C	C	C
Loading Coils and Buildout Capacitors	C	C	C
T-Carrier Systems	C	C	C
ENGINEERING AND INSTALLATION	C	—	C
TESTS AND MEASUREMENTS	—	C	A^2
TRAINING	C*	C	—
PROJECT MANAGEMENT	—	C	—
DOCUMENTATION	—	C	—
MAINTENANCE	—	C	—
SPARE PARTS	—	C	—

C implies the Contractor's responsibility.
A implies ARENTO's responsibility.
A* implies the Contractor shall provide on-the-job training to ARENTO personnel

C* developed by the Contractor.
— implies not applicable, and
A^2 Acceptance by ARENTO

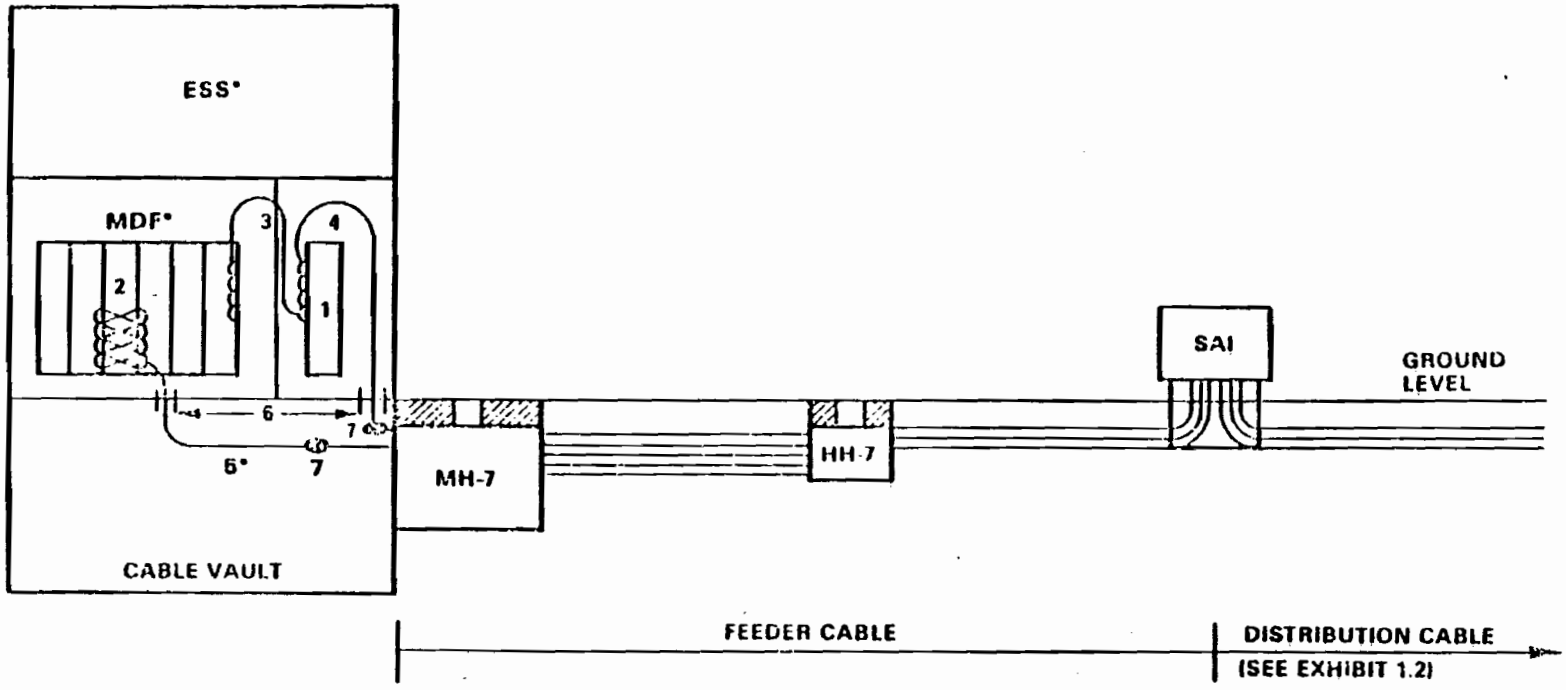
TABLE IV-6: OUTSIDE PLANT

Approximate

Feeder and Junction Pair Requirements*					
Exchange	ESS Ports[1]	Feeder Cable Pairs[2]	Non-PCM Local Junction Pairs[2]	PCM Voice Tie Cable Pairs[2]	T-Screened Cable Pairs[3]
Zamalek	20,000	24,000	4,600	—	—
Heliopolis	30,000	36,000	3,000	2,976	200
Bab-el-Louk	20,000	24,000	6,000[5]	624	50
Abbassia[4]	—	—	—	6,144	450
Ramses[4]	—	—	4,900	2,544	200
Almaza[4]	—	—	600	—	—
Dokki[4]	—	—	1,200	—	—
Kobba[4]	—	—	900	—	—
Kurba[4]	—	—	1,800	—	—
Nasr City[4]	—	—	900	—	—
Opera[4]	—	—	1,200	—	—
Roda[4]	—	—	1,200	—	—
Shoubra[4]	—	—	1,200	—	—
Cairo Total	70,000	84,000	27,500	12,288	900
Auto	30,000	36,000	3,300	1,152	100
Ibrahimia	20,000	24,000	5,700	4,320	300
Gleem	20,000	24,000	2,100	5,232	350
Sidi Bishr[4]	—	—	900	2,160	150
Sidi Gaber[4]	—	—	4,200	5,376	350
Manshia[4]	—	—	6,000	3,168	250
Alexandria Total	70,000	84,000	22,200	21,408	1,500
TOTAL	140,000	168,000	49,700	33,696	2,400

1. For information purposes only.
2. Pairs to be terminated on the MDF at the designated exchange.
3. T1-C pairs to be terminated at the T-CXR terminal equipment bay at the designated exchange.
4. Junction network terminations only; exchanges not included in current ESS Project.
5. Junction cable pairs total 6,300; 300 pairs to be dead ended at cable vault splices.

* This Table does not reflect the additional 40,000-50,000 line expansion proposed under this Amendment. Exact feeder, junction, PCM and T-Screened cable pair requirements will not be known until final engineering is completed.

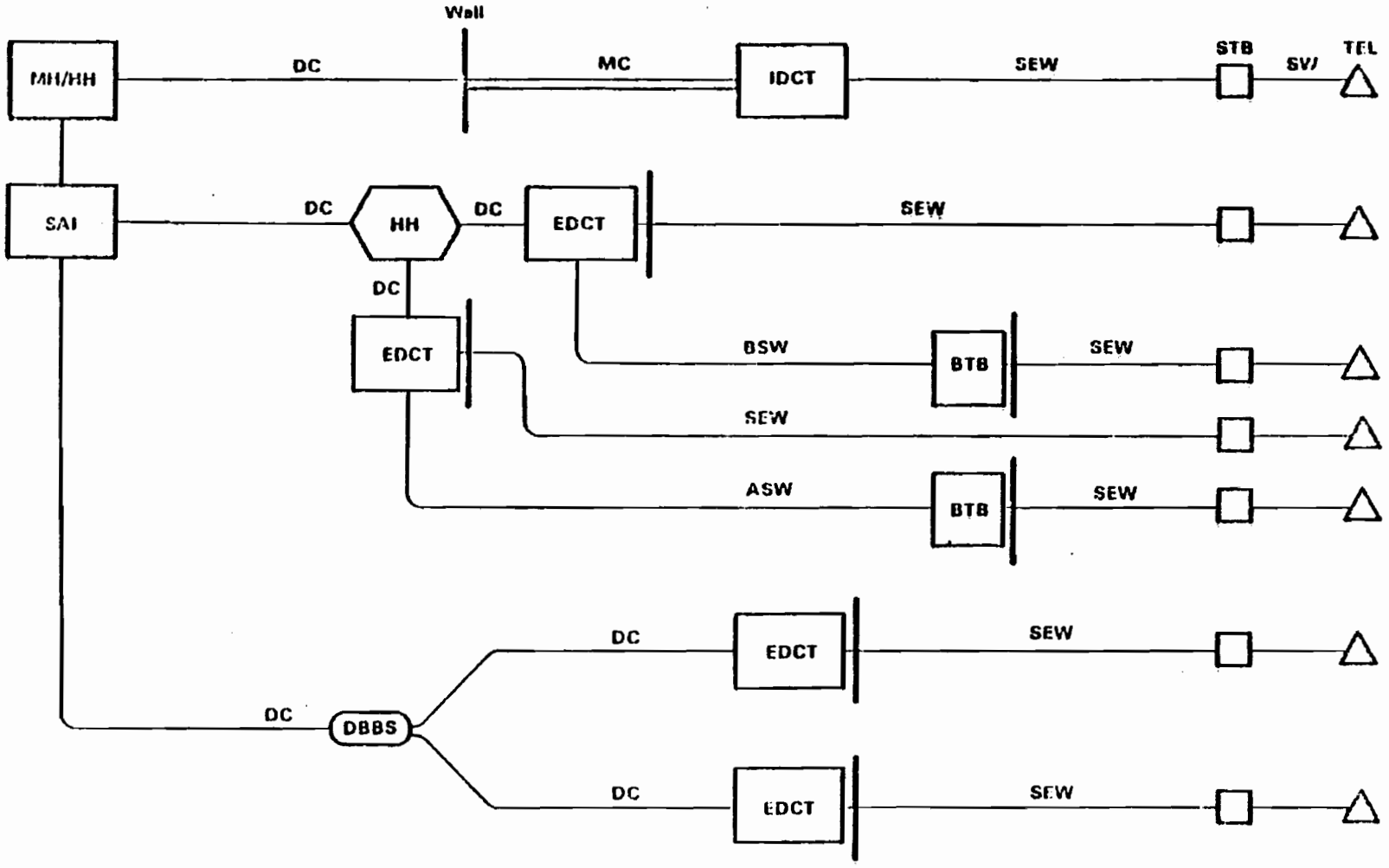


ESS* = Electronic Switching System
MDF* = Main Distribution Frame
MH = Manhole
HH = Handhole
SAI = Serving Area Interface Housing

1 = T-Carrier Electronics
2 = Jumper Wire
3 = Voice Tie Cable
4 = T-CXR Tip Cable
5 = Tie Cable*
6 = Riser Shafts
7 = Splices

* = Provided by ARENTO

Exhibit IV-7:Simplified Diagram of OSP from MDF to SAI



SAI = Serving Area Interface Housing
DC = Distribution Cable
MC = PVC DC in a Metal Conduit
IDCT = Interior DC Terminal
EDCT = Exterior DC Terminal
HH = Handhole
DBBS = Direct Buried Branch Splice
MH/HH = Manhole or Handhole

BSW = Buried Service Wire
ASW = Aerial Service Wire
BTB = Building Terminal Block
SEW = Service Entrance Wire
STB = Station Terminal Block
SW = Service Wire
TEL = Telephone Instrument

Exhibit IV-8: Simplified Diagram of a Local Cable Network

the contractor, with conduits for junction cables to be installed only to the exchange boundaries. Cables will be installed for the entire route from MDF to MDF for T-CXR systems and from cable vault splice to cable vault splice for non-PCM junction circuits. Junction routes will include junction cable, submarine cable for river crossings, or T-screened cable. Conduits and manholes outside the six exchange area boundaries which are required to complete the junction cable placement will be engineered, furnished and installed by ARENTO. The Cairo junction network diagram is set forth as an example in Exhibit IV-9.

The actual construction of the outside plant will most likely be performed by the National Services and Projects Organization (NSPO), the Egyptian subcontractor working under the direct control of Ford Aerospace (FACII), the successful outside plant bidder. The installation has been planned to create a minimum of disturbance to normal ARENTO operations and Cairo traffic. Upon cutover of the completed outside plant installations, existing customers will temporarily have both old and new distribution cable terminals, service entrance wire, station wire and telephone instruments. Held orders will be served by the new local cable network. The existing local cable network and equipment will remain in place undisturbed, to the extent possible, until the new expanded local cable network is in service. After that time the old telephones, wire, cable and equipment will be removed by ARENTO.

As an integral part of the proposed outside plant contract, the contractor will maintain all outside plant systems provided under the IFB until their Final Acceptance. The contractor will keep maintenance records and submit them to ARENTO on a monthly basis. In addition, the contractor will aid ARENTO, as required, before, during and after the cutover of the ESSs.

Because ARENTO's expansion and modernization program in outside plant systems will use U.S. technologies and methods with which ARENTO personnel have little or no experience, the outside plant contractor will also provide both formal classroom training and on-the-job training. Training sessions will be held at the ARENTO Telecommunication Training and Research Institute (TTRI) in Nasr City, Cairo. All course materials, documentation, training aids and presentations will be provided under the contract. A summary of the IFB course and student training requirements is set forth in Table IV-10.

4.03 Technical Assistance

Technical assistance to be provided through the Consultant will continue to cover a wide range of ARENTO functions and sectors. The contractual format of the technical assistance is to be comprised of Phase I, ending in May 1982 with the completion of the IFB preparation and Service Improvement Plan stage, and of a Phase II follow-on, including ESS and outside plant implementation

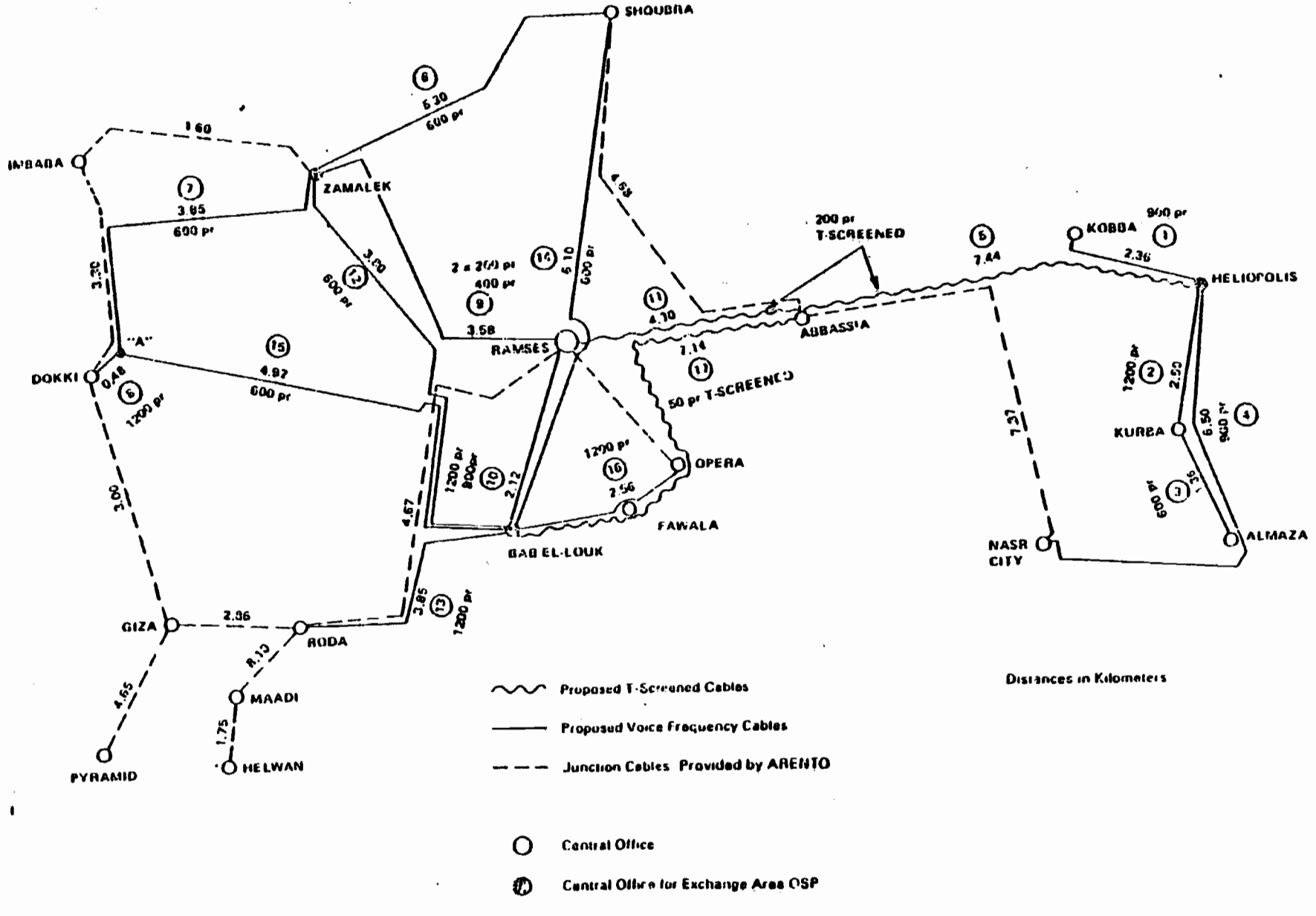


Exhibit IV-9: Cairo Junction Network Diagram

Course Title	Elec. Eng.	Civil Eng.	Elec. Tech.	Civil Tech.	Foreman Civil	Craft Const.	Craft Splicer	Craft Inst.	Craft MDF
OSP Planning Methods	4	-	-	-	-	-	-	-	-
OSP Engineering	9	-	10	-	-	-	-	-	-
T-CXR Span Line Design	6	-	6	-	-	-	-	-	-
Underground Construction Methods	-	3	-	6	6	45	-	-	-
Cable Construction and Color Codes	4	-	10	-	-	-	40	-	30
Cable Placement	-	3	-	6	6	45	-	-	-
Vehicle Use in Cable Placement	-	3	-	6	6	45	-	-	-
Cable Splicing	4	-	10	-	-	-	40	-	-
SAIs and DCTs	4	3	10	6	6	30	40	-	30
T-CXR Installation and Repair	6	-	6	-	-	-	-	30	-
Cable Balancing	6	-	6	-	-	-	-	-	-
Cable Fault Location	6	-	12	-	-	-	12	-	-
OSP Acceptance Methods	3	3	8	8	-	-	-	-	-
Station Installation	-	-	6	-	-	-	-	60	-
Subscriber Loop Testing	6	-	12	-	-	-	-	30	-
Installation and Repair	-	-	12	-	-	-	-	60	-
OJT Jumpering	-	-	12	-	-	-	-	60	30
OJT Station Installation	-	-	12	-	-	-	-	60	-

TABLE IV-10: OUTSIDE PLANT TRAINING

Number of Students per Course

supervision, extension of priority management assistance, and planning and implementation assistance in several key technical sectors. One such sector already targeted for possible assistance is network planning and design. Given the rapid changes in the population and exchange systems for the Cairo and Alexandria metropolitan areas, ARENTO wishes to consider the introduction of large tandem exchanges as a measure aimed at ensuring orderly and economic expansion of the two major metropolitan networks. The Consultant, if tasked to perform a network design, would be required to: 1) provide data on the existing and under construction plant, cost profiles for expansion of the implemented plant and additional plant, and a traffic data base through 1995; 2) postulate alternative network plans and select, through engineering and economic analysis, the optimal network plan; and 3) contingent upon demonstration of the requirement for tandem switching, prepare a complete Invitation for Bid for the tandem exchanges. A draft scope of work for the proposed network design is set forth in Annex K.

In conjunction with the network design, ARENTO and the Consultant will be planning for the proper expansion of the inter-city transmission system. One section already under consideration for survey/plan is the Ismailia/El Arish microwave link to tie together the Northern Sinai and Cairo. Other segments are also currently being reviewed. Using experience gained from the completed Task B Service Improvement Plan work, ARENTO and the Consultant will now be able to more rationally plan for a balance of microwave and cable junction expansion, and to tackle many of the basic technical problems currently associated with the metropolitan and national network systems.

Given the turn-key nature of the ESS and outside plant contracts, Consultant supervision of these contracts is to be kept at a minimum. ARENTO's staffing requirements have been defined, and ARENTO is now taking actions to prepare for upcoming installation. The ARENTO staffing pattern for implementation of the ESS and outside plant contracts is set forth in Annex J. The Consultant staffing pattern is still being negotiated, but will inter alia basically provide for factory inspections, engineers with broad switching and computer experience for ESS, and several experienced civil and outside plant engineers for the outside plant.

While technical assistance efforts will continue to include such specific tasks as Project Planning and Management Office, finance, training, billings, warehousing and stores, and tariffs, future technical assistance will be directed more on overall system

performance through a de-emphasis on narrowly defined tasks and an increased emphasis on incremental planning and the availability of Consultant personnel with broad technical and management expertise in telecommunications. Given ARENTO management's demonstrated job dedication and willingness to change, it is felt that a continued major technical assistance effort will provide the basis for sound development of ARENTO's organizational structure and of the many talented technicians and managers within ARENTO's staff.

4.04 Considering the Project assistance as a whole, it is our opinion that the current and proposed components have been planned and are being carried out in a technically sound manner, and that cost estimates for provision of these components are reasonable with respect to technical job requirements and current competitive world prices. Cost estimates for the various components of this Amendment are set forth in Section III above.

V. FINANCIAL ANALYSIS AND PLAN

A. FINANCIAL ANALYSIS

a. Historical Financial Performance:

5.01 ARENTO'S Comparative Balance Sheets and Statements of Operating Income as reclassified by AID are shown in Annex H. Although the information provided by ARENTO for these statements was unaudited and was not in the best format for analysis, we believe that the statements as reclassified are descriptive enough for a general analysis of ARENTO's financial condition.

b. Balance Sheet:

5.02 During the period December 31, 1978 through June 30, 1981 ARENTO's Assets have increased over 62%, from LE. 324 million in 1978 to LE. 526 million in 1981. Of this increase (LE 202 million), over 89% reflects increases in ARENTO's Utility Plant which is its major vein for income generation.

5.03 While ARENTO has shown a positive expansion in its operations, this expansion as reflected in its Balance Sheet has mostly been achieved through debt financing. ARENTO's long term debt has increased 105% over the past three and one half years, from LE 203 million in 1978 to LE 417 million in 1981. Following are the summary Balance Sheet figures and current and debt to equity ratios for 1978 - 1981, more detail figures for the Balance Sheet are presented in Annex H.

Comparative Balance Sheets
(in LE Millions)

	Years			
ASSETS	1978 1/	1979 1/	1980 2/	1981 3/
Utility Plant	243	332	370	459
Current Assets	81	62	72	67
Total	324	394	442	526
LIABILITIES AND EQUITY				
Long Terms Debt	203	288	336	417
Current Liabilities	88	72	71	70
Equity	33	34	35	39
Total	324	394	442	526

Current Ratio 4/	.92:1.00	.86:1.00	1.01:1.00	.96:1.00
Debt to Equity Ratio	8.82:1.00	10.59:1.00	11.63:1.00	12.49:1.00

1/ As of December 31, 1978 and 1979.
2/ As of June 30, 1980.
3/ As of June 30, 1981.
4/ Current assets divided by current liabilities.

5.04 The above current account ratio indicates that ARENTO's current obligations are maturing faster than the current assets it can generate through its operations and represent increased dependency on outside resources for financing its expansions.

c. Statements of Operating Income:

5.05 The results of ARENTO's operations for the period 1978 - 1981, are shown below. Detailed statements are presented in Annex H.

Comparative Statements of Operating Income
(In LE Millions)

	Years			
	1978 1/	1979 1/	1980 2/	1981 3/
Operating Revenues	50	57	33	73
Operating Expenses	34	46	24	54
Net Operating Income	16	11	9	19
Non-Operating Expenses	6	9	10	17
Net Income from Operations	10	2	[1]	2

1/ For the years ending December 31, 1978 and 1979.
2/ For the period January 1, 1980 through June 30, 1980.
3/ For the year ending June 30, 1981.

5.06 As reflected above ARENTO's operating expenses have increased over the period 1978 - 1981 by approximately 59% (from LE 34 million in 1978 to LE 54 million in 1981) while operating revenues have increased by only 46% or LE 23 million during the same period. The operating expense increase is a reflection of salary increase and higher depreciation due to an increase in ARENTO's asset base.

The increase of over 183% in non-operating expenses is a reflection of increased interest expenses caused by increases in local and foreign debt.

5.07 Profitability Ratios examined for ARENTO which are shown in Annex H reflect the following:

1. Return on Investment:
   This ratio which shows operating results as a percentage of investment has decreased from 3.1% in 1978 to 0.4% in 1981.

2. Return on Equity:
   This ratio which demonstrates the return on equity capital has been decreasing from 30.3% in 1978 to 5.1% in 1981.

3. Cost of Debt:
   This ratio which shows the cost of borrowed capital, has been increasing from 3.0% in 1978 to 4.1% in 1981.

4. Income from operations:
   This ratio which shows the profit margin of earnings, has been decreasing from 20.0% in 1978 to 2.7% in 1981.

The above ratios reflect a decreasing trend in ARENTO's return on investment. This decrease can be attributed mostly to increases in operating expenses and cost of debt which have not been off set by increases in revenues.

5.08 The rate structure of telecommunication services before January 1982 was clearly too low to generate necessary investment resources either internally or through an ability to pay an adequate "dividend" rate on new equity infusions. The ARENTO balance sheet in Annex H shows only L.E. 2.0 million profits from the estimated total asset value of L.E. 526.3 million for FY 1981 -- a rate of return of less than four-tenths of 1%. In January 1982, ARENTO succeeded in obtaining GOE permission to increase service charges. Revenues expected to receive under the new and old rates are compared in Table 5-1 for various categories of services provided.

5.09 Table 5-1 shows that the overall ARENTO revenue will increase by about 40.5% due to the new rate structure. The highest

revenue increases will be derived from non-recurring, one-time charges, such as installation, re-connect and transfer charges. Business and government telephone subscription fees are expected to increase by 66.7% from L.E. 18 to L.E. 30 per year, while residential fees are unchanged at L.E. 18 per year. Domestic telex revenues are projected to rise by 70.1%, while domestic telegraph fees are unchanged.

5.10 The following table shows that under the old tariff rates, ARENTO barely managed to break even between total revenues and expenditures. The rate of return from its total assets was about 0.4% a year. With the average tariff rate increase of 40.5%, it is expected that the rate of return will increase to about 4.0%. While the rate increases are substantial and will contribute much in the way of making ARENTO operations financially self-sustaining, the new rates are nevertheless insufficient to generate reasonable returns on investment in telecommunications facilities. Further rate increases are necessary to generate hypothetical returns of 10%, 15% and 20% on ARENTO assets. The table indicates that additional rate increases required are on the average 37%, 68% and 98% if ARENTO were to earn a 10%, 15% and 20% return on its assets. The Grantee and ARENTO recognize the need to further increase tariff rates and an appropriate covenant will be included in the Amendatory Agreement to register their commitment to continue to review and adjust tariffs periodically to fully meet ARENTO's long-range true financial needs.

Service Tariff Rates and Returns to Assets
(L.E. Millions)

	Old Rates		New Rates	Additional Rate Increases Required to Meet Alternati Target Rates of Return on FY 1983 Assets		
	FY 1981 (actual)	FY 1982 (estimates)	FY 1983 (estimates)			
Total Assets	526.3	605.2 1/	696.0 1/	696.0 1/	696.0 1/	696.0
Total Revenues	73.5	81.2	114.0	114.0	114.0	114.0
Total Expenditures (assumed 10% a year) 2/	71.5	78.6	86.5	86.5	86.5	86.5
Profits	2.0	2.6	27.5	27.5	27.5	27.5
Returns to Assets (%)	0.4	0.4	4.0	10.0	15.0	20.0
Rate Increases (%)	0.0	0.0	40.5	36.9	67.5	98.0

1/ Assumed that the total assets will increase at 15% per year.

2/ Total expenditures include operation and maintenance expenditures, depreciation writeoffs, interest and tax payments.

TABLE 5-1

ARENTO Revenue Projections by Source
(L.E. Millions)

	ADL Estimates FY 1982 (Old Rates)	USAID Estimates FY 1983 (New Rates)	% Change
A. Domestic Revenues	44,252	67,960	53.6
1. Domestic Telephone/Trunk Line	39,557	60,020	51.7
Subscriptions	13,314	15,530	16.7
Automatic Telephone	7,527	9,280	23.3
(Residential)	(4,892)	(4,892)	(0.0)
(Business)	(1,957)	(3,262)	(66.7)
(Government)	(667)	(1,126)	(66.7)
Manual Telephone	926	926	0.0
Miscellaneous Telephone	3,008	3,008	0.0
Trunk Line	1,853	2,316	25.0
Excess Calls	11,857	11,857	0.0
Intra-Egypt Toll	5,777	7,222	25.0
Non-Recurring Charges			200.5
Installation	7,803	24,456	213.4
(Residential)	(2,984)	(12,476)	(318.1)
(Business)	(3,580)	(10,741)	(200.0)
(Government)	(1,239)	(1,239)	(0.0)
Re-Connect Charges	250	750	200.0
Transfer Charges	250	1,000	300.0
Miscellaneous Charges	750	1,000	300.0
2. Domestic Telex	2,568	4,369	70.1
Subscription	1,886	3,144	66.7
Inter-Egypt Telex Usage	64	64	0.0
Non-Recurring Charges	618	1,161	87.9
3. Domestic Telegraph	2,228	2,228	0.0
B. International Revenues	36,826	46,184	25.4
1. International Telephone	11,933	16,706	40.0
2. International Telex	16,726	20,071	20.0
3. International Telegraph	6,202	7,442	20.0
4. International Miscellaneous	1,965	1,965	0.0
TOTAL DOMESTIC/INTERNATIONAL REVENUES	81,179	114,040	40.5

SOURCES: Arthur D. Little International, Inc. and Continental Telephone International Corp., Projected Revenue Requirements and Recommended Rates for 1981/82, July 1981 and USAID/Cairo.

B. FINANCIAL PLAN

5.11 Particularly in light of the limited equity now available to ARENTO, it is proposed that the entire $42.0 million of this Amendment be financed as a grant to the GOE who, in turn, would re-grant to ARENTO $42.0 million. These grant funds will be used to finance the U.S. dollar costs of services and materials as set forth in the Summary Cost Estimate and Financial Plan, Table III-1, Section III above. Breakdowns of the inputs and outputs, and projected disbursements for the combined Telecommunications Projects (including this Amendment) are set forth in Tables 5-2 and 5-3.

5.12 The total ARENTO contribution related to A.I.D. Telecommunications Projects would increase to $51.5 million (LE equivalent), comprised of $6.5 million for ESS, $28.4 million for outside plant, $6.5 million for tools, test gear and rehabilitation, $5.4 million for technical assistance, and $4.75 for contingency. An additional $3.0 million equivalent Egyptian Pound funding is associated with this Amendment. The ARENTO contribution to specific Amendment components is set forth in Table III-1, Section III above.

SUMMARY OF TELECOMMUNICATIONS PROJECTS FINANCING PLAN

Table 5-2: BREAKDOWN OF AID'S PROJECT INPUTS/OUTPUTS
($ MILLIONS)

Inputs	ESS Exchanges	OSP Exchanges	Improved Management	Rehabilitated Exchanges	TOTAL
Technical Assistance	-	-	44.0	-	44.0
Training	11.0	3.0	1.0*	-	15.0
Equipment/Installation	78.0	70.5	-	13.0	161.5
Maintenance	5.5	3.0	-	-	8.5
Tools & Test Equipment	0.5	0.5	-	2.0	3.0
Contingency	3.0	3.0	2.0	2.0	10.0
	98.0	80.0	47.0	17.0	242.0

* U.S. Training provided through Consultant contract

Table 5-3: PROJECTED DISBURSEMENTS FOR AID'S CONTRIBUTION
($ MILLIONS)

	THRU FY 81	FY 82	FY 83	FY 84	FY 85	TOT
ESS	-	18.0	35.0	35.0	10.0	98.0
OSP	-	12.0	20.0	33.0	15.0	80.0
CONS	10.0	10.0	13.0	10.0	4.0	47.0
REH EQUIP	2.4	9.6	4.0	1.0	-	17.0
	12.4	49.6	72.0	79.0	29.0	242.0

ESS = Electronic Switching Systems
OSP = Outside Plant
CONS = Consultant Contract
REH EQUIP = Exchange Rehabilitation Equipment
CONT = Contingency

VI. ECONOMIC ANALYSIS

6.01 The economic analysis of this amendment to the Telecommunications Project III is a marginal cost/benefit analysis. The total dollar and LE cost is compared with the estimated total benefits to Egypt derived from the proposed investment and an IRR is calculated using the benefit and cost figures.

6.02 The primary components of this Amendment which may be expected to have a direct economic impact are:

- The addition of 60,000 expansion lines in New Maadi, Zamalek, Heliopolis, Auto and Gleem including 20,000 lines already contracted and 40,000 lines proposed herein;

- Expanded operations and maintenance capabilities of the proposed C.O.M. centers, affecting all 220,000 lines to be provided under the A.I.D. Telecommunications Projects I, II and III..

- An addition of approximately $30.0 million for technical assistance and training directed at improving ESS and OSP operations and management of the entire ARENTO telephone system;

- Additional junction and T-carrier plant which will improve inter-exchange communications and reduce congestion in the Cairo tandem exchanges.

6.03 The total cost of this amendment consists of the $42 million AID grant and the LE 3.0 million GOE contribution. The economic cost to Egypt equals $45.0 million using the estimated shadow exchange rate of $1.00 = LE 1.

6.04 The economic benefits of telecommunication services derive from the speed and timeliness with which communications can take place among firms, households and the public sector within Egypt and internationally. Such services also provide substantial cost savings over alternative modes of communication. Obviously, if cross-town communication requires a car and messenger, telecommunication services provide a faster mode of communication as well as a substitution for labor and capital that would otherwise have to be provided for communication. One indication of the cost-effectiveness of telecommunication services in Egypt over alternative communication modes is the backlog of unserviced applications for telephone services. In GOE FY 1980/81 there was a backlog of some 50,000 applications for new telephone installations

at the average annual service charge of $125 per telephone and in spite of waiting periods of up to twenty years and poor reliability of phone services.

6.05 It is difficult to obtain a precise quantitative measurement of the economic value of telecommunication services. Such a quantitative measure would require placing an economic value on the savings in labor and capital that would result from the substitution of telecommunications for alternative communication modes as well as placing an economic value on the increase in speed and timeliness of telecommunications over these alternative modes. A reasonable proxy for the economic value of telecommunication services is, however, available. This proxy is the charges levied for telecommunications services in other developing countries with more appropriate rate structures. As developed below, this is the approach adopted here.

6.06 As noted above, telecommunications services in Egypt are very poor. As a result the value of these services is lower in Egypt than in countries with better services. During FY 1980/81, for instance, the estimated average annual charge per telephone line was $125. In other comparable countries such as Ghana, Pakistan, Ethiopia and India, it was $225* In this analysis we assume that the value of an existing telephone line to Egypt is $125 per year and that when the quality of telephone services in Egypt become equal to that in the comparable countries, the economic value will increase to $225 per year. The difference, $100 ($225 - $125) per line, is the estimated maximum economic benefits derived from upgrading existing telephone lines.

6.07 Under Telecommunications Projects I, II and III, exclusive of this Amendment, a total of 160,000 new telephone lines will be provided together with the necessary peripheral equipment and facilities to make the system properly function. This Amendment will increase the total new lines by a minimum of 60,000. Using the Consultants' estimate that the call completion rate on new lines will be at least 50 percent higher than the rate for existing lines, the value of these new lines to Egypt would be $187.50 ($125 plus one half of $125). The annual benefits become $11.25 million from the 60,000 new lines. Other benefits that must be taken into account are the impact of this Amendment on the existing 410,000 old exchange lines. This can be approximated by the proportion of investment allotted for technical assistance and training directed at improvement of ESS and outside plant operations. This Amendment allocates $40 million in technical assistance whereas all three previous projects provided only $20 million for this purpose. Estimating that the total Telecommunications Projects technical assistance package for training and management can serve to improve

*A.T.&T. Publication - World Telephones 1980.

the completion rate on existing ARENTO lines by approximately 20 percent, we can expect that about 50 percent ($20 million divided by $40 million) of this improved completion rate would be due to technical assistance provided under this amendment. The estimated benefit to Egypt would be $5.125 million per year (410,000 x .50 x $125 x .20). On these bases, total economic benefits to Egypt become $16.4 million per year for 20 year life span of the investment. Assuming as was done in the economic analysis in Telecommunications Project III that reduced maintenance costs offset increased operation costs, the internal economic rate of return for this amendment is 36 percent.

6.08 This IRR of 36 percent is much higher than the minimum estimated IRR of 10.2 percent and the 19.4 percent as previously given in the Telecommunications Project III. Since an IRR of 10 percent would be considered adequate for basic public utility investments, the 36 percent IRR would satisfy the economic rate of return requirement.

6.09 This very high economic IRR is primarily creditable to the very low bid prices received for the ESS and outside plant equipment. Also, since reliable telecommunication facilities are critically important for the development of a modern Egyptian economy, we would expect a favorable benefit-cost ratio from investment in the telecommunication system. While the project undoubtedly merits funding on economic grounds, it should be pointed out that the pricing of telecommunication services to users does not yet fully reflect the economic value/cost of these services to users. By no means, however, is the price structure for telecommunication services in Egypt as inadequate in providing a reasonable financial return on investment as is the tariff structure in, say, the water and sewerage areas. In fact, substantial progress in increasing tariff rates has been made even though more progress is required. This is particularly true of tariff rates for household telephone services. More important, both ARENTO and the GOE recognize the need for future rate increases in spite of the large but selective rate increases introduced in 1982.

6.10 The rate structure of telecommunication services before January 1982 was too low to generate necessary investment resources either internally or through an ability to pay an adequate "dividend" rate on new equity infusions. The ARENTO balance sheet in Annex H shows only L.E. 2.0 million profits from the estimated total asset value of L.E. 526.3 million for FY 1981 — a rate of return of less than four-tenths of 1%. In January 1982, ARENTO succeeded in obtaining GOE permission to increase service charges. Revenues expected to receive under the new and old rates are compared in Table 6-1 for various categories of services provided.

6.11 Table 6-1 shows that the overall ARENTO revenue will increase by about 40.5% due to the new rate structure. The highest

VII. IMPLEMENTATION PLAN

7.01 Schedule

The schedule of important events leading to the completion of the various Project components is as follows:

ESS contract signing	February 1982
Outside plant bids due	March 1982
Grant Amendment Agreement signed	May 1982
Outside plant bid award	May 1982
ESS effective date of contract	May 1982
Amend technical assistance contract	May 1982
Outside plant effective date of contract	July 1982
ESS training complete	April 1983
Installation of traffic measuring system at Opera Exchange completed	May 1983
Sinai Microwave Survey completed	May 1983
Outside plant training complete	June 1983
Outside plant-first exchange area cutover	September 1983
ESS first exchange provisional acceptance	October 1983
Network design (Cairo/Alexandria) complete	October 1983
Complete technical assistance for training, finance, management	May 1984
All outside plant exchange areas cutover	July 1984
All ESS provisionally accepted	October 1984
Final Acceptance of all outside plant	July 1985
Final Acceptance of all ESS	October 1985
Completion of ESS and OSP Maintenance	October 1986

The relationship between ESS and outside plant schedule is set forth in Table VII-1.

7.02 Contracting Procedure/Procurement

The ESS contract with ATTI is a lump sum fixed price contract, the selection of ATTI being the result of a two-stage competitive bidding process. Further changes to the contract should be primarily limited to the addition of 40,000 to 50,000 expansion lines, adjustments for any delays and any amendments necessary for additions, changes or deletions.

The FACII outside plant contract, a fixed unit price contract, is also the result of standard competitive bidding procedures. Changes

TABLE VII-1: ESS AND OUTSIDE PLANT

SCHEDULE OF KEY MILESTONES

(Months After ESS Effective Date of Contract)

LOCATION	NO. OF LINES	EXCHANGE BUILDING COMPLETE	MDF INSTALLED	OSP COMPLETED	ESS TESTS COMPLETED	ESS CUTOVER
MAADI I	20,000	10	N/A	15	17	18
NEW MAADI I	13,000	11	N/A	16	18	19
ZAMALEK I	20,000	12	13	17	19	20
HELIOPOLIS I	20,000	14	15	19	21	22
" II	10,000	28	15	19	33	34
BAB-EL-LOUK I	20,000	16	17	21	23	24
CAIRO COM CENTER	N/A	16	17	N/A	22	23
AUTO I	20,000	18	19	23	26	30
" II	10,000	38	19	23	26	30
ALEXANDRIA COM	N/A	18	19	N/A	25	29
GLEEM I	10,000	20	21	25	27	30
" II	10,000	36	21	25	40	41
IBRAHIMIA I	10,000	22	23	27	28	30
" II	10,000	37	23	27	41	42

MDF = Main Distribution Frame
OSP = Outside Plant

in the system plan and amounts are expected to be frequent in light of the nature of outside plant construction, but the contract is designed for sufficient flexibility without impacting on the fixed unit price structure.

The contracting mode for technical assistance, now cost reimbursement plus fixed fee, is currently being reviewed in light of future job requirements. A combination fixed-price/cost reimbursement contracting mode, in accordance with the specific types of assistance rendered, is being considered.

All ancillary equipment are being procured through competitive bidding in compliance with U.S. source/origin requirements.

7.03 A.I.D. Financing Procedures

All disbursements under the Project to date have so far come out of the Telecommunications I Loan. In order to promptly and sequentially close out the three Projects, a portion of the ESS contract has been funded under the Telecommunications I Loan, such portion to be disbursed initially to close out the Loan. The balance of the ESS contract is being financed from the Telecommunications II Grant. Both the outside plant and technical assistance contracts will be financed under the balance of the Telecommunications II and III Grants. In this manner the monies first obligated will be disbursed first. For the purpose of meeting conditions precedent to disbursement under this grant, the Phase II technical assistance contract will be financed in part or whole by this Amendment and is subject to fulfillment of the conditions precedent under this amendment. In view of the fact that the ESS and outside plant contracts will be entirely financed under Telecommunications Projects I and II and that conditions precedent under these two Projects have heretofore been fully met, these contracts shall not be subject to conditions precedent under this Amendment.

7.04 Monitoring and Reporting

In addition to monitoring and reporting provided through the Project Consultant, USAID has one direct hire telecommunications engineer, one direct hire project development officer and one Egyptian telecommunications engineer working full-time on the Telecommunications Projects. While the work load has been extremely heavy, it is expected that existing monitoring and reporting arrangements will be sufficient to ensure proper execution of the Projects.

7.05 Evaluation

The joint ARENTO/USAID evaluation of technical assistance currently being conducted is in conformance with the October 1981 evaluation scheduled in the Telecommunications III Project Paper. The evaluation of equipment related Project components has been postponed until October 1982 in light of the delayed contract initiations. The balance of the existing evaluation plan and schedule remain unchanged.

7.06 Terminal Dates

The current Project Assistance Completion Date (PACD) for Telecommunications III of March 31, 1984 will be extended in the new Grant Agreement Amendment to December 1986, in accordance with the revised implementation plan providing for ESS and outside plant maintenance services.

VIII. ENVIRONMENTAL AND SOCIAL ANALYSES

8.01 In addition to the above analysis, reference should be made to the negative determination environmental clearance in Annex E hereto, and to relevant analyses in the Telecommunications III Project Paper, specifically the social analysis and market analysis.

IX. RECOMMENDATIONS, CONDITIONS AND COVENANTS

A. Recommendation

9.01 Based on the analysis and information set forth in Telecommunications III and this Amendment thereto, and subject to the conditions and covenants listed below, we recommend that A.I.D. authorize a grant to the Government of Egypt in the amount of $42 million (forty-two million dollars) which, together with the $40 million FY 1978 A.I.D. loan and the FY 1979 and FY 1980 grants each of $80 million, will provide for 1) technical assistance for improvement of the present telecommunications system and for strengthening the management, operations, planning, training and financial functions of ARENTO; and 2) for the procurement and installation of telecommunications and related equipment. We further recommend that the FY 1982 $42 million grant to the GOE be regranted to ARENTO to increase its equity position.

B. Conditions Precedent to Disbursement

9.02 Prior to the first disbursement or to the issuance of the first Letter of Commitment under this Amendment, the GOE shall furnish to A.I.D. in form and substance satisfactory to A.I.D.:

a) An opinion of the Egyptian Ministry of Justice or other legal counsel satisfactory to A.I.D. that the grant agreement and corresponding regrant agreement or amendment have been duly authorized and/or ratified by, and executed on behalf of, the GOE and ARENTO and that they constitute valid and legally binding obligations in accordance with all of their terms.

b) A regrant agreement or amendment satisfactory to A.I.D. for the project between the GOE and ARENTO under which the GOE will regrant to ARENTO all grant funds made available under this Amendment.

C. Conditions Precedent to Disbursement for Equipment

9.03 Prior to any disbursement under this Amendment for equipment, or to the issuance by A.I.D. of letters of commitment pursuant to which such disbursements will be made, the Grantee will, except as the Parties may otherwise agree in writing, furnish evidence that ARENTO has signed a contract acceptable to A.I.D. for

technical services, providing assistance to ARENTO for supervision of the outside plant and ESS equipment installation, and for improvement of the ARENTO financial, tariff and training operations.

D. Covenants

9.04 The covenants under the three Telecommunications agreements (one loan and two grants) have been analyzed to determine if any revision of the covenants in the Telecom III authorization and agreement of December 30, 1979 are desirable. The result of this analysis has been to consolidate, modify some of the covenants in consideration of the current status of the Egyptian telecommunications program. We recommend that these reformulated covenants be included in the Project Agreement Amendment essentially in the form as they appear below. The covenants which appear in the original Project Authorization are marked with an asterisk. These will be retained in the existing Project Agreement.

"SECTION 5.1. Project Evaluation. The Parties agree to establish an evaluation program as part of the Project. Except as the Parties otherwise agree in writing, the program will include, during the implementation of the Project and at one or more points thereafter: (a) evaluation of progress toward attainment of the objectives of the Project; (b) identification and evaluation of problem areas or constraints which may inhibit such attainment; (c) assessment of how such information may be used to help overcome such problems; and (c) evaluation, to the degree feasible, of the overall development impact of the Project."

* "SECTION 5.2. Execution of the Project. The Grantee shall:
(a) Carry out the project with due diligence and efficiency, and in conformity with sound engineering, construction, financial and administrative practice.

(b) Cause the project to be carried out in conformance with all of the plans, specifications, contracts, schedules, and other arrangements, and with all modifications therein approved by A.I.D. pursuant to this Agreement.

(c) Submit for A.I.D. approval prior to implementation, issuance, or execution, all plans, specifications, construction schedules, bid documents, documents concerning solicitation of proposals relating to eligible items, contracts, and all modifications to these documents."

ANNEX A

FIRST AMENDMENT

TO

PROJECT AUTHORIZATION

Name of Country: Arab Republic Of Egypt

Name of Project: Telecommunications III Project

Number of Project: 263-0117

1. Pursuant to Part II, Chapter 4, Section 531 of the Foreign Assistance Act of 1961, as amended, the Telecommunications III Project for the Arab Republic of Egypt, was authorized on December 28, 1979, (hereinafter referred to as "the Authorization). The Authorization is hereby amended as follows:

A. Paragraph 1 is deleted in its entirety and a new paragraph is substituted as follows to add forty-two million United States Dollars ($42,000,000) in grant funds:

> "Pursuant to Part II, Chapter 4, Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Telecommunications III Project for the Arab Republic of Egypt involving planned obligations of not to exceed One Hundred Twenty-Two Million United States Dollars $122,000,000 in grant funds over a three year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB allotment process, to help in financing the foreign exchange costs of goods and services required for the project."

2. The First Amendment, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and delegations of authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate:

(1) First Disbursement of Funds under the First Amendment

Prior to any disbursement or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made of funds made available under the First Amendment, the Arab Republic of Egypt ("Grantee") shall, except as the parties may agree otherwise in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) A loan and regrant agreement (or amendment) for the project between the Grantee and ARENTO under which the Grantee will, except as A.I.D. may otherwise agree in writing, regrant to ARENTO Twenty Million United States Dollars ($20,000,000) and loan to ARENTO Twenty-two Million United States Dollars ($22,000,000) on terms and conditions satisfactory to A.I.D.

(b) An opinion of the Egyptian Ministry of Justice or other legal counsel satisfactory to A.I.D. that the Grant Agreement Amendment and the corresponding loan agreement or amendment have been duly authorized and/or ratified by, and executed on behalf of, the Grantee and that they constitute valid and legally binding obligations in accordance with all of their terms.

(c) Such other information and documents as A.I.D. may reasonably require.

(2) Conditions Precedent to Disbursement of Funds for Equipment under the First Amendment

Prior to any disbursement or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made of funds available under the First Amendment for equipment, the Grantee shall, except as the parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D.:

(a) An executed contract acceptable to A.I.D. for technical services, providing assistance to ARENTO for supervisor, of the outside plant and Electric Switching Systems equipment installation, and for improvement of the Arento financial, tariff and training operations.

3. The Authorization remains in force except as hereby amended.

M. Peter McPherson

30 JUL 1982

Date

Clearances:
AA/NE:WAFord _____ Date 21 JUL 1982
GC:CLvOrman _____ Date 7/28/82
GC/NE:GADavidson _____ Date _____
AA/PPC:JRBolton _____ Date _____

ANNEX B

5C(2) PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual funding sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered; FAA Sec. 634A; Sec. 653(b).

   (a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that amount)?

   (a) The FY 1983 Congressional Presentation contains notification of this Amendment in the amount of $25.0 million. Notification of the increase to $50.0 million will be sent prior to Authorization.

   (b) Yes

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

   (a) Yes

   (b) Yes

3.	FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	N.A.
4.	FAA Sec. 611(b); Continuing Resolution Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?	N.A.
5.	FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	Yes. See Annex D
6.	FAA Sec. 209. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	No

7.	FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	Upgrading of telecommunications services is an essential step toward development of the private sector in Egypt.
8.	FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	The poor condition of the telecommunications system in Egypt has discouraged the initiation of many service industries which would attract U.S. investment. This Project should assist in making investment in Egypt more attractive.
9.	FAA Sec. 612(b), 636(h); Continuing Resolution Sec. 508. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.	ARENTO is contributing the total amount of LE expenses (approximately LE 33 million) toward this Project.
10.	FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and,	All such currencies have been fully programmed, and none is available for this Project.

if so, what arrangements have been made for its release?

11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise? — Yes

12. Continuing Resolution Sec. 522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity? — N.A.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, — N.A.

especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) [103] for agriculture, rural development or nutrition; if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; 103A if for agricultural research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic research to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec. 104 to help improve nutrition of the people of developing countries

N.A.

through encouragement of increased production of crops with greater nutritional value, improvement of planning, research, and education with respect to nutrition, particularly with reference to improvement and expanded use of indigenously produced foodstuffs; and the undertaking of pilot or demonstration of programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building national food reserves, expanding available storage facilities, reducing post harvest food losses, and improving food distribution.

(2) [104] for population planning under sec. 104(b) or health under sec. 104(c); if so, (i) extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research. N.A.

(4) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development; and (ii) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities.	N.A.
(5) [106; ISDCA of 1980, Sec. 304] for energy, private voluntary organizations, and selected development activities; if so, extent to which activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of energy production; (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves and to encourage exploration for potential oil, natural gas, and coal reserves; and (c) a cooperative program in energy production and conservation through research and development and use of small scale, decentralized,	N.A.

renewable energy sources for rural areas;

(ii) technical cooperation and development, especially with U.S. private and voluntary or regional and international development, organizations;

(iii) research into, and evaluation of, economic development process and techniques;

(iv) reconstruction after natural or manmade disaster;

(v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small laborintensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. [107] is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor.) N.A.

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which N.A.

the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least developed" country)?

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? N.A.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government. N.A.

g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth? N.A.

2. Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to N.A.

repay the loan, at a reasonable rate of interest.

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan? — N.A.

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531(a). Will this assistance promote economic or political stability? — Yes

To the extent possible, does it reflect the policy directions of FAA Section 102? — Yes

b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities? — No

5C(3) - STANDARD ITEM CHECKLIST

Listed below are the statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. PROCUREMENT

1.	FAA Sec. 602. Are these arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?	Yes
2.	FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him?	Yes
3.	FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will commodities be insured in the United States against marine risk with a company or companies authorized to do marine insurance business in the U.S.?	Yes
4.	FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a). If offshore procurement of agricultural commodity or	N.A.

	product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably be procured in the U.S.)	
5.	FAA Sec. 603. Is the shipping excluded from compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates?	No
7.	FAA Sec. 621. If technical assistance is financed, to the fullest extent practicable will such assistance, goods and professional and other services be furnished from private enterprise on a contract basis?	Yes
	If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	Yes

8.	International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will provision be made that U.S. carriers will be utilized to the extent such service is available?	Yes
9.	Continuing Resolution Sec. 505. If the U.S. Govenment is a party to a contract for procurement, does the contract contain a provision authorizing termination of such contract for the convenience of the United States?	N/A

B. CONSTRUCTION

1.	FAA Sec. 601(d). If capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?	Yes
2.	FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?	Yes
3.	FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?	N.A.

C. Other Restrictions

1.	FAA Sec. 122(b). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?	N.A.
2.	FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?	N.A.
3.	FAA Sec. 620(h). Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries?	Yes
4.	Continuing Reslution Sec. 514. If participants will be trained in the United States with funds obligated in FY 1981, has it been determined either, (a) that such participants will be selected otherwise than by their home governments, or (b) that at least 20% of the capital FY 1981 funds appropriated for participant training will be for participants selected otherwise than by their home govenments?	Yes

5.	Will arrangements preclude use of financing:	
	a. FAA Sec. 104(f). To pay for performance of abortions as a method of family planning or to, motivate or coerce persons to practice abortions; to pay for performance of involuntary sterilization as a method of family planning, or to coerace or provide financial incentive to any person to undergo sterilization?	Yes
	b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property?	Yes
	c. FAA Sec. 660. To provide training or advice or provide any financial support for police, prisons, or other law enforcement forces, except for narcotics programs?	Yes
	d. FAA Sec. 662. For CIA activites?	Yes
	e. FAA Sec. 636(i). For purchase, sale, loan-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained.	Yes
	f. Continuing Resolution Sec. 504. To pay pensions, etc. for military personnel?	Yes.

g. Continuing Resolution Sec. 506. To pay U.N. assessments, arrearages or dues.	Yes
h. Continuing Resolution Sec. 507. To carry out provisions of FAA section 209(d) (Transfer of FAA funds to multilateral organizations for lending.)	Yes
i. Continuing Resolution Sec. 509. To finance the export of nuclear equipment fuel, or technology or to train foreign nationals in nuclear fields?	Yes
j. Continuing Resolution Sec. 510. Will assistance be provided for the purpose of aiding the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights?	No
k. Continuing Resolution Sec. 516. To be used for publicity or propaganda purposes within U.S. not authorized by Congress?	No

ANNEX C

Mr. Donald S. Brown
Director
U.S. Agency for International
Development
5 Latin Amercia Street
Garden Cicy
CAIRO

Subject: Request for Additional Funding for Telecommunications Projects

Dear Mr. Brown,

As described in our meeting of December 1981, the total funding requirements for implementation of the USAID-financed electronic switching systems and outside plant, and the additional urgently required technical assistance in training, long-term planning, finance and system engineering, including the network design for Cairo and Alexandria, are now estimated as requiring a total of U.S. $ 250 million in foreign exchange, exceeding the current USAID Project assistance level of $ 200 million. In light of the urgent priority of these items to the telecommunications sector and to the economy of Egypt as a whole, we would kindly request your urgent consideration to amending your existing Telecommunications Projects to provide for an additional $ 50 million in A.I.D. grant funds.

Thank you very much for your assistance.

Sincerely,

"Eng. Ahmed Kamel MOHAMED"
Chairman Board of Directors
ARENTO

27. 1. 1982

cc: Mr. Fouad Iskandar,
Ministry of Economy

ANNEX D

UNITED STATES AGENCY for INTERNATIONAL DEVELOPMENT

CAIRO, EGYPT

Egypt: Telecommunications III, Amendment I

CERTIFICATION PURSUANT TO
SECTION 611(e) OF THE
FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Donald S. Brown, the Principal Officer for the Agency for International Development in Egypt, having taken into account, among other things, the maintenance and utilization of projects in Egypt previously financed or assisted by the United States and technical assistance and training planned under this project, do hereby certify that in my judgment Egypt has both the financial capability and human resources capability effectively to maintain and utilize the capital assistance to be provided for the rehabilitation and modernization of the Arab Republic of Egypt National Telecommunications Organization (ARENTO).

Donald S. Brown
Director

March 19, 1982
Date

ANNEX E

UNITED STATES GOVERNMENT

memorandum

DATE: November 1, 1981

REPLY TO ATTN OF: NE/PD/PDS, Stephen F. Lintner, Bureau Environmental Coordinator SFL

SUBJECT: Egypt - Telecommunications III, Amendment No. 1 (263-0117) Environmental Clearance.

TO: NE/PD/ENGR, Alfred Hotvedt, Project Chairperson

I have reviewed Amendment No. 1 to the subject project and recommend that it be given a "Negative Determination" in compliance with the requirements of 22 CFR 216, "A.I.D. Environmental Procedures."

cc:
GC/NE:TCarter
AID/Cairo:WMcAleer, Mission Environmental Officer
AID/Cairo:LMHager, Senior Legal Advisor
AID/Cairo:GWest, Mission Project Officer

ANNEX F

ARENTO AMENDED TARIFFS

ANNOUNCEMENT	TARIFF ORIGINAL L.E.	ORIGINAL MMs	AMENDED L.E.	AMENDED MMs
I. Subscription to Automatic Exchanges with Meters:				
- Non-Residential	18	00	30	00
- Government, Public Organizations and other Government Agencies	18	00	30	00
- Residential with an internal or external branch which is non-residential or vice versa	18	00	30	00
- Residential telephone being used for business purposes at the same time	18	00	30	00
II. Remaining Subscription, Cost of Installment, Relocation for other Purposes and Miscellaneous Expenses:				
- Subscriptions	50% Increase			
- Cost of Installment, Relocation and miscellaneous expenses	50% Increase with a minimum charge of L.E. 5.00			
- Telephone instruments with branching and secretarial system that is installed on subscriber's demand, type A.V.H. 120 complete unit	Subscriber to pay for cost of equipment in addition to yearly subscription			
III. Subscription to National Trunk Lines	25% Increase			
IV. National Trunk Services:				
- Direct Service (Automatic calls for subscribers only)	25% Increase			

ANNEX F

ANNOUNCEMENT	TARIFF ORIGINAL L.E.	MMs	TARIFF AMENDED L.E.	MMs
V. Car Telephone Service:				
- Subscription	1,000		2,000	
- Installation fees	100		500	
- Transfer fees	100		100	
VI. Cost of Telephone Installations:				
- Government, Public Organizations and other Governmental Agencies	50		75	
- Non-Residential, Commercial Companies of Joint Liability and Limited Partnerships	100		300	
- Remaining Companies	150		300	
- Investment Companies established under Law 43, Banks and Hotels	150		1,000	
VII. Relocation Costs:				
- Non-Residential, Commercial Companies of Joint Liability and Limited Partnerships	50		100	
- Remaining Companies	50		150	
- Investment Companies established under Law 43, Banks and Hotels	50		200	
VIII. Transfer				
- Selling to shops and offices with the restriction of business use only	150		1,000	
- Selling to Residential Abodes with the restriction of Residential use only	150		500	

ANNEX F

ANNOUNCEMENT	TARIFF ORIGINAL L.E. MMs	TARIFF AMENDED L.E. MMs
- Transfer to relatives up to the third degree	150	150
- Transfer to other than the above cases with possible relocation	—	1,000
IX. Telegraph Service:		
(a) Telex Subscription	600	1,000
(b) Cost of Telex Installation		
1. Investment Companies, Banks and Hotels	500	1,000
2. Remaining Subscriptions	500	750

X. Cost of Priority Installation:

	Telephone Line L.E. MMs	Telex Line L.E. MMs
- Investment Companies, Banks, Hotels and Foreigners	2,000	3,000
- Other Categories and ordinary citizens (50% of the cost of the above categories)	1,000	1,500

(a) This Cost is not applicable to Governmental Agencies, the Public Sector and Diplomatic and International Agencies and their members

(b) This regulation will be valid for agreements that were issued after 1.1.82

(c) A Ministerial Decree will designate a percentage of free lines for allocation to the above Categories - with the reservation of the present established priorities to some categories

ANNEX F

ANNOUNCEMENT	TARIFF ORIGINAL	TARIFF AMENDED
XI. International Communications Service:		
- International Telephone Service	Tariffs differ for every nation in accordance with the bilateral agreements.	A maximum increase of 40% in tariffs with the standardization of tariffs for nations that offer similar service. The Organization shall issue detailed operational tables specifying the tariffs for each nation based on the above.
- International Telex Service	Tariffs differ for every nation in accordance with the bilateral agreements.	A maximum increase of 20% in tariffs with the standardization of tariffs for nations that offer similar service. The Organization shall issue detailed operational tables specifying the tariffs for each nation based on the above.
- Tariff for underground cable serving ships' messages	20 centime/word	30 centime/word
- Tariff and installation fees for Direct International Dialing	---	1,000 L.E.

ANNEX G

EXCERPT FROM CONSULTANT'S ORGANIZATIONAL RECOMMENDATION TO ARENTO

I. SUMMARY

A. PURPOSE AND SCOPE

One purpose of this outline report is to recommend a modified organizational structure for ARENTO that is in compliance with the intent of Public Law 153 and the changing needs of ARENTO while preserving the best aspects of the existing organization. These recommendations, which are intended to be implemented in stepwise fashion, will enable ARENTO to operate much more effectively, but the resulting structure will be of an interim nature. Further reorganization will be needed in future years, and this report includes suggested goals to be attained at that time.

A second purpose is to elicit considered, written responses from ARENTO executives so that their judgment can be incorporated more directly into a final recommendation and report.

B. BACKGROUND

For nearly ten years, ARENTO's organizational structure has undergone little change. Only minor modifications have been made in each of its three principal functional areas: (a) Planning and Execution of Projects, (b) Administration, Financial and Commercial Affairs, and (c) Operations and Maintenance. This relatively stable organization has been able to manage the routine tasks of the existing telephone system and the modest capital investment projects that were implemented annually.

Beginning in 1980, however, plans were completed for an expansion of the ARENTO nationwide network from about 410,000 lines to 750,000 by 1985/86. Much of the new plant and switching equipment will be installed in Cairo (from 224,000 to 554,000 lines) and Alexandria (from 64,000 to 180,000 lines); additional projects will be executed in remote rural areas and small cities throughout Egypt.

In order to cope with an expansion program of this magnitude and complexity, ARENTO should make some significant changes in its organization and management. Modifications to the existing organizational structure should begin now.

The proposed reorganization has several objectives:

- to strengthen ARENTO's capabilities to conduct formal planning;
- to facilitate the development and operation of an expanded telephone system through specialization along telecommunications functional lines; and
- to improve the maintenance of the physical plant by differentiating responsibilities and increasing coordination among related departments.

This proposal does not recommend a drastic reshaping of ARENTO to reach an optimum organization but, rather, an adjustment of important functions and clarification of organizational responsibilities for the supervision and performance of all phases of telephone work. The modified structure is designed to strengthen ARENTO's existing organization and particularly to give increased importance to the effective management of telecommunications operations and maintenance. The following management principles have served as a guide toward these goals:

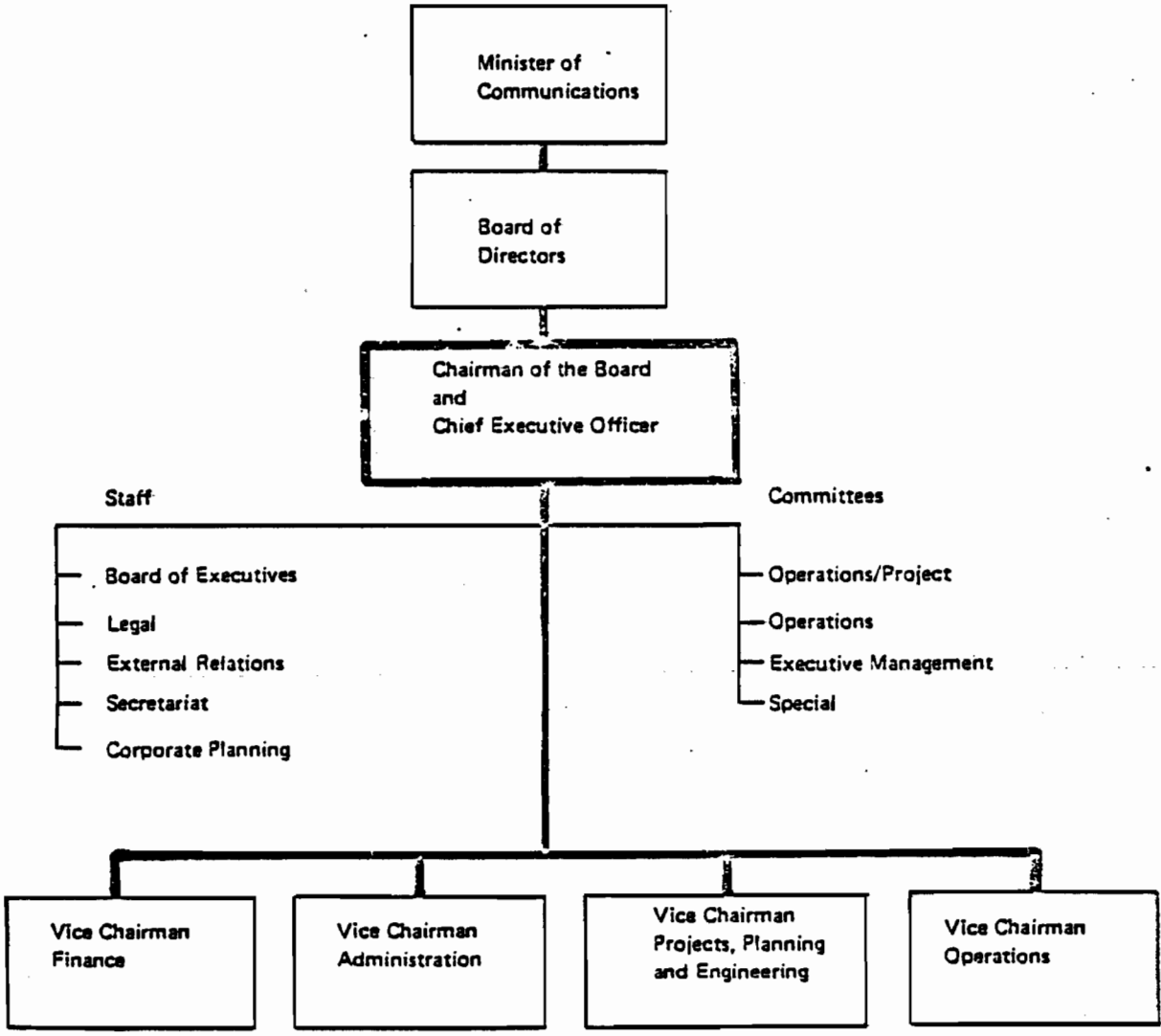
- Organization structure must reflect enviroment;
- Organization structure should follow functional lines primarily and be divided geographically only when or where necessary;
- You manage what you measure;
- The span of supervisory control must be limited;
- Command must be undivided;
- Authority must match responsibility at all levels;
- Distinct functional responsibilities report upward to a general manager to achieve inter-functional coordination;
- Authority must be delegated as far as possible to all levels of management.

C. APPROACH

In developing these recommendations, the members of ADLI's Task A-1 worked extensively with ARENTO personnel and discussed organizational issues with every ADLI and CTIC task leader to obtain a clear understanding of the current formal and informal structure of ARENTO. We drew upon extensive prior telephone operating experience in the United States, Europe and Mideast and discussed the organization of ARENTO with each of the present Vice Chairmen, each of the former Vice Chairmen, and, as it applied to a sector, with each Sector Chief. We also discussed issues with Task A-1 counterparts in ARENTO and other managers in the organization.

At a presentation on March 10, 1981 to the Vice Chairmen and other selected personnel, we outlined suggestions to be considered in an eventual restructuring of ARENTO and solicited written comments from the Executives. On the basis of oral comments during that meeting and subsequent conversations with the Vice Chairmen and others, we now are recommending a modified organization to be implemented as soon as possible together with goals for a subsequent organization to be implemented gradually as experience and ability allows.

ANNEX G



Note: Currently there are only three Vice Chairmen, one being Vice Chairman for Finance and Administration

FIGURE 1 RECOMMENDED INTERIM ORGANIZATION

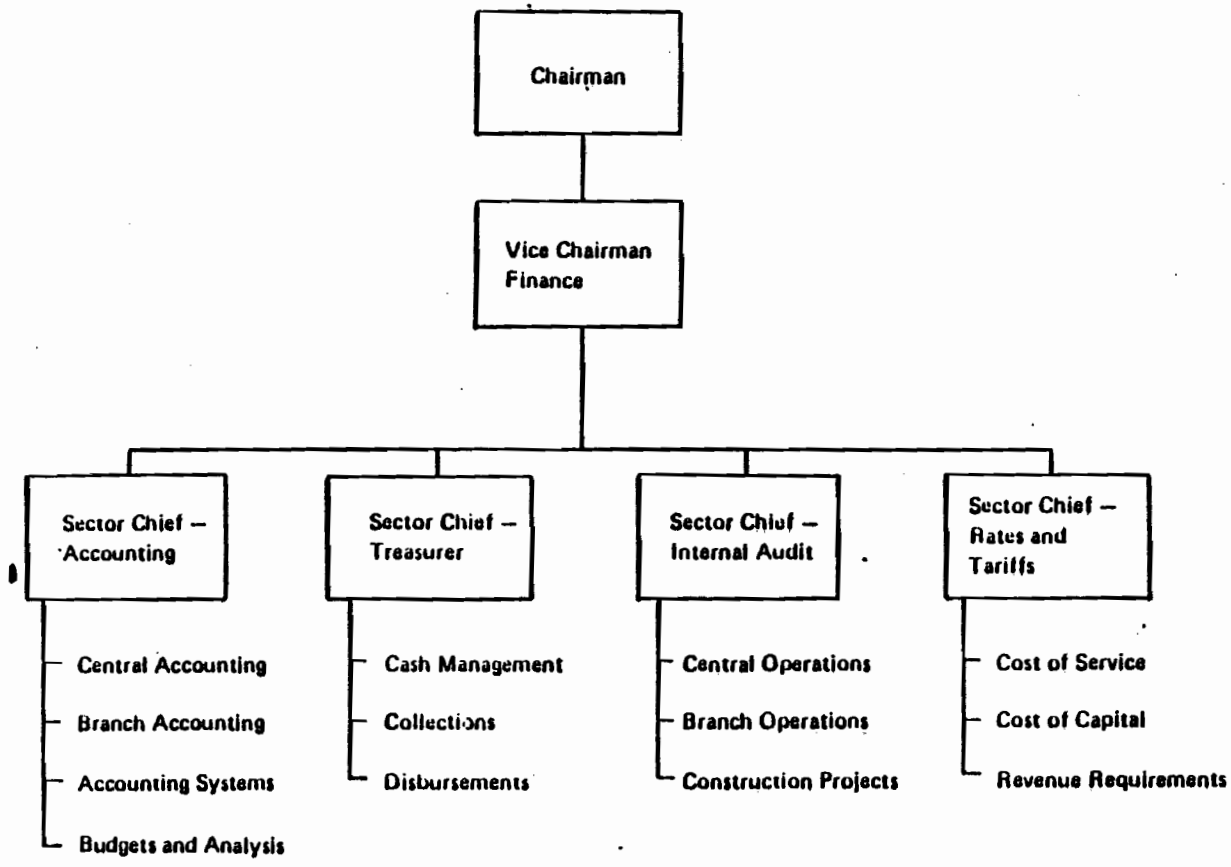


FIGURE 2 FINANCIAL ORGANIZATION

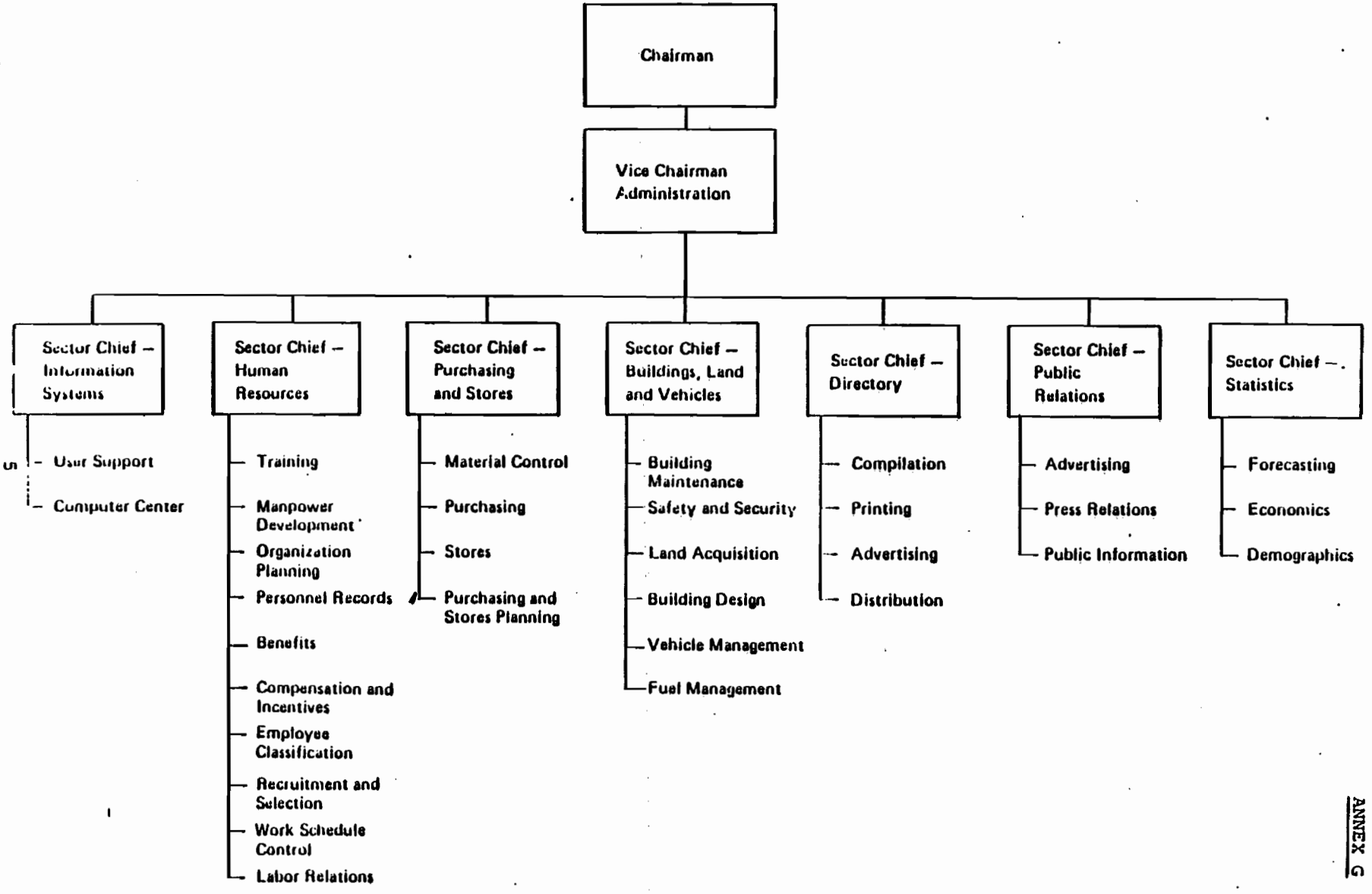


FIGURE 3 ADMINISTRATIVE ORGANIZATION

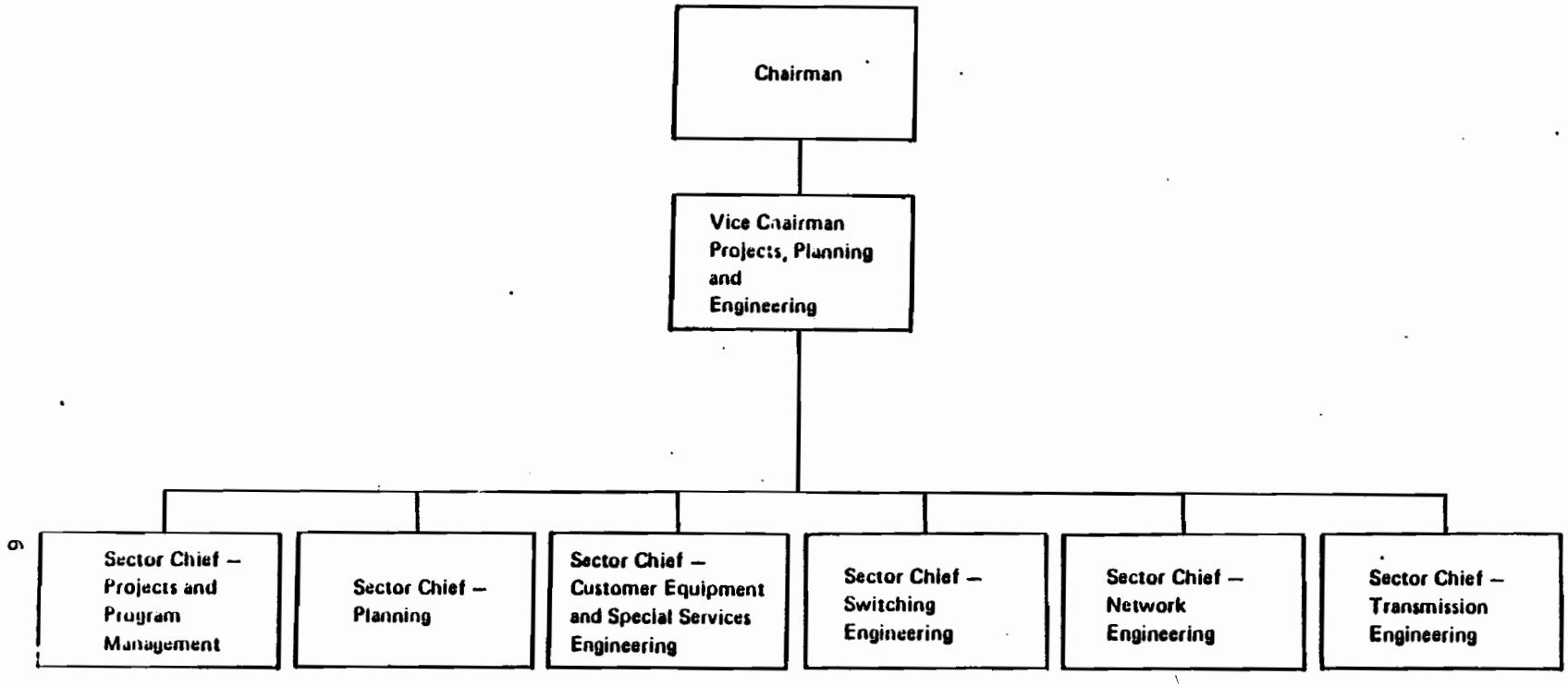


FIGURE 4 PROJECTS, PLANNING AND ENGINEERING ORGANIZATION

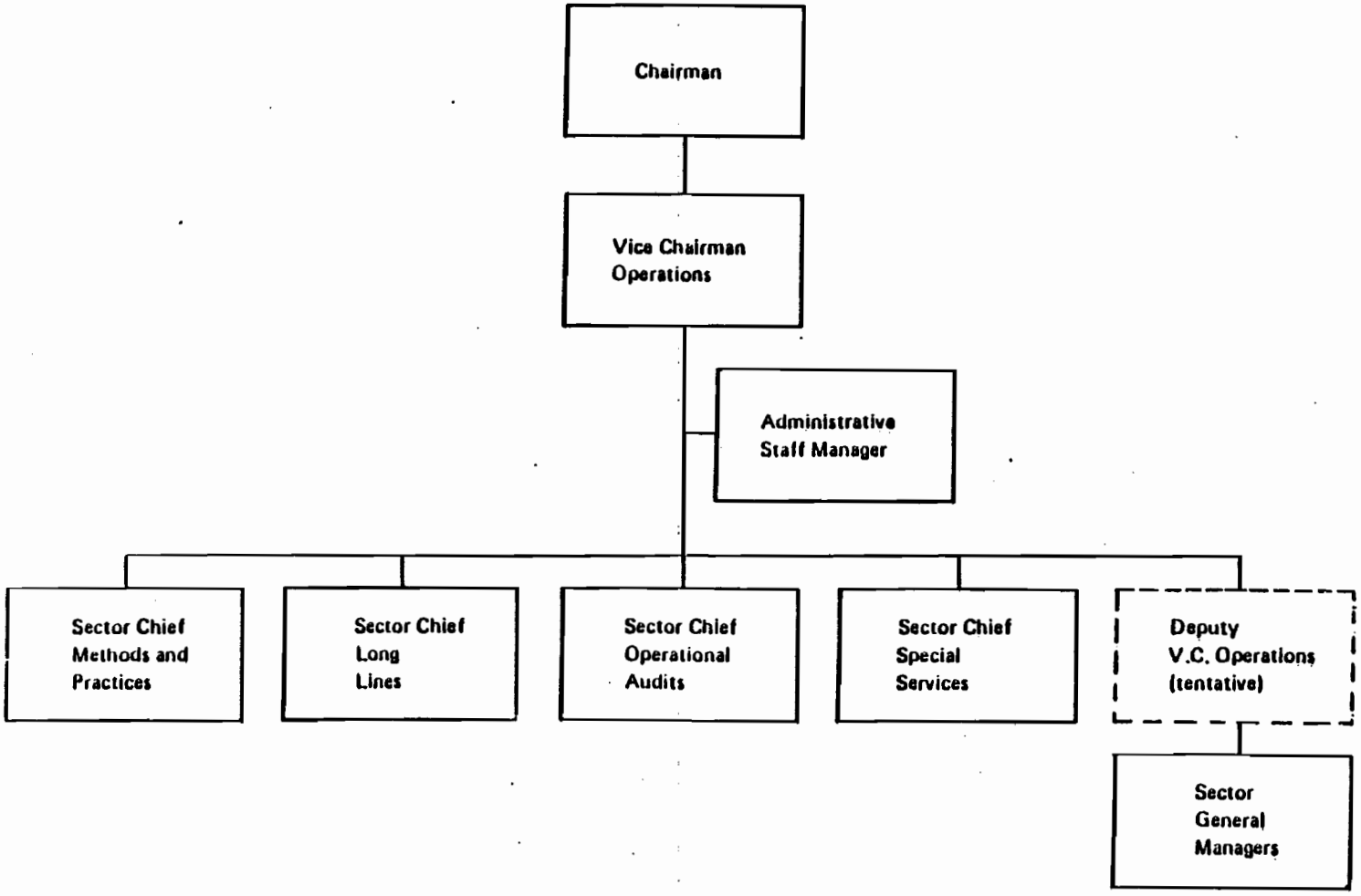


FIGURE 5 OPERATIONS ORGANIZATION

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ANNEX G

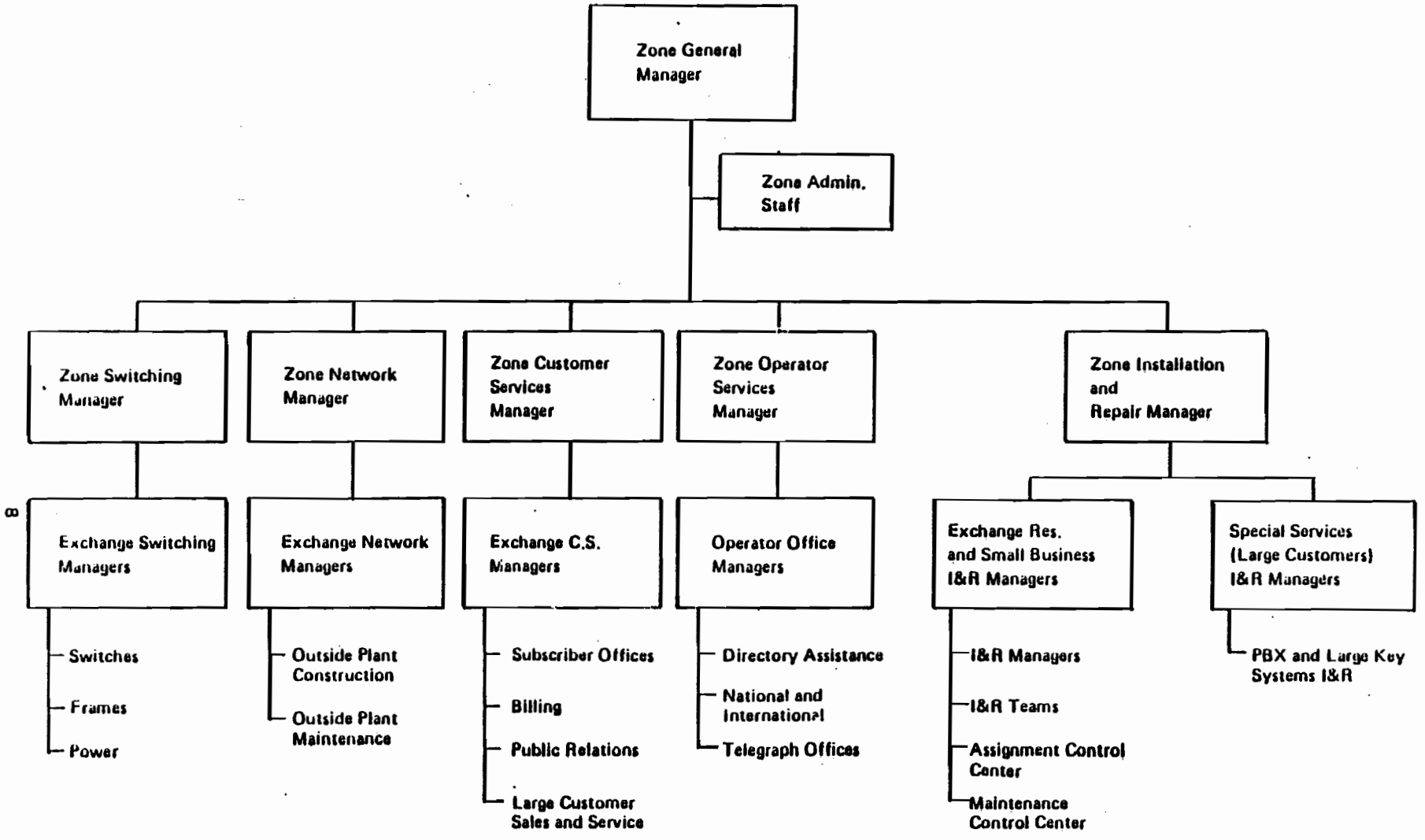


FIGURE 6 FUTURE ZONE FUNCTIONAL ORGANIZATION

ARENTO

Comparative Balance Sheets

As of December 31, 1978, 1979 and as of June 30, 1980 and 1981

(LE. 000)

ASSETS	1978	1979	1980	1981
Utility Plant				
In Service	123,180	197,743	215,050	243,518
Under Construction	171,535	196,464	222,176	294,956
Total	294,715	394,207	437,226	538,474
Less Depreciation	51,254	62,254	67,289	79,627
Utility Plant-Net	243,461	331,953	369,937	458,847
Current Assets				
Cash on hand	77	131	181	174
Cash in banks	9,396	8,063	10,358	11,945
Temporary Investments	1,615	3,087	3,087	3,087
Accounts Receivable (net)	47,085	31,997	38,238	31,795
Inventories	22,487	19,192	19,977	20,410
Total Current Assets	80,660	62,470	71,841	67,411
Total Assets	324,121	394,423	441,778	526,258
LIABILITIES AND EQUITY				
Longterm Debt:				
Domestic	119,919	188,392	229,084	288,919
Foreign	83,058	99,541	106,643	128,295
Total	202,977	287,933	335,727	417,214
Current Liabilities				
Accounts Payable	43,113	28,594	22,433	18,335
Other	44,677	43,679	49,059	51,537
Total	87,790	72,273	71,492	69,872
Equity	33,354	34,217	34,559	39,172
Total Liab. & Equity	324,121	394,423	441,778	526,258

ARENTO

Comparative Statements of Operating Income

For the years ending 12/31/78, 12/31/79, 6/30/81 and for the period 1/1/80 through 6/30/80

(LE. 000's)

	1978	1979	1980	1981
Operating Revenues				
Telegraph	3,191	4,307	3,029	5,454
Telephone	18,300	21,529	12,461	28,490
Wireless	28,461	31,327	17,095	39,507
Total	49,952	57,163	32,585	73,451
Operating Expenses				
Salaries	20,919	26,013	14,109	33,748
Commodity and Service Imports	4,478	5,698	3,420	6,413
Taxes and Duties	28	58	8	187
Depreciation	6,075	12,133	5,521	13,473
Rent	1,999	2,158	431	922
Total	33,499	46,060	23,489	54,743
Net Operating Income	16,453	11,103	9,096	18,708
Non Operating Expenses				
Interest Local	4,863	7,421	5,104	12,701
Interest Foreign	1,147	1,314	4,841	3,990
Total	6,010	8,735	9,945	16,691
Net Income/(Loss) from Operations	10,443	2,368	(849)	2,017

ARENTO
PROFITABILITY RATIO
(LE. MILLIONS)

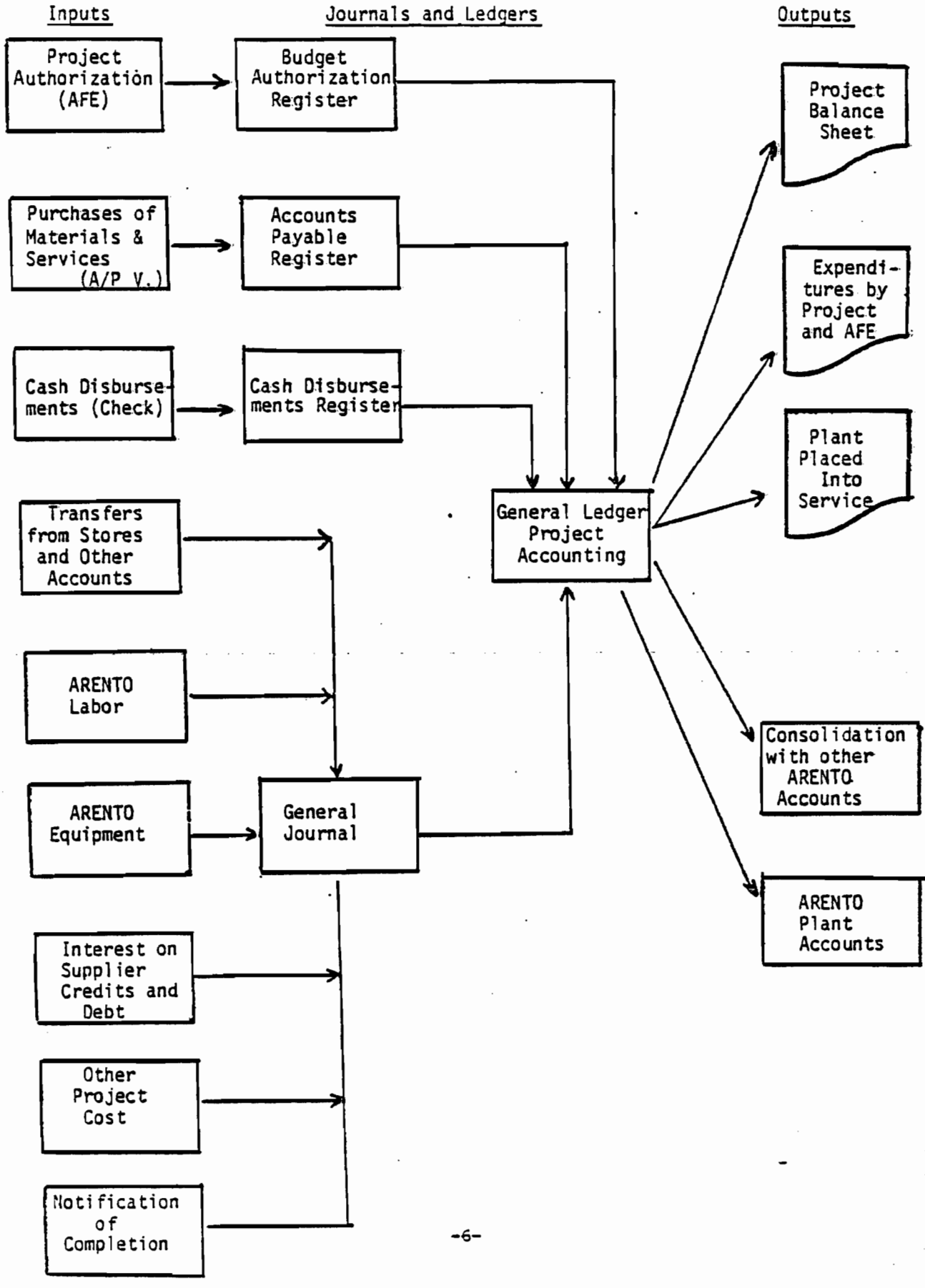
Ratio		Years							
		1978		1979		1980		1981	
		Amount	%	Amount	%	Amount	%	Amount	%
I.	Return on Investment		3.1		.5		N/A		.4
	Net Income	10		2		(1)		2	
	Total Assets	324		394		442		526	
II.	Return on Equity		30.3		5.9		N/A		5.1
	Net Income to	10		2		(1)		2	
	Total Equity	33		34		35		39	
III.	Cost of Debt.		3.0		3.1		3.0		4.1
	Interest Expense to	6		9		10		17	
	Long term Debt.	203		288		336		417	
IV.	Income from Operations		20.0		3.5		N/A		2.7
	Net Income to	10		2		(1)		2	
	Total Revenues	50		57		33		73	

OVERVIEW OF STEPS REQUIRED TO IMPLEMENT ARENTO'S FINANCIAL AND ACCOUNTING POLICIES

A. ORGANIZATION	B. TRAINING	C. SYSTEMIZATION	D. COMPUTERIZATION
1. Recruit and appoint: • Vice Chairman Finance • Director of Accounting • Treasurer • Director of Internal Audit	1. Conduct management development program for senior management on financial planning and control 2. Prepare training materials	1. Chart of Accounts and accounting policies 2. Project accounting incl. labor distribution and equipment utilization	1. Payroll 2. Project accounting
2. Reorganize financial and accounting functions in Cairo. Consolidate financial and accounting functions performed in: • Purchasing and stores • Engineering • Commercial • Wireless • Personnel	3. Conduct training programs for financial and accounting personnel	3. General ledger and general journal 4. Accounts payable 5. Budgeting 6. Financial Reporting	3. General ledger and general journal 4. Accounts payable 5. Budgeting 6. Financial Reporting 7. Labor distribution 8. Materials control 9. Equipment Utilization
3. Appoint General Managers for: • Budgets and Analysis • Central Accounting • Branch Accounting • Accounting Systems • Cash Management • Collections • Disbursements • Control Operations Auditing • Branch Operations Auditing • Construction Project Auditing		7. Revenue accounting 8. Cash collections and accounts receivable 9. Cash management 10. Cost accounting 11. Internal Audit	10. Revenue accounting 11. Cash collections and accounts receivable 12. Financial modelling
4. Reorganize financial and accounting functions outside of Cairo to match overall			13. Property accounting

ANNEX H

SCHEMATIC OVERVIEW OF SYSTEM



ANNEX I

ARENTO EXCHANGE EXPANSION PROGRAM

(Source: IBRD Report No. 3326-EGT)

Main Automatic Telephone Exchange Installation Program: 1980-85
(as at end of each calendar year)

Location	Total installations	Extensions to existing exchanges	New installations	Replacements 1/	Remarks
			1980		
CAIRO					
Almaza	10,000		10,000 XB	7,000	Replaces 7,000 lines of Helliopolis I Rotary
Nasr	5,000	5,000 XB			
Subtotal	15,000	5,000	10,000	7,000	
LOWER EGYPT					
Shibinelkom	5,000		5,000 CA/EL	1,500	Replaces 1,500 lines step by step equipment
Subtotal	5,000		5,000	1,500	
EGYPT GRAND TOTAL	20,000	5,000	15,000	8,500	
			1981		
CAIRO					
Ramses	20,000	10,000 XB	10,000 XB	10,000	Replaces 10,000 lines Gizira
Dokki	10,000	10,000 XB	-	-	
Giza	10,000	-	10,000 XB	4,800	Replaces 4,800 lines of Giza rotary.
"	10,000	10,000 XB	-		
Subtotal	50,000	30,000	20,000	14,800	
ALEXANDRIA					
Sidi Gaber	9,000	9,000 XB			
Sidi Beshr	4,000	4,000 XB			
Subtotal	13,000	13,000			

XB - Crossbar type equipment from Egyptian Telephone Factory.
CA/EL - Electronic switching equipment of CIT/ALCATEL.
J/XB - Crossbar equipment from Japanese of Hitachi Company.
US/EL - Electronic switching equipment from US under AID financed project.
S/EL - Electronic switching equipment from European Consortium of Siemens Company.
TH/EL - Electronic switching equipment from European Consortium of Thompson C&F-France.
I, II - Phases I and II of program of installation.

/1 Equipment required for replacement is included in quantities specified under "New Installations".

ANNEX I

Location	Total instal-lations	Extension to existing exchanges	New Installations	Replace-ments	Remarks
LOWER EGYPT					
Kafr El Sheikh	1,600	1,600 XB			
Dessouk	1,600	1,600 XB			
Menouf	2,000		2,000 CA/EL		
Tanta	4,000	4,000 XB			
Tala	1,000		1,000 CA/EL		
Kafr Rabie	600		600 "		
Bagour	800		800 "		
Mit Abol Kom	200		200 "		
Shuhadaa	600		600 "		
Kouesna	1,000		1,000 "		
Ashmoum	1,000		1,000 "		
Subtotal	14,400	7,200	7,200		
UPPER EGYPT					
Assuit	4,000	4,000 XB			
Subtotal	4,000	4,000			
CANAL & SINAI AREA					
Port Said	10,000		10,000 J/XB	4,000	Replaces 4,000 lines step by step exchange
Qerdaga	600		600 J/XB		
Subtotal	10,600		10,600	4,000	
EGYPT GRAND TOTAL	92,000	54,200	37,800	18,800	
			1982		
CAIRO					
Kanater	1,200	1,200 XB			
Kaliub	1,200	1,200 XB			
Shobra	4,000	4,000 XB			
Opera	5,000	5,000 XB			
Pyramids	3,000	3,000 XB			
Almaza	10,000	10,000 XB			
Dokki	20,000	20,000 S/EL I			Extension to existing 20,000 X Bar exchange
Helwan	5,000		5,000 XB	2,000	Replaces 2,000 lines rotary
Tebine	2,000		2,000 XB		
Subtotal	51,400	44,400	7,000	2,000	
ALEXANDRIA					
Kafr Dawar	1,200	1,200 XB			
Mersa Matruh	1,000	1,000 XB			
Subtotal	2,200	2,200			

ANNEX I

Location	Total installations	Extension to existing exchanges	New installations	Replacement	Remarks
LOWER EGYPT					
Damanhour	4,000	4,000 XB			
Birket El Sab	800		800 CA/EL		
Mehalla	5,000	5,000 XB			
Kafr Sheikh	2,000	2,000 XB			
Dessouk	2,000	2,000 XB			
Mansoura	4,000	4,000 XB			
Benha	2,000	2,000 XB			
Toukh	1,000		1,000 CA/EL		
Mit Kenana	400		400 "		
Mit Ghamr	3,000	3,000 XB			
[illegible]	800		800 CA/EL		
Degui	200		200 "		
El Amar	300		300 "		
Shibinel Kanater	1,000		1,000 "		
Subtotal	26,500	22,000	4,500		
UPPER EGYPT					
Luxor	1,200	1,200 XB			
Sohag	1,200	1,200 XB			
Qena	1,000	1,000 XB			
Badrashein	1,000		1,000 CA/EL		
Ayat	1,000		1,000 "		
Elsaf	1,000		1,000 "		
Hawamdiya	800		800 "		
Shobakgarta	600		600 "		
Aflih	200		200 "		
Ikhsas	200		200 "		
Kof Amar	200		200 "		
Mazhouna	600		600 "		
Subtotal	9,000	3,400	5,600		
CANAL & SINAI AREA					
Ismailia	4,000		4,000 J/XB	900	Replaces 900 step by step exchange
Suez	4,000		4,000 J/XB	2,000	Replaces 2,000 lines
Subtotal	8,000		8,000	2,900	step by step exchange
EGYPT GRAND TOTAL	97,100	72,000	25,100	4,900	
			1983		
CAIRO					
Fawala	20,000		20,000 S/EL I		
Heliopolis II & III	30,000		30,000 US/EL I	22,000	This will replace 22,000 lines rotary
Kubba	30,000		30,000 S/EL I	20,000	

	Total installations	Extensions to existing exchanges	New installations	Replacements	Remarks
Zamalek	20,000		20,000 US/EL I	20,000	Replaces 20,000 lines rotary exchange.
Imbaba	20,000		20,000 S/EL I	-	
Shobra	10,000	10,000 XB		-	
Nasv	10,000	10,000 XB		-	
Maadi	20,000		20,000 US/EL I	4,000	Replaces 4,000 lines rotary exchange.
Subtotal	160,000	20,000	140,000	46,000	
ALEXANDRIA					
Central I & II	30,000		30,000 US/EL I	20,000	Replaces 20,000 lines rotary.
Mersa Malruh	2,000	2,000 XB			
Ibrahimiya	20,000	-	20,000 US/EL I	10,000	Replaces 10,000 lines rotary.
Gleem	20,000	-	20,000 US/EL I	10,000	Replaces 10,000 lines rotary.
El Meuhya	10,000	10,000 XB			
Sidi Beshr	10,000	10,000 XB			
Subtotal	92,000	22,000	70,000	40,000	
LOWER EGYPT					
Tanta	20,000	20,000 TH/EL I			Extension to existing X Bar exchange.
Kafre Zayat	3,000	3,000 XB			
Zefta	4,000		4,000 Th/EL I		
Zagazig	15,000		15,000 TH/EL I	3,200	Replaces step by step 3,200 lines.
Facous	4,000		4,000 TH/EL I	1,000	Replaces existing 1,000 lines X Bar.
Abo Kebir	4,000		4,000 TH/EL I		
Belbis	4,000		4,000 TH/EL I		
Mansoura	25,000	25,000 TH/EL I	-		This is in addition to 10,000 lines X Bar equipment.
Sherbine	2,000		2,000 TH/EL I	-	
Derkiness	2,000		2,000 TH/EL I		
Subtotal	83,000	48,000	35,000	4,200	
UPPER EGYPT					
Minia	4,000	4,000 XB			
Beni Souef	3,400	3,400 XB			
Fayoum	3,000	3,000 XB			
Aswan	1,000	1,000 XB			
Gerga	2,200	2,200 XB			
Assiut	2,000	2,000 XB			
Malawi	3,000	3,000 XB			
Subtotal	18,600	18,600			

ANNEX I

Location	Total installations	Extension to existing exchanges	New installations	Replacements	Remarks
CANAL & SINAI					
Port Said	10,000	10,000 J/XB			
Qantara	1,000		1,000 J/XB		
Fayed	1,000		1,000 J/XB		
Ismailia	6,000	6,000 J/XB			
Suez	6,000	6,000 J/XB			
Tel El Kabir	1,000		1,000 J/XB		
Pat Tarfig	1,000		1,000 J/XB		
El Arish	2,000		2,000 J/XB		
Gerdaga	400		400 J/XB		
Subtotal	28,400	22,000	6,400		
EGYPT GRAND TOTAL	382,000	130,600	251,400	90,200	
CAIRO					
Pyramids	10,000	10,000 XB			
Bab El Louk	20,000		20,000 US/EL I	14,000	Replaces 14,000 line rotary.
New Shobra	10,000		10,000 S/EL II		
Kurba	10,000		10,000 S/EL I		
Roda	20,000	20,000 S/EL I			Extension to crossbar exchange.
Helwan	5,000	5,000 XB			
Tebine	1,000	1,000 XB			
Zamalek	10,000	10,000 US/EL II			
Maadi	10,000	10,000 S/EL II			
Subtotal	96,000	56,000	40,000	14,000	
ALEXANDRIA					
El Maks	15,000		15,000 S/EL II		
Gleem	25,000	25,000 S/EL II	-		
Subtotal	40,000	25,000	15,000	-	
LOWER EGYPT					
Mehalla	10,000	10,000 TH/EL II	-	-	
Talkha	2,000	-	2,000 TH/EL II	-	
Matareya	2,000	-	2,000 "	-	
Menzala	2,000	-	2,000 "	-	
Damiette	10,000	-	10,000 "	3,000	Replaces 3,000 line
Ras El Barr	2,000		2,000	900	" 900 "
Mina El Kamh	4,000	-	4,000 "	-	
Abo Hamad	2,000	-	2,000 "	-	
Benha	6,000	6,000 TH/EL	-	-	This is in addition to 4,000 lines X Bar equipment.
Subtotal	40,000	16,000	24,000	3,000	

ANNEX I

Location	Total installations	Extension to existing exchanges	New installations	Replacements	Remarks
UPPER EGYPT					
Gharga	3,000		3,000 XB		
Subtotal	3,000		3,000		
EGYPT GRAND TOTAL	179,000	97,000	82,000	17,900	
1985					
CAIRO					
Almaza	15,000	15,000 SEL II			Extension to existing crossbar 20,000 lines.
Nasr	20,000	20,000 SEL II			Extension to existing crossbar 20,000 lines.
Imbaba	10,000		10,000 SEL II	-	
Pyramids	15,000	15,000 SEL II			Extension to existing crossbar 20,000 lines.
Subtotal	60,000	50,000	10,000	-	
ALEXANDRIA					
Menshiya	20,000	20,000 SEL II			Extension to existing crossbar 10,000 lines.
Subtotal	20,000	20,000			
EGYPT GRAND TOTAL	80,000	70,000	10,000	-	
SUMMARY					
YEAR					
1980	20,000	5,000	15,000	8,500	
1981	92,000	54,200	37,800	18,800	
1982	97,100	72,000	25,100	4,900	
1983	382,000	130,600	251,400	90,200	
1984	179,000	97,000	82,000	17,900	
1985	80,000	70,000	10,000	-	
Total 1980-85	850,100	428,800	421,300	140,300	

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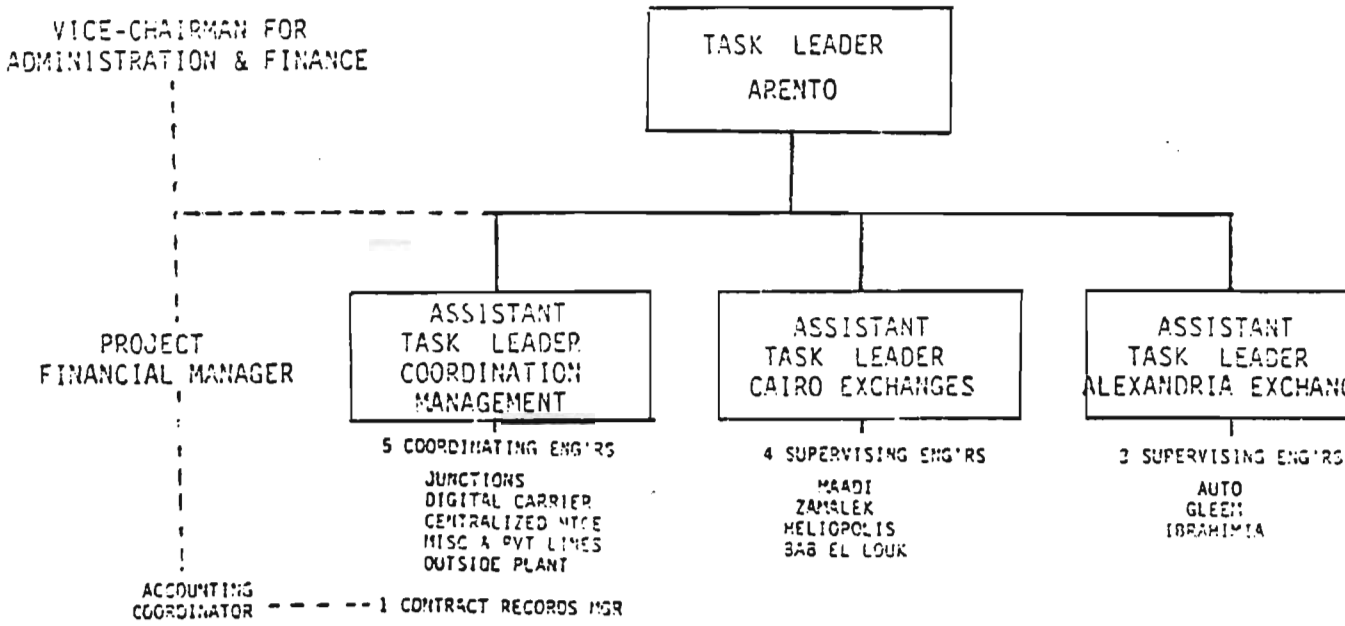
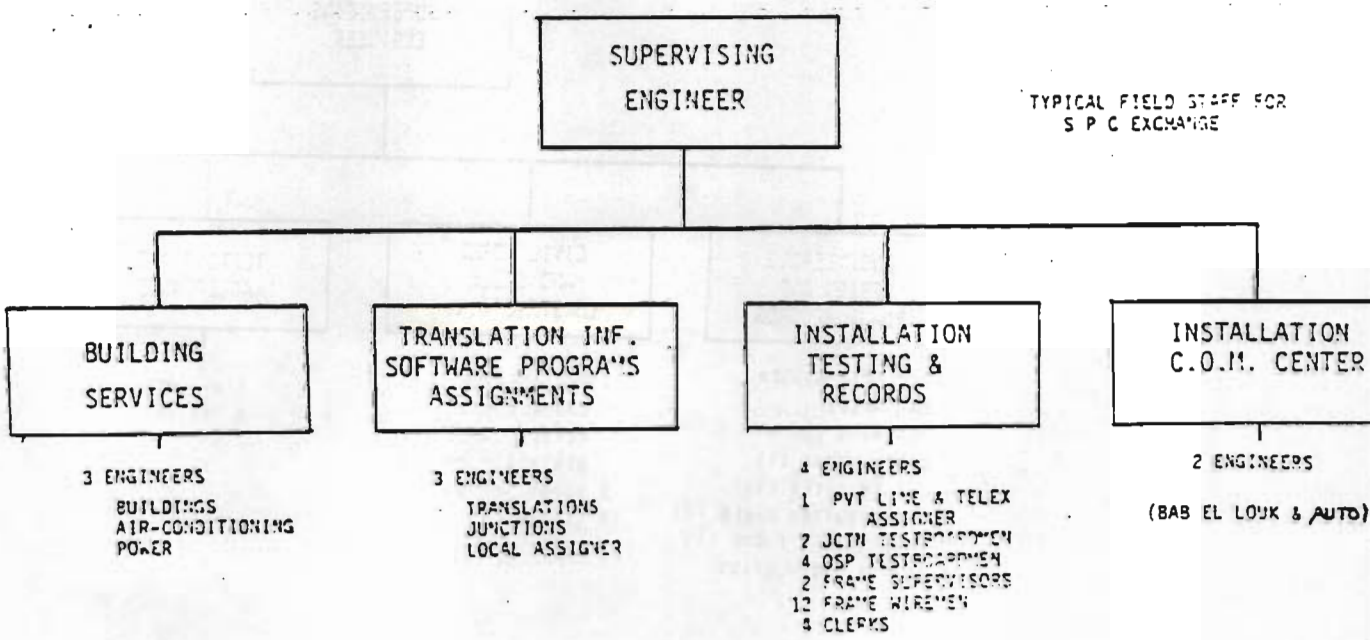
ANNEX J

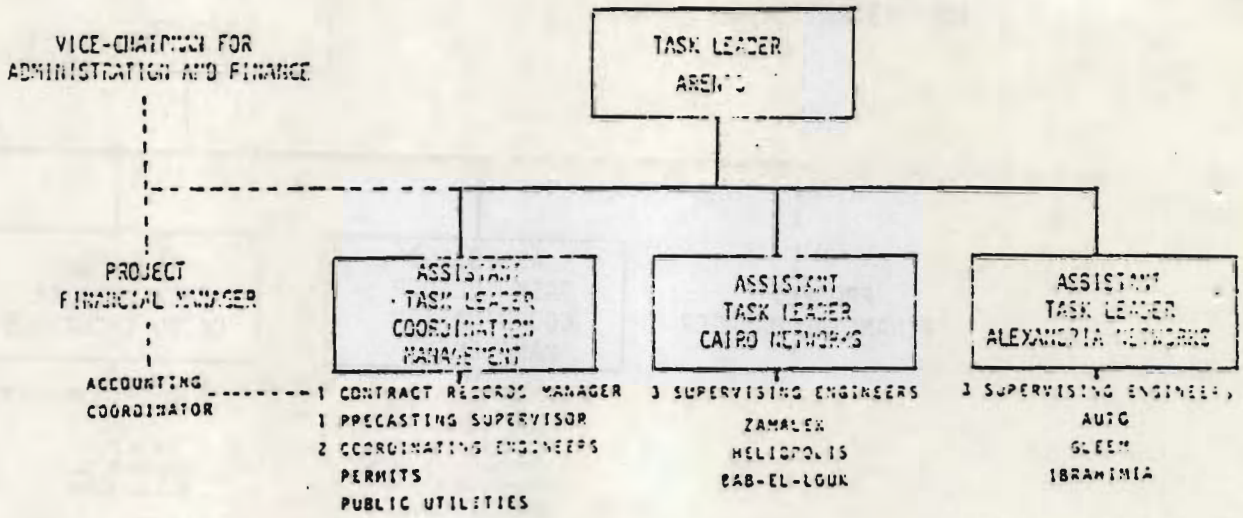
ARENTO STAFFING FOR ESS INSTALLATION

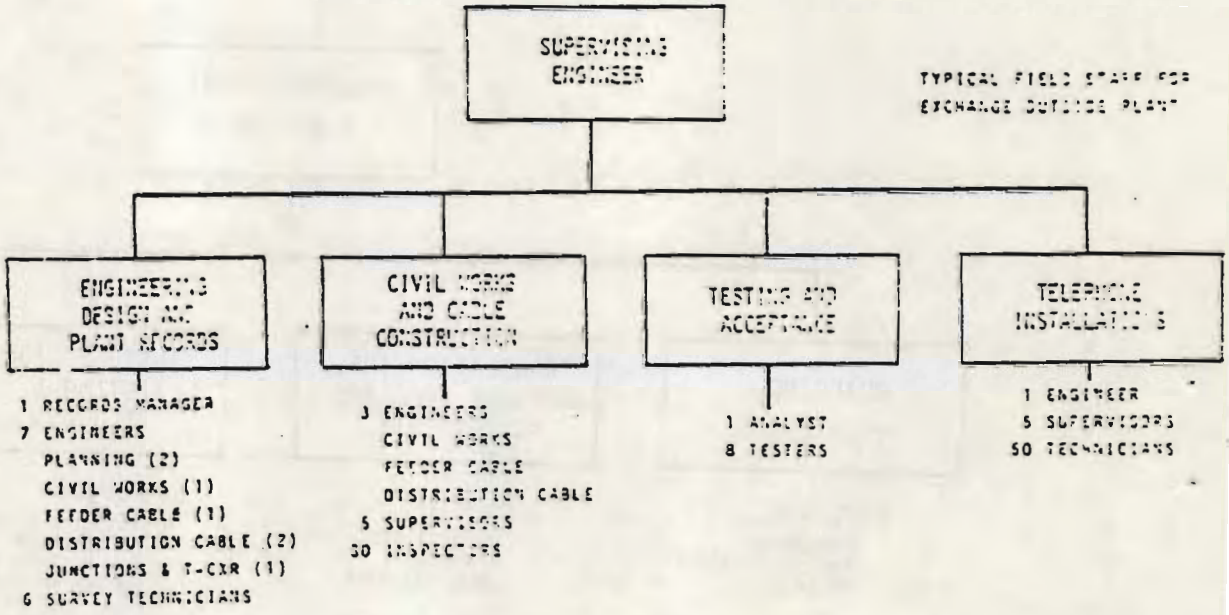




ANNEX J

ARENTO STAFFING FOR OUTSIDE PLANT INSTALLATION





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CAIRO AND ALEXANDRIA NETWORK DESIGN

I. INTRODUCTION

This task has been designed in the context of the current and planned rapid expansion and modernization of the metropolitan telephone networks in Cairo and in Alexandria. Introduction of a large number of new exchanges, growing demand for service stimulated by the overall economic expansion and changing demographic patterns as the population flows into the metropolitan areas have created a situation of enormous complexity. ARENTO wishes to consider the introduction of large tandem exchanges as a measure aimed at ensuring orderly and economic expansion of its two (2) major metropolitan networks.

II. SCOPE OF WORK

Task C-2, Cairo and Alexandria Network Design, shall provide for achievement of ARENTO's network planning objectives for the Cairo and Alexandria metropolitan areas at least through 1995. The main objective of this task is to ensure orderly and economic expansion of these metropolitan networks. This objective may require introduction of large tandem exchanges in addition to or as a replacement of the existing small tandems, in which case the tandem exchange specifications shall also be prepared under this task.

The two (2) metropolitan areas to be studied shall include all local and tandem as well as the directly associated national trunk and international exchanges and all other telephone plant existing, under construction and to be implemented within the current Five Year Plan. Long range plans through to 1995 will also be considered.

The task is broken down into the following subtasks:

1. Plant Data Base
2. Expansion Cost Profiles
3. Traffic Study
4a. Cairo Network Plans
4b. Alexandria Network Plans
5. Traffic and Trunking Specifications for Tandem Exchanges
6. Technical Specifications and Statement of Work
7. Invitation for Bid Documents

The first three (3) subtasks shall provide (1) data on the existing and under construction plant, (2) cost profiles for expansion of the implemented plant and for additional plant, and (3) a traffic data base through 1995.

Subtask 4, Network Plans, is the central activity of the Network Design Task. It shall draw on the data collected under Subtasks 1, 2, and 3. Alternative network plans shall be postulated and, through engineering and economic analysis, the optimal network plan selected.

Subtasks 5, 6, and 7 progress toward the preparation of a complete Invitation for Bid package for the tandem exchanges and are contingent upon demonstration of the requirements for tandem switching.

Subtasks 1 through 5 shall be performed separately with respect to Cairo and Alexandria, whereas Subtasks 6 and 7 are common to both metropolitan areas. Subtask 7 effort is contingent upon obtaining reasonable assurance of USAID funding for the tandem exchanges.

With reference to Figure C-2-1, Schedule of Events and Manpower Chart, the task shall be divided into three (3) Phases. Each Phase ends with a major review at which ARENTO and USAID shall review the completed work and approve the results and recommendations. Without ARENTO's and USAID's approval, the subsequent phase subtasks shall not be started. Subtasks beginning in Phase II and Phase III will be funded as separate options. In addition to the Major Reviews, ARENTO and USAID shall review the results of each subtask at its completion.

Table C-2-1 shows the man-month requirements for the Basic task (which includes Subtasks 1 thru 4a), Option I (which includes Subtasks 4b thru 6), and Option II (which includes Subtask 7).

Tender issuance, bid evaluation, supervision coordination, acceptance testing, etc., of any plant or equipment additions to the network which may result from this Network Design Task do not form part of this Scope of Work. In the event that additional USAID financing is made available for network projects, such as the digital tandem exchanges, the technical assistance required for the implementation of the project will be separately financed under the loan or grant agreement concerned.

Subtask 1. Plant Data Base

Complete metropolitan network plant data, excluding local subscriber OSP, shall be collected and integrated as a baseline for postulating the alternative network expansion plans. This Plant Data Base (PDB) shall include:

a) All existing plant with notes on its condition and cost of essential repair.
b) All plant under construction, with completion dates.
c) All plant irrevocably committed to construction with completion dates.

At least the following plant items shall be included in the PDB. Detailed data shall be collected on each subitem below.

A. Exchange Buildings

1. Each available equipment space, its size and suitability for specific types of equipment.

2. Provisions and possibilities for addition or expansion of equipment space.

Floor plans shall be provided for each exchange building, showing the occupied, available and potentially available equipment space.

B. Main Conduit System

Main Conduit System, including the junction conduit system and main feeder conduit system, which could be extended for junction use. Clear

OSP System Plan Drawings, covering the whole metropolitan area, with a scale of at least 1:10,000 shall be provided showing:

1. Number of conduits in each run.

2. Internal diameter of conduits.

3. Cables in each run by size and type.

4. Junction cable type and utilization by each cable, showing the number of circuits used as junctions, FX lines, dedicated lines, Telex, etc.

5. Manhole size and total and spare splice capacity.

6. Spare circuit availability on installed cable by type/e.g./loaded, unloaded, T-screen.

7. Spare conduit system availability in terms of number of spare conduits and outside diameter of additional cables in underutilized conduits.

Exchange locations and exchange area boundaries shall be shown on the drawings as well as completion dates for each incompleted or being expanded section.

The Main Conduit System PDB shall, if possible, be compiled in a computer; programmed for easy update of PDB. Computer print-out containing all data required for the System Plan Drawings shall be delivered as well as data and program tapes which will permit PDB updates and printing out on a machine available to ARENTO in Cairo.

In addition to drawing copies, the OSP drawings shall be delivered as mylar originals. The quantitative data on the mylar originals shall be easily eraseable without damage to the mylar sheet.

C. Microwave Junction System

At least the following snall be provided:

1. Metropolitan area map showing the locations of the MW stations, RF beams, RF frequencies and polarization in each direction and voice channel capacities on each RF channel.

2. T-1 MUX Matrix.

3. Circuit MUX Matrix.

4. Channelization Matrix, showing utilization of circuits as one-way and two-way junctions, FX lines, dedicated lines, etc., and identifying signalling interfaces.

D. Outside Plant

All underground and microwave OSP shall be summarized in:

1. Single line quasi-geographic diagram showing superposition of (a) the Main Conduit System and each cable within it, (b) the Microwave Junction System (trunking) routes, showing cable and route numbers and capacities, and (c) length of interexchange of segments. Exchange names, codes and capacities shall also be included.

2. Interexchange OSP matrices showing cable and route numbers, capacities and utilization.

E. Switching Equipment

The exchanges shall be reviewed to determine their expansion potential, if any, as affected by all limited factors, e.g., switching network capacity, call processing capacity, building size, etc. The current and ultimate capacity as limited by each factor shall be tabulated.

Subtask 2. Expansion Cost Profiles

Expansion Cost Profiles shall be developed for each existing or proposed element of the metropolitan plant including:

a) each exchange site, and

b) each section of the junction system, both underground and microwave.

For each element, marginal costs of adding trunk and traffic capacity shall be developed, clearly identifying cost breakpoints as capacity is increased. Alternative approaches to capacity expansion shall be considered as feasible.

Subtask 3. Traffic Study

The traffic study shall cover two periods: (a) the present Supply Limited Period (SLP) and (b) the future Demand Limited Period (DLP).

The DLP traffic study shall rely on long-term demand forecasting including demographic trends, per capita income by metropolitan subarea and its distribution, and business/industrial/government activity and development plans. Community of interest factors shall be determined. Sample block-by-block projections shall be performed for typical subareas. Originating traffic source density maps shall be prepared as required with a resolution of 500 meters. In determining the forecast, alternative sets of exchange locations and/or area boundaries shall be postulated as necessary. Junction traffic matrices shall be prepared for each alternative at least for the end of 1990 and of 1995.

During SLP, the carried BH traffic will be limited by the availability of the OSP and EX plant. For the first few years of SLP, the generated BH traffic is expected to be limited by the already predetermined capacity of existing, under construction and irrevocably planned EXs. Hence, the traffic study shall stress reliance on originating erlangs per line and on calling pattern studies.

Following the predetermined expansion, SLP will progress into a phase of flexible expansion which will be significantly impacted by the results of this task. The underlying traffic study for this flexible portion of SLP shall receive maximum attention. All SLP and DLP methodologies shall be applied and extrapolation of the traffic forecasts between predetermined SLP and DLP shall be taken into account. Originating traffic source density maps as necessary and junction traffic matrices for several alternative sets of postulated exchange sizes, locations, and area boundaries, and for several well selected network development phases shall be generated. In all cases, minimum, maximum and most likely forecasts shall be presented.

Prominent among the subtask objectives shall be the development of traffic data base for the most economical expansion of the metropolitan networks.

Subtask 4. Network Plans

Alternative Network Plans shall be postulated for each metropolitan area. At least the following alternatives shall be analyzed:

a) Direct Low Loss Trunking.

b) Tandem Trunking with High Usage Junctions.

c) Combinations of (a) and (b) above.

Subalternatives shall include the following permutations:

a) Inclusion of National Trunk Exchange functions in the tandems.

b) Inclusion of International Exchange Functions in the tandems.

c) Functional and/or geographic disposition of the existing tandem exchanges.

d) Use of the tandem capability of local exchanges.

e) Provision of subscriber, operator and special services.

Each alternative and subalternative shall be proven sound from the point of view of:

Switching
Numbering
Call Charging
Transmission
Routing
Signalling

For alternatives utilizing alternative routing, traffic peakness shall be taken into account using Wilkinson's theory.

Thirty most busy days BH traffic shall be used in the design. In addition, maximum 10% loss with 10% overload criterion shall be applied.

Each alternative involving tandem routing shall be optimized utilizing the Economic CCS Methodology, subject to appropriate minimum and maximum limits.

The selected optimized alternatives and subalternatives shall be subjected to rigorous Engineering Economics treatment using

Present Worth of Annual Charges method. The annual charges shall be developed taking into account financial and economic factors, including shadow pricing. Comparison of PWACs for at least twenty (20) year periods shall be presented.

Subtask 5. Traffic and Trunking Specifications for Tandem Exchanges

Provided the engineering and economic analysis in Subtask 4, Network Plans, demonstrates that any specific tandem exchanges should be introduced in the metropolitan areas by 1985, Traffic and Trunking Specifications shall be prepared for these exchanges. The Traffic and Trunking Specifications shall be accompanied by detailed estimated cost breakdowns for the implementation of these tandem exchanges. Both foreign exchange and Egyptian Pound costs shall be provided. An implementation schedule should be developed.

Subtask 6. Technical Specifications and Statement of Work

Complete Technical Specifications and a Statement of Work suitable for competitive procurement of the tandems shall be prepared, incorporating the Traffic and Trunking Specifications delivered under Subtask 5.

Subtask 7. Invitation for Bid Documents

Provided USAID and the Government of the Arab Republic of Egypt agree to fund the implementation of the tandem exchange, appropriate IFB documents shall be prepared. The IFB documents shall include instructions to Bidders, Contractual Terms and Conditions and any other items necessary to complete the IFB package in readiness for its issuance.

III. APPROACH

The successful attainment of the objective of this project will depend upon close cooperation among the Consultant, the Counterpart Team, and the ARENTO Management. Assistance and training will be provided to the ARENTO Counterpart Team with respect to all phases of the work. A detailed work plan shall be prepared and organizational responsibilities clearly defined.

The data required for this task shall be collected with active formal ARENTO cooperation. All relevant data assembled during the Sector Study and under other tasks of the Consultant's Contract shall be reviewed and utilized as appropriate.

Monthly Reports on this task, showing schedules, accomplishments, personnel assignments, and man-months utilized, shall be included in the monthly Project Report.

Monthly Progress Meetings shall be scheduled at least two (2) weeks in advance. An agenda shall be made available to ARENTO Management and to USAID at least one (1) week before each meeting.

Subtask Reports shall be delivered at the end of each subtask. The reports shall include:

a) All collected data.
b) Description of the work performed, including methodology, problems, etc..
c) Decision made, including reasons.
d) All results of the subtask effort.

Clear, concise presentation shall be supported by tables, graphs, drawings and maps included in or with the reports. In the case of Subtasks 6 and 7, the Subtask Reports shall consist of copies of the output documents required under the subtasks accompanied by a explanatory letter covering the decisions and choices made during the process of preparation of these documents. Ten (10) copies of Subtask Reports shall be delivered to ARENTO and three (3) copies to USAID.

Approximately ten (10) days after the delivery of Subtask Reports, Subtask Review Meetings shall be held with ARENTO Management and USAID. Copies of any presentation material shall be made available.

Major Reviews, which may consist of several presentations and meetings, shall be held with ARENTO Management and USAID at the end of each phase of the task. Any material to be considered, including all subtask reports on tasks completed during the phase and a well thought-out agenda shall be delivered at least two (2) weeks before each review. Copies of any presentation material shall be made available.

All Computer printouts delivered with the reports shall be accompanied by explanatory notes and logic flow charts.

At the end of the task, input data tapes and program tapes for any software developed under the task shall be delivered to ARENTO. The software shall be sufficiently well-documented to permit its use by skilled computer personnel. The software should, as far as possible, be supportable by a machine available to ARENTO in Cairo. To the extent possible, computer data processing for this task should be performed in Cairo on a machine available to ARENTO.

Copies of drawings shall be included in or with relevant subtask reports.

For drawings possessing a permanent or update value to ARENTO, the mylar originals shall be delivered at the end of the task. The updatable quantitative data on the mylar original shall be easily erasable without damage to the mylar sheet.

IV. SCHEDULE

Figure C-2-1 shows the time periods during which work will be in progress on each of the seven (7) subtasks. Phase I is scheduled to complete nine (9) months from the beginning of the task; Phase II is scheduled for months 10 through 14; and Phase III is scheduled for months 15 through 18.

V. ORGANIZATION AND STAFFING

Table C-2-1 shows total man-months for the three (3) phases.

The Consultant shall provide the following Key Personnel to be resident in Egypt:

1 Task Leader/Network Engineer
1 Traffic Engineer
1 Switching Systems Engineer
1 Transmission/Outside Plant Engineer

The resumes of these Key Personnel shall be submitted to ARENTO and USAID for their approval before they may be assigned to the task. The Key Personnel shall be subject to Clause 6 (Key Personnel) of the Contract. Other Consultant personnel shall also be carefully selected based on proven records of performance in their required specializations.

ARENTO shall provide separate office space for the task team including Consultant and ARENTO counterpart personnel, both in Cairo and in Alexandria. Drafting support shall be provided by ARENTO.

AID 1020-25 (3-78)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1980 to FY 1986
Total U.S. Funding $80 million
Date Prepared July 1979
Amended: February 1982

Project Title & Number: Telecommunications (263-0117) Amendment

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: A reasonably efficient telecommunication system capable of supporting Egypt's economic and social growth.	Measures of Goal Achievement: Dissatisfaction of gov't, commercial and private subscribers substantially decreases.	ARENTO records and statistics and U.S. consultant survey of sample representation of various uses segments.	Assumptions for achieving goal targets: 1. Other financial resources are available. 2. Telecomm. remains a high GOE priority.
Project Purpose: Support and strengthen ARENTO's ability to more efficiently manage and operate the present Egyptian telecommunications system in order to improve service to customers.	Conditions that will indicate purpose has been achieved. End of project status: 1. A reorganized ARENTO operating under modern industry standards. 2. Reduction of dial attempt/contact ratio. 3. Decrease of number of private system operating. 4. Greater use of telephones.	1. Progress reports mtgs., & annual evaluation, esp. end of proj. 2. National dial attempt/contact ratio reduced from present max. 1 to 15 to 1 to 8, or better. 3. ARENTO's reports showing private telephone systems users switching to ARENTO services. 4. ARENTO records and progress reports.	Assumptions for achieving purpose: 1. Most service bottlenecks are weaknesses in capabilities of many mgmt. & oper. personnel; unsatisfactory policies, procedures & records; most telecomm. equipment is old & obsolete; and ARENTO, although an autonomous org., continues to operate under artificial GOE constraints.
Outputs 1. Planning unit established and functioning in ARENTO. 2. New training programs installed. 3. Annual procurement plans developed and implemented. 4. Accounting, financial & personnel systems developed and operating. 5. ESS exchanges and related outside plant installed. 6. Air cond. training units & generators installed. 7. Other telecomm. equipment being installed.	Magnitude of Outputs: 1. PPMO established. 2. Consultant, ESS and OSP training installed. 3. Formal annual procurement plans distributed to approp. divisions of ARENTO. 4. All systems operating. 5. ESS exchanges operating. 6. All air cond. generators operating. 7. T-carrier and Temp. Power operating.	1. Progress reports & periodic mtgs. with U.S. consultants and ARENTO. 2. Copies of training curricula, progress reports and visits to trng. center. 3. Receipt of formalized procedures & progress reports. 4. Receipt of formal procedures and policies. 5. Site visits. 6. Site visits. 7. Site visits.	Assumptions for achieving outputs: 1. U.S. Consultant performs of work satisfactorily. 2. ARENTO provides personnel & other support to U.S. Consultant. 3. Turnkey contractors will perform per schedule of future contracts.
Inputs: 1. Tech. asst. for continued support for strengthening ARENTO's mgmt, operating & trng function 2. ESS equipment rotary as well as related outside plant. 3. Air conditioning equipment and electric power generators. 4. Other misc. equipment.	Implementation Target (Type and Quantity) 1. Completion of technical & trng. serv. proj. in 4 years. 2. Installation of 83,000 lines of ESS and 84,000 lines of outside plant. 3. Installation of $1.0 million of air conditioners & $1.5 million of standby power generators. 4. Procurement & utilization of other telecom. equipment.	1. Progress reports & final by U.S. Consultant. 2. Progress reports and site visits. 3. Same as 2. above. 4. Same as 2. above.	Assumptions for providing inputs: 1. U.S. Consultants contract amended. 2. Equipment suppliers can make telecomm. equip. available at reasonable prices. 3. GOE meets all CPs promptly.

ANNEX I