AGENCY FOR INTERNATIONAL DEVELOPMENT

Washington, D. C. 20523

PROJECT PAPER

EGYPT: Telecommunications IV
(263-0177)

September 25, 1988

UNCLASSIFIED

D STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

AGENCY FOR INTERNATIONAL DEVELOPMENT

CAIRO, EGYPT

PROJECT PAPER

PROJECT NO. 263-0177

AUGUST 1988

EGYPT: TELECOMMUNICATIONS IV

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

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

2. COUNTRY/ENTITY: Egypt

3. PROJECT NUMBER: 263-0177

4. BUREAU/OFFICE: Asia/Near East — 03

5. PROJECT TITLE (maximum 40 characters): Telecommunications IV

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 01 DD 15 YY 93

7. ESTIMATED DATE OF OBLIGATION (Under "B." below, enter 1, 2, 3, or 4): A. Initial FY 88 — B. Quarter 4 — C. Final FY 89

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	20,000		20,000	40,000		40,000
(Grant)	(20,000)	( )	(20,000)	(40,000)	( )	(40,000
(Loan)	( )	( )	( )	( )	( )	(
Other U.S. 1.						
Other U.S. 2.						
Host Country		4,350	4,350		9,130	9,130
Other Donor(s)						
TOTALS	20,000	4,350	24,350	40,000	9,130	49,130

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	C. PRIMARY TECH. CODE 2. Loan	D. OBLIGATIONS TO DATE 1. Grant	D. OBLIGATIONS TO DATE 2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	E. AMOUNT APPROVED THIS ACTION 2. Loan	F. LIFE OF PROJECT 1. Grant	F. LIFE OF PROJECT 2. Loan
(1) ESF	701	827		0		20,000		40,000	
(2)									
(3)									
(4)									
TOTALS				0		20,000		40,000	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

Expand the present Cairo telecommunications system inorder to meet some of the public and private sector demand for telecommunications service.

14. SCHEDULED EVALUATIONS: Interim MM YY MM YY — Final MM 09 YY 92

15. SOURCE/ORIGIN OF GOODS AND SERVICES: [X] 000 [ ] 941 [ ] Local [ ] Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment)

USAID/Egypt Controller concurs with the proposed methods of implementation and financing.

William A. Miller
Controller

17. APPROVED BY — Signature — Title: Director, USAID/Egypt — Date Signed MM DD YY

18. DATE DOCUMENT REC'D IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIB. MM DD YY

EGYPT - TELECOMMUNICATIONS IV

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EXHIBITS:

REFERENCES:

1. International Telecommunications Union Report," Information Telecommunications and Development," dated February 1986.

2. German Telepost Consulting Ltd. - Report, "ARENTO - Long Term Development Planning", dated April, 1985.

3. ARENTO Report, "Telephone Line Development Program - Second Five Year Plan 1987/88 - 1991/92," dated May, 1984.

4. Egypt's Second Five-Year Plan for Socio-Economic Development (1987/88 - 1991/92), Volume Two, "The Sectoral View".

5. Continental Telephone International Study, "Arab Republic of Egypt - Telecommunications Sector Study", dated April 30, 1978.

GLOSSARY OF ABBREVIATIONS

A.R.E.	Arab Republic of Egypt
ARENTO	Arab Republic of Egypt National Telecommunications Organization
CDSS	Country Development Strategy Statement
CIP	Commodity Import Program
CM	Construction Manager
CR	Cost Reimbursable
DR/UAD	Development Resources Directorate, Office of Urban Administration
DSS	Digital Switching Systems
ESS	Electronic Switching Systems
FP	Fixed Price
GOE	Government of Egypt
HC	Host Country
IFB	Invitation for Bid
IQC	Indefinite Quantity Contract
ITU	International Telecommunications Union
L/Comm	Letter of Commitment
LE	Egyptian Pound
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
PACD	Project Assistance Completion Date
TDD	Terminal Disbursement Date
USAID	Agency for International Development - Cairo Mission

EGYPT - TELECOMMUNICATIONS IV
PROJECT SUMMARY AND RECOMMENDATIONS

PROJECT TITLE: Telecommunications IV

PROJECT NO.: 263-0177

AMOUNT OF TOTAL AID FUNDING: $40 million

HOST COUNTRY CONTRIBUTIONS:

The Government of Egypt (GOE) contributions are LE 10 million in cash and LE 11 million "in-kind" for a total of LE 21 million ($1.00 = LE 2.30).

PROJECT ASSISTANCE COMPLETION DATE:

A Project Assistance Completion Date of January 15, 1993 is proposed.

SUMMARY OF PROJECT:

Introduction:

In 1977 the Egyptian Telecommunications system was unreliable and unable to meet the growing public demand for telephone service. Telephone service was so poor that even next door neighbors could not successfully call one another over the telephone, let alone make calls to the rest of the city or to other cities or countries. As a first step in resolving this problem, USAID in 1977 financed an indepth telecommunications sector study which resulted in the launching by the Egyptian Government of an ambitious 20-year $20 billion program to rehabilitate and modernize the telecommunications system. In 1978 AID initiated the financing of certain key aspects of this program. Under the Telecommunications I, II and III projects, $242 million was provided to finance the cost of U.S. technical assistance for the institutional strengthening of the Telecommunications Organization, replacement of seven obsolete rotary systems in Cairo and Alexandria with new electronic systems and their related cable connections, and provision of U.S. technical assistance for the design, procurement and supervision of the installation of the project financed equipment. In addition, the Commodity Import Program (CIP) provided $62.5 million to finance a microwave system connecting all telephone exchanges in Cairo and Alexandria.

The result of these activities has been a significant visible improvement in telecommunications service in Egypt. In addition, during the process of implementing the on-going expansion program, ARENTO has dramatically improved its institutional capacity. In an effort to meet AID's requirements for assistance in this sector, ARENTO, over the last few years, has made many significant changes. It has changed its basic charter to become an autonomous entity (to satisfy a project covenant), it is in the process of revising its personnel and accounting systems at our behest (in response to the project covenants) and has over the last few years as telephone service improved, substantially increased its tariffs, rates and installation fees. ARENTO as of January, 1988 limited local call duration to six minutes and as a result is expecting an increase of approximately 25% in local calls revenues.

A mid-term evaluation of the Telecommunications I, II, and III projects conducted in 1984 concluded that the ongoing project had been implemented successfully and recommended that AID together with the GOE identify further telecommunications activities as a part of a follow-on project.

Although AID and other donor assistance have come a long way to improve Egypt's telecommunications system, much remains to be done to provide sufficient telecommunications service required to meet the growing telephone demand. In addition to the traditional telephone and telex demand, the introduction of computers has led to an increased demand in Egypt of business user service requirements for data, image, text and voice. Egypt's current telephone density is 2.2 telephones per 100 persons (telephone density is 7 per 100 in Turkey, 12 per 100 in Portugal and 80 per 100 in the U.S.). In order to provide the level of telecommunications service required to sustain economic development in Egypt and in accordance with the AID-financed 20 year master plan ARENTO plans to reach a telephone density of 7 per 100 persons by the year 2000. This effort will require the addition of approximately 250,000 telephone lines per year. As a part of this program, ARENTO is presently in the process of selecting a foreign supplier to form a joint-venture for the local manufacture of digital telephone systems. In the meantime, and until the manufacturing plant is producing, significant amounts of equipment will have to be imported in order to meet the increasing demand for telephone service, particularly in Cairo.

Cairo, Egypt's capital, now accounts for almost half of the total urban population and is literally bursting at its seams. While the GOE has implemented planning for new cities and satellite towns in outlying areas to relieve population pressure, these plans can at best only accommodate a very small part of the anticipated urban growth, and the gap between the demand and supply for telecommunications services widens. Significant areas of Cairo currently receive inadequate telephone service and unfulfilled requests for service go back as far as ten years or more . Providing reliable telephone service to these areas will stimulate economic development and improve quality of life just as it has in other areas of Cairo. Therefore, the GOE has requested AID assistance to finance the supply and installation of telecommunications systems for the Pyramids West and Bab El Khalk (South East Cairo) areas of Cairo.

The Pyramids West area of Cairo consists of the west part of the present Pyramids area including the Pyramids themselves and the built up area south of the road to Alexandria. Income level ranges from middle high to high and the mix of residential versus business/government is 72 to 28 percent. The areas most characteristic of Bab EL Khalk are the historical area of Darb El Ahmar and the new area of Mokattam. The Bab El Khalk residents' income level ranges from low to middle high and the mix of residential versus business/governmental is 58 to 42 percent. In recent years, extensive construction has taken place in these two areas, numerous small private sector enterprises have been established and several hotels and tourist service facilities have been constructed. These areas currently receive inadequate and unreliable telephone service and the waiting list (i.e. request for services) goes back as far as 1976. The introduction of the new telephone systems will have a significant effect on reducing the problems associated with urban congestion. It is anticipated that once it becomes known that the introduction of telephone service is planned in the near future, these areas will soon become particularly attractive sites for the location or relocation of homes and businesses away from the congested city center. In addition, many persons now travelling to and from these areas will be able to reduce such trips and obtain needed information more effectively and more economically over the telephone. In sum, these areas should become sources of improved economic productivity in terms of increased business activity and investments and sources of improved overall efficiency in communications.

Linkage to GOE and AID Development Strategies

The GOE considers rehabilitating and developing Egypt's telecommunications system as playing a key role in the development of all sectors in the Egyptian economy and in particular in tourism and private sector investment. Accordingly, the telecommunications sector is given substantial attention in the GOE second Five-Year Plan (1987/88 - 1991/92). The GOE recognizes the need for telephone service revenues to cover operating costs and has been increasing rates as the service to customers improve. As a result of these recent rate increases ARENTO at present (unlike other Egyptian utilities) is able to meet its operation and maintenance cost, debt service requirements and some investments from revenues generated from the service it provides. However, interest charges on local and foreign loans cost ARENTO approximately 40% of its income and the remaining amounts are not sufficient to cover its continuing expansion programs.

The USAID 1987 Country Development Strategy Statement (CDSS) states that concessional assistance to the telecommunications sector is no longer appropriate. However, due to the current economic situation in Egypt, it is extremely difficult for ARENTO to obtain any commercial loans to finance the costs of its continuing expansion programs.

In addition to financial considerations, AID recognizes the importance of the orderly expansion and modernization of telecommunications systems in the development of efficiency and enhancement of the profitability of all sectors in the Egyptian economy, particularly to support a growing private industrial sector. Based on the above and taking into account ARENTO's excellent policy progress and the successful implementation of the Telecommunications I, II and III Projects, AID is prepared to provide support for an exceptionally good performer and assist with essential infrastructure for private sector development.

Project Description:

The Project will add two new digital telephone exchanges to the Cairo system (see Diagram I) to serve the areas of Bab-El-Khalk (South East Cairo) and Pyramids West of Cairo. Each exchange will include a digital switching system and its related outside plant. Each of the two switching systems will have an initial capacity of 30,000 lines* expandable to an ultimate capacity of 60,000 lines.

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* One line represents a wire circuit connecting the telephone subscriber to a switch located in an exchange.

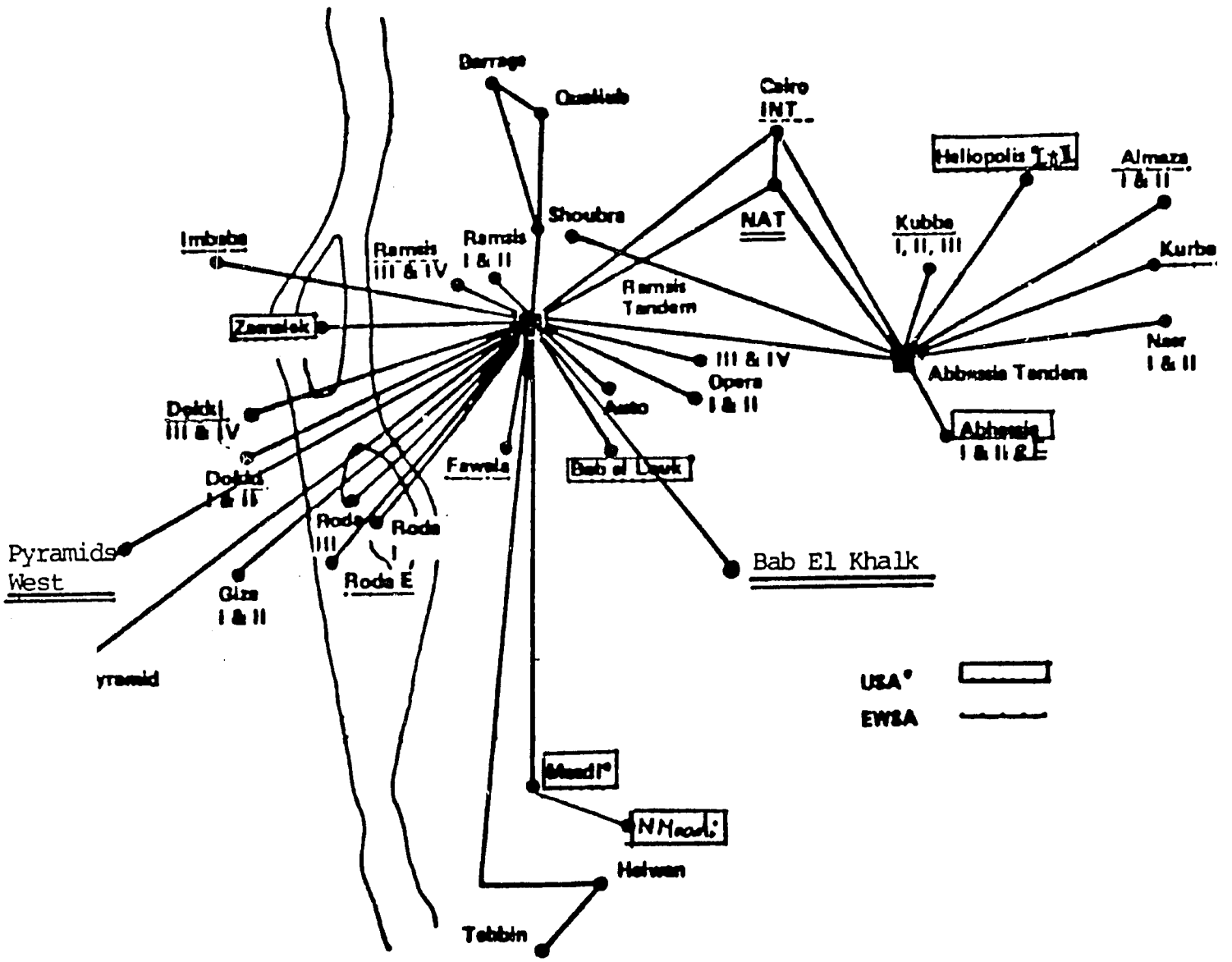

Diagram I
Simplified Diagram of Cairo Telephone Network with the addition of Bab El Khalk and Pyramids West

The outside plant system includes cable interconnections between the two new digital telephone exchanges and subscribers as well as transmission facilities within Cairo and to the Cairo National and International telephone system. The project will also providemanpower development and training of ARENTO engineers and technicians in the operation and maintenance of the new digital telephone systems. The project will include a reassessment of ARENTO's operation and maintenance of the existing AID-financed (Telecommunications I, II and III) equipment and identification of areas where further improvements may be appropriate.

Project Goal and Purpose:

The goal of this project is to improve the telecommunications system serving the 12 to 14 million people residing and/or working in Cairo. The purpose of this project is to expand the present Cairo telecommunications system in order to meet some of the public and private sector demand for telecommunications services.

End of Project Status:

At the end of the project half a million Cairo residents will have access to improved telephone service. The Arab Republic of Egypt National Telecommunications Organization (ARENTO) will be able to meet the demand for service and thus shorten the existing waiting list in the areas of Bab-El-Khalk and Pyramids West of Cairo. A fully staffed Operations and Maintenance system for the latest state-of-the-art digital switching equipment will be established and functioning.

Project Elements:

The project has two major components -- Technical Assistance and Equipment Additions. The Technical Assistance Component will include the following:

* Consulting services for the procurement and installation of the two digital telephone exchange facilities.

* Manpower development and training of ARENTO personnel in the operations and maintenance of the new digital telephone systems.

The Equipment Component will include the following:

* Two 30,000 line digital switching systems.

* The related outside plant system (cable interconnections).

Cost Estimate:

The cost estimates are based upon sound technical and cost analysis performed by a U.S. technical expert. The consultant's cost estimate for the outside plant system is based on the Bill of Quantities contained in the earlier Telecommunications I, II and III contract adjusted for inflation. The cost estimate for the digital switching systems is based on information provided by ARENTO on different vendor prices in addition to World Bank data on projects of equivalent size worldwide. The project cost estimate is summarized in the following table:

PROJECT COST ESTIMATE

	USAID ($000)	GOE (LE000)
Consultant Services	3,500	-
Digital Switching Systems (DSS)	19,500	11,000
Outside Plant Systems (OSP)	14,400	9,000
U.S. Training	500	-
Contract Audit	100	-
Contingency	2,000	1,000
	40,000	21,000

LE 2.30 = $ 1.00

Financial Plan:

AID grant funds will finance the foreign exchange costs for the design, engineering, equipment installation, maintenance and training (i.e. turnkey) contracts for the digital systems and related outside plant. AID grant funds will also finance both the foreign exchange and local currency costs associated with the consulting engineering services. The GOE will finance all other local currency costs affiliated with the project including land acquisition, exchange building construction and outside plant system civil works.

Implementation Plan:

The Arab Republic of Egypt National Telecommunications Organization (ARENTO) is the implementing agency for the Telecommunications I, II and III projects and will serve in the same capacity for the Telecommunications IV Project. Throughout the duration of the existing Telecommunications I, II and III projects, ARENTO has demonstrated its capability to manage the implementation of telecommunications projects.

It is anticipated that two host country contracts with U.S. firms will be used for the engineering, furnishing, installation, maintenance and training of the two digital switching systems and related outside plant. A U.S. consulting engineering firm, under an AID direct contract will provide support to ARENTO in the evaluation and selection of bidders, contract management and supervision of the works associated with the turnkey equipment contracts. In addition, AID will obtain the services of a U.S. consultant under an Indefinite Quantity Contract (IQC) to assist ARENTO in the preparation of tender documents for the equipment contracts.

Monitoring and Evaluation:

The engineering consultant will provide construction management and routine supervision of the two turnkey equipment contracts. ARENTO and USAID will monitor the project progress via inspection of vouchers, field trips, attendance of project meetings and review of monthly progress reports. The project will fund a final evaluation to identify progress toward attainment of the project objectives and to assess overall impact of the project on beneficiaries.

Analyses:

A number of analyses were conducted to ensure that the Project will be technically, economically, financially, administratively, environmentally and socially sound.

Technical:

Evaluation of various technologies for telephone switching systems indicates that the proposed digital switching system, which is the basis of the project is a proven technology. Through 1986, over 1,400 exchanges and 17 million digital telephone lines have been shipped worldwide. Exchanges in service today number over 1,000. Digital switching systems provide many features: integration of voice, data and videotex; are less costly to install and maintain; are compatible with the existing Cairo digital transmission systems;

replacement parts are readily available; and are the current state-of-the-art in switching technology recommended by the World Bank and the International Telecommunications Union (ITU). The outside plant system will be of the same design and technical specifications successfully used under the AID-financed Telecommunications I, II and III projects.

Financial and Economic:

This project adds 60,000 lines to the Egyptian telephone network. Assuming that the rate structure and utilization of the current network are replicated in the project, we obtain a financial internal rate of return FIRR of 8.8 percent. With similar assumptions, the economic internal rate of return is 7.2 percent, using the direct benefits of the project only. The project can be expanded to 120,000 lines with less than proportional increase in costs. This expanded project gives a FIRR of 9.2 percent. The FIRR is not sufficient to cover all of ARENTO's costs but these costs could be reached with relatively minor adjustments. ARENTO's current rate structure is, however, rather skewed. Forty-five percent of the revenue comes from the international network and twenty-four percent from installation costs. This rate structure seems to be driven by the need to ration the available supply of telephone lines. Unless ARENTO increases its revenues enough to enable it to borrow in the market place, this need to ration will continue and a large percentage of the population will continue to be frozen out of these services. Our financial and economic analysis supports the Telecommunications IV project with the proviso that ARENTO should commission a study of its rate structure to recommend steps to be taken to improve ARENTO's financial position, improve the allocation of telephone services and expand the network to decrease the current excess demand for telephone service. The waiting list for telephones, without the payment of a stiff priority fee, is long and the waiting period can be more than five years.

Social:

It is generally accepted that with improved communications there will be an increase in commercial activity, general economic performance will increase and there will be more goods and services available and benefits will accrue to the population as a whole. In the context of Cairo in 1988 a project which makes qualitative and quantitative improvements in the city's telecommunications system has an extensive social impact and few, if any, social costs.

Managerial/Administrative:

ARENTO has many years of extensive and successful experience in the construction, operation and maintenance of telecommunications systems. Throughout the implementation of the existing Telecommunications I, II and III Projects, ARENTO has performed well in the review of project documents, the approval and award of contracts and the overall management of contractor performance. In our opinion, ARENTO supported by their engineering consultant has the contracting capability to satisfactorily acquire and manage the turnkey contracts required for the implementation of the Telecommunications IV Project.

Environmental:

This project is a continuation of the efforts in the telecommunications sector similar to those conducted under the Telecommunications I, II and III project for which the Initial Environmental Examination performed in May 1979 resulted in "Negative Determinations". Therefore, the Mission Environmental Officer has concluded that no further information would be gained by additional studies or examinations of this project and approves a negative determination of the Telecommunications IV Project.

RECOMMENDATION:

That the Mission Director authorize a Grant of $40 million in Economic Support Funds (ESF) for the Telecommunications IV Project. This four year, four-month project will be incrementally funded as follows:

FY88, obligation $20 million
FY89, obligation $20 million

PROJECT COMMITTEE:

Technical Office Chairperson	Azza El Abd,DR/UAD
Support Office Co-Chairperson	William Duncan, PDS/PS
	Jim Brody, FM/FA
	Kevin O'Donnell, LEG
	Vic Duarte, PDS/E
	Vicky Kunkle, PDS/P
	Roger L. Russell, PDS/PS
	Joe Williams, HRDC/ET

PROJECT AUTHORIZATION

Name of Country: Arab Republic of Egypt

Name of Project: Telecommunications IV

Number of Project: 263-0177

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended (the "Act"), I hereby authorize the Telecommunications IV Project (the "Project") for the Arab Republic of Egypt ("Cooperating Country") involving planned obligations not to exceed Forty Million United States Dollars ($40,000,000) in grant funds over two years from the 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 and local currency costs of goods and services required for the Project. The estimated life of the Project is four years and eight months from the date of initial obligation.

2. The Project will assist the Cooperating Country in expanding and strengthening its present telecommunications system. More specifically, the Project will assist in providing improved telephone service in two areas of Cairo (Bab El Khalek and Pyramids West).

3. The Project Agreement, 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.

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall, except as A.I.D. may otherwise agree in writing, be financed on flag vessels of the United States.

b. Conditions Precedent to Disbursement

(1) First Disbursement

Prior to any disbursement or to the issuance of any commitment documents under the Grant, the Cooperating Country 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) A statement of the names and titles of the persons who will act as the representatives of the Cooperating Country, together with a specimen signature of each person specified in such statement.

(b) An executed contract acceptable to A.I.D. for consultant services for the Project.

(c) Evidence that the proceeds of the Grant have been lent by the Cooperating Country to the Arab Republic of Egypt National Telecommunications Organization (ARENTO) on terms and conditions acceptable to the Cooperating Country and ARENTO, and for the purpose of financing eligible costs under the Project.

(d) Evidence that necessary local currency financing for the Project has been budgeted by the Cooperating Country and will be available for expenditure by ARENTO pursuant to ARENTO's cost estimate.

(e) Evidence that accounting records for local currency and in-kind contributions to the Project will be maintained by ARENTO.

(2) Disbursement for Infrastructure

Prior to any disbursement or to the issuance of any disbursement authorization or commitment to disburse for the financing of digital switching systems and outside plant, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D., evidence that ARENTO owns the sites for the exchange buildings for the Bab El Khalk and Pyramids West exchanges and that ARENTO has firm commitments for the construction of the exchange buildings based on specifications compatible with the requirements of the digital switching systems being financed by A.I.D.

c. Covenants:

The Cooperating Country shall covenant substantially as follows:

(a) Project Management:

The Cooperating Country shall promote and support the selection by ARENTO of (1) qualified and experienced management for the Project; (2) technical staff to receive comprehensive training in the United States on digital switching systems provided by the switch contractor; (3) engineering staff to receive on-the-job training provided by the switch contractors in the operation and maintenance of digital switching equipment; and (4) engineering, construction and maintenance staff to receive on-the-job training provided by the outside plant contractor in planning and engineering of outside plant facilities, fiber optic terminal equipment and underground construction methods.

(b) Periodic Discussions:

The Cooperating Country and A.I.D. will periodically discuss the status of the Project and associated economic isssues*.

(c) Payment of Salary Incentives and Supplements:

Grant proceeds or funds derived from the Special Account will not be used to pay salary supplements and incentives except in accordance with mutually agreed guidelines.

(d) Local Currency and In-kind Contributions:

ARENTO will provide A.I.D., on a quarterly basis, with information concerning its accounting records on local currency and in-kind contributions provided for the Project.

(e) Social Insurance and Taxes on Expatriates:

Any social insurance assessments and any taxes on expatriates arising under Grant-financed work will be paid directly or reimbursed by the Cooperating Country from its own resources. (It is understood that ARENTO would, in the first instance, be expected to pay any such assessments or taxes.)

(f) Use of L.E. Letters of Credit:

The financial contributions of the Cooperating Country to the local currency costs of construction contracts shall be met through use of L.E. letters of credit.

Marshall D. Brown
Mission Director
USAID/Egypt

9/25/88
Date

Clearance:
OD/PDS/PS:FMiller
AD/DR:FZobrist
AD/LEG:KO'Donnell 9/25/88
AD/PDS:JPatterson
AD/FM:WMiller

* It is understood that a consultant's study of ARENTO's tariff structure, to include review of previous studies on the topic, will form the basis for such discussions.

1.0 PROJECT BACKGROUND AND RATIONALE

1.1 BACKGROUND:

Cairo, Egypt's capital has been, and always will be, an important factor in Egypt's economy. This is true because approximately one out of four Egyptians lives in Cairo and the city is the hub of Egypt's commerce, attracting private investment in industry, services and housing, and contributing more to national economic growth than any other city. Cairo enjoys many advantages over other Egyptian cities: higher returns on investment; economies of concentration in urban service provision; transportation advantages; communication economies; dominant source of innovation and managerial expertise; diffusion center for developmental impulses and for economic technical and social change; and the nation's focus of academic involvement and religious thought.

Because of Cairo's key position and importance within the country and the economy, the massive problems that currently confront Cairo also seriously affect Egypt's economic development efforts. Cairo is literally bursting at its seams. During the period between 1947 and 1976 the population of Cairo increased from 2 million to 8 million people (or, from 11 to 20 percent of the total population). Now, Cairo accounts for almost half of the total urban population of Egypt.

At the same time, portions of the existing infrastructure systems are old, require more sustained maintenance and are incapable of providing adequate service levels. A major element of the infrastructure system is the telecommunications network which provides telephone service. Telephone service until recently was outdated, unreliable and inadequate.

While Egypt has implemented planning for new cities and satellite towns in outlying areas to relieve population pressure, these plans can at best only accommodate a very small part of the anticipated urban growth, and the gap between the demand and supply for telecommunications services widens. Thus, there is an urgent need to improve and expand the Cairo telecommunications infrastructure in order to provide for growth in efficient ways. In addition, a reliable telecommunications system is an essential ingredient in the process of Egypt's development which can raise the productivity and efficiency of agriculture, industry, commerce, tourism and the social services.

1.2 CURRENT SYSTEM:

1.2.1 RECENT HISTORY:

In 1977 the Egyptian telecommunications system was completely unreliable and inadequate to meet the growing public demand for telephone service. In the urban areas of Cairo and Alexandria approximately only one in 100 persons had a telephone and even among those few with telephones only 39% of the calls attempted were successfully completed. Telephone service was so ineffective that even next door neighbors could not successfully call one another over the telephone, let alone make calls to the rest of the city or to other cities and countries.

As a first step in resolving this problem, USAID in 1977 financed an indepth telecommunications sector study. The study resulted in the launching by the Egyptian Government of an ambitious 20-year, $20 billion program to rehabilitate, and modernize the telecommunications network. In 1978 AID initiated the financing of certain key aspects of this program. Under the Telecommunications I, II and III projects, $242 million was provided to:

provide U.S. technical assistance for institutional strengthening activities in the areas of fundamental planning, finance and administration, organizational structure, tariff rates and computer systems and applications;

replace seven old and obsolete rotary systems in Cairo and Alexandria with electronic systems and their related cable connections in addition to junction cable interconnections between all the exchanges in Cairo and Alexandria; and

provide U.S. technical assistance to design, procure and supervise the installation of the above mentioned equipment and on-the-job construction supervision training.

The Commodity Import Program (CIP) provided an additional $62.5 million to finance a microwave system connecting all telephone exchanges in Cairo and Alexandria.

In addition to the AID funds, a $1.8 billion program in subsidized credits was formalized with a European consortium in 1979 but did not specify particular sector activities. To date under this program contracts totalling approximately $750 million have been signed to finance the

turnkey construction of telephone exchange systems totalling 360,000 lines and related equipment training for exchanges in Cairo, Alexandria and the Delta areas. A variety of other international supplier financing has also been made available including Japanese supplier financing for the provision of exchange systems in the Canal cities.

1.2.2. ACCOMPLISHMENTS:

As a result of these activities, significant progress has been made over the past few years to meet some of the demands for effective telecommunications service in Egypt. ARENTO dramatically improved its physical plant and institutional capacity. ARENTO with the support of various donors has increased the capacity of the existing system since 1977 from 541,000 lines* to 1,600,000. An important part of this program has been the exchange systems financed by AID for the Cairo and Alexandria cities core areas which included the replacement of the seven old rotary exchanges and the addition of 283,000 lines. The result of this investment has been a significant visible improvement in communications in the project targeted areas of Cairo and Alexandria.

In addition, during the process of implementing the ongoing expansion program, ARENTO has obtained valuable experience and expertise to effectively plan and manage the operations of a continually growing, sophisticated and complex telecommunications system. Indeed, ARENTO was able to effectively carry out the installation of 9 electronic exchange systems in Cairo and Alexandria which included the very tricky simultaneous cutover of three switching systems in Alexandria. ARENTO is now also effectively operating the new AID-financed electronic exchanges in Cairo and Alexandria without further direct U.S. supplier assistance. Furthermore, ARENTO has effectively supervised the construction and installation of a new 30,000 line electronic switching system and the associated outside plant cables for the Abbassia exchange area of Cairo without the usual intense level of expatriate advisor involvement.

*One "line" represents a wire circuit connecting one telephone subscriber to a switch located in an exchange.

In an effort to meet AID's requirements for assistance in this sector, ARENTO, over the last few years, has made many significant changes. It has changed its basic charter to become an autonomous entity (to satisfy a project covenant), it is in the process of revising its personnel and accounting systems at our behest (in response to the project covenants) and has over the last few years as telephone service improved, substantially increased its tariffs, rates and installation fees. In addition, ARENTO as of January, 1988 limited local call duration to six minutes and as a result is expecting an increase of approximately 25% in local calls revenues.

1.2.3 LESSONS LEARNED

In October 1984, a mid-term evaluation of the integrated telecommunications project (Telecommunications I, II, III) was performed by three consulting engineers. The evaluation concluded that the implementation of the ongoing project had gone rather well considering the complexity of the project activities and the many state-of-the-art technologies being introduced into Egypt. The evaluation team made several observations on lessons learned that should be taken into account in the design and implementation of similar projects.

1) A capable aggressive Project Manager is important to the success of a project. Maintaining continuity on the project team will also have a positive influence on the success of the project.

2) The equipment chosen should have a history of proven in-service results and be backed up by a reliable manufacturer.

3) The number of organizations involved in providing an overall service should be minimized to reduce coordination problems which have proved to be difficult in the international business environment.

4) Hardware implementation is more readily accepted than are institutional changes such as organizational restructuring. These changes cannot be expected to be adopted quickly, but must be continually re-introduced with tact and light pressure.

5) The relatively short implementation schedules and reasonable costs incurred in this project for switching and outside plant relief could be used as a standard for other telecommunications projects.

At the time of the evaluation, only two of the Electronic Switching Systems (ESS) exchanges were in operation and the last seven were scheduled for operation at the end of June 1985 and June 1986. All of the nine exchanges are now actually in service many of them ahead of schedule. Exhibit 1 contains a list of suggestions for institutional improvements which were made by the consultants and describes ARENTO's actions to implement many of them. One recommendation was to have the USAID Mission with ARENTO identify telecommunications activities and actions which could be undertaken by ARENTO with their own resources or as a part of a follow-on project to effectively build on the institutional capability already developed as a result of the telecommunications projects.

1.3 EXISTING NEEDS:

Although AID and other donor assistance has come a long way to improve Egypt's Telecommunications system, much remains to be done to provide the level of telecommunications service required to sustain economic development in Egypt. In addition to the traditional telephone and telex demand, the introduction of computers has led to an increased demand in Egypt of business user service requirements for data, image, text and voice. In accordance with the AID financed 20 year master plan ARENTO plans to reach a telephone density of 7 telephones per 100 persons by the year 2000 (current density is 2.2 per 100 compared to a telephone density of 7 per 100 in Turkey, 12 per 100 in Portugal and 80 per 100 in the U.S.). Exhibit 2 is a table showing telephones per 100 population in the U.S. and several European countries. This effort will require the addition of approximately 250,000 lines per year. As a part of this program, ARENTO is presently in the process of selecting a foreign supplier to form a joint-venture for the local manufacture of digital switching systems. In the meantime, until the manufacturing plant is producing (end of 1992), significant amounts of plant and equipment will have to be imported in order to meet the increasing demand for telecommunications service. Exhibit 3 is a table showing the status of the waiting list (unfullfilled demands for service) in all areas of Cairo. ARENTO under Phase IIB of the German consortium agreement has contracted for 40,000 lines and is currently negotiating Phase III for an additional 70,000 lines. However, the foreign exchange resources and the suppliers have yet to be identified for the bulk of the remaining needed inputs.

In order to meet the most pressing demand for telephone service in Cairo, the GOE has requested AID assistance to finance the installation and supply of telecommunications systems for the Pyramids West and the Bab-El-Khalk areas of Cairo. The Pyramids West and the Mokattam Section of Bab-El-Khalk are relatively new districts of Cairo. Exhibit 4 is a brief description of the areas as well as tables indicating existing and future demand. In recent years, extensive construction has taken place in these two areas and a number of small private sector enterprises have been established as well as several hotels and tourist services facilities. These areas currently receive inadequate telephone service and the waiting list (i.e. requests for service) goes back as far as 1976. The introduction of the new telephone systems will have a significant effect on reducing the problems associated with urban congestion. It is anticipated that once it becomes known that the introduction of telephone service is planned in the near future, these areas will soon become particularly attractive sites for the location or relocation of homes and businesses. In addition, many persons now travelling to and from these areas will be able to reduce such trips and obtain needed information more effectively and more economically over the telephone. In sum, these areas should become sources of improved economic productivity in terms of increased business activity and investments and sources of improved overall efficiency in communications.

1.4 LINKAGE TO AID AND GOE DEVELOPMENT STRATEGIES:

1.4.1 PRIORITY IN EGYPT'S 5-YEAR PLAN

As expressed in a recent speech by the President, the GOE considers rehabilitating and developing Egypt's telecommunications system as playing a key role in the development of all sectors in the Egyptian economy and in particular in tourism and private sector investment. Accordingly, the telecommunications sector is given substantial attention in the GOE second Five-Year Plan (1987/88 - 1991/92).

The GOE is planning to allocate LE 617 million to meet the following objectives for the telecommunications sector contained in the five-year plan:

- provide necessary lines to decrease the waiting lists so that they won't exceed five years and satisfy the urgent necessities of economic and trade activities of the country;

- expand the telephone services network to reach 4.8% of population, provide communication services to new settlements and expand the automatic dialing network to cover all districts and villages of governorates.

- participate in international telecommunications networks to support trade exchange with the external world and to serve Egyptians working abroad;

- provide new telecommunications systems for information and data transfer to tally with the expected expansion in the use of computers and data banks; and

- develop local manufacturing capability for electronic exchanges.

The telephone line development program for successive five year-plan increments is shown in Exhibit 5.

1.4.2 COST RECOVERY IN THE TELECOMMUNICATIONS SECTOR

The GOE recognizes the need for the telephone service rates to cover operating costs and has been increasing rates as the services to customers improve (Exhibit 6 shows the historical development of telephone tariffs from 1975 to 1986). As a result of the recent tariff increases and as shown in Exhibit 7, ARENTO's income is steadily increasing (LE 107 million "1984/85", LE 195 million "1986/87"). Thus, unlike most of the other Egyptian utilities, ARENTO at present is able to meet its operation and maintenance costs, debt service requirements and some investments from revenues generated from the service it provides. However, interest charges on local and foreign loans cost ARENTO approximately 40% of its income and the remaining amounts are not sufficient to cover its continuing expansion programs.

1.4.3 LINKAGES TO USAID DEVELOPMENT STRATEGY

The USAID 1987 Country Development Strategy Statement (CDSS) states that concessional assistance to the Telecommunications Sector is no longer appropriate. However, due to the current economic situation in Egypt and the IMF ceiling on GOE loans, it is extremely difficult for ARENTO to obtain any commercial loans to finance the cost of its continuing expansion programs.

In addition to financial considerations, three other factors contributed to AID's decision to finance a telecommunications project: 1) the importance of the orderly expansion and modernization of telecommunications systems in the development of efficiency and enhancement of the profitability in all sectors of the Egyptian economy particularly to support a growing private industrial sector; 2) previous policy successes in the telecommunications sector; and 3) ARENTO's proven strong project management skills and technical and organizational capabilities during the successful implementation of the present AID-financed Telecommunications Projects.

In sum, AID is prepared to provide support for an exceptionally good performer (see 1.2.2 above) in terms of both management and policy and assist with essential infrastructure for private sector development.

2.0 PROJECT DESCRIPTION:

2.1 PROJECT GOAL AND PURPOSE:

The goal of this project is to improve the telecommunications system serving the 12 to 14 million people residing and/or working in Cairo.

The purpose of the project is to expand the present Cairo telecommunications system in order to meet some of the public and private sector demand for telecommunications. A description of the project activities is presented below.

2.2 END OF PROJECT STATUS:

At the end of the project half a million Cairo residents will have access to improved service. ARENTO will be able to meet the demand for service and thus shorten the existing waiting list in the areas of Bab el Khalk and Pyramids West of Cairo. A fully staffed Operations and Maintenance system for the latest state-of-the-art digital switching equipment will be established and functioning.

2.3 PROJECT ELEMENTS:

2.3.1 TECHNICAL ASSISTANCE:

2.3.1.1 CONSULTING SERVICES

The project will provide the necessary U.S. technical assistance and consulting services to procure and install the two digital telephone exchanges and related outside plant. The consultant will provide assistance to ARENTO in the evaluation of responses, recommendation for awards, negotiation of contracts and the supervision and monitoring of the performance of the equipment contracts.

2.3.1.2 INSTITUTIONAL DEVELOPMENT- OPERATION AND MAINTENANCE:

Much has been done under the Telecommunications I, II, III projects in the area of technology transfer and as a result ARENTO is currently able to operate and manage its system However, ARENTO is a rapidly growing utility and, like any other utility world-wide, needs to continually expand its facilities, its institutional capabilities and its training programs. Thus, it is proposed that the project continue to assist ARENTO in its efforts to develop its manpower capabilities. The project will include a reassessment of ARENTO's operation and maintenance of the previous AID financed equipment and identification of areas where further improvements may be appropriate. The project will also finance the US, in-country and on-the-job training of ARENTO engineers in the operation and maintenance of the two digital telephone exchanges and related outside plant.

2.3.2 EQUIPMENT:

2.3.2.1 DIGITAL LOCAL TELEPHONE EXCHANGES:

The project will finance the procurement of two new local telephone exchanges in the Greater Cairo area of Bab-El-Khalk and Pyramids West. Each exchange will have an initial capacity of 30,000 lines (See Exhibit 8). The Digital Exchange components include the basic switch of 30,000 line capacity, the switch power system, standby power, pressurization system, heating ventilating and air-conditioning, security system, fire protection, main distributing frame, tools and test equipment, documentation and a 3-year supply of spare parts.

2.3.1.2 THE RELATED OUTSIDE PLANT SYSTEM:

The related outside plant system consists of the cable interconnections between the digital telephone exchanges and the subscribers as well as transmission facilities within Cairo and to the Cairo National and International telephone system. The outside plant system consists of fiber optics cables for transmission and metallic cable for the distribution and feeder networks.

2.3.1.3 CIVIL WORKS

Civil works associated with the installation of the outside plant cables and the fiber optics transmission cable will be GOE financed. The GOE will also finance the costs of the two exchange buildings to house the digital and the transmission terminal equipment.

3.0 COST ESTIMATE AND FINANCIAL PLAN:

3.1 PROJECT COST ESTIMATE:

The project cost estimate was prepared by a U.S. technical expert as a part of the project technical and cost analysis. The consultant's cost estimate for the outside plant system is based on the bill of quantities contained in the earlier Telecommunications I, II and III contracts adjusted for inflation. The cost estimate for the digital switching systems is based on information provided by ARENTO on different vendor prices in addition to World Bank data on projects of equivalent size worldwide.

The GOE LE 21 million contribution includes LE 11 million in-kind contributions over the life of the project. The in-kind contributions include counterpart personnel costs, services, administrative costs, fair market value of land contributed and other similar costs.

The project cost estimate is summarized in Table III - 1

TABLE III - 1

SUMMARY OF COST ESTIMATE
(U.S.$ and LE - Thousands)

	USAID ($000)	GOE (LE000)*
Technical Assistance	3,500	-
Equipment	34,400	20,000
Audit	,100	-
Contingency	2,000	1,000
Totals	40,000	21,000

It is the conclusion of the Project Committee that the requirements of Section 611 (a) of the Foreign Assistance Act of 1961, as amended, have been satisfied. The project is based upon sound engineering analysis performed by a U.S. technical expert. The Mission has reviewed the plans and finds them to be acceptable and has reviewed the cost estimates and find them reasonably firm within the meaning of the statutory requirements.

* LE 2.30 = $1.00

3.2 PROJECT FINANCIAL PLAN:

3.2.1 SUMMARY FINANCIAL PLAN:

The sources of funds required for the project are summarized below according to the following financial plan:

FUNDING PROVIDED	U.S.DOLLARS (MILLIONS)	EGYPTIAN POUNDS (MILLIONS)
AID Grant	40.00	
GOE Contribution		21.00
	40.00	21.00
FUNDING UTILIZATION:		
Consultant Services	3.5	-
Digital Switching Systems (DSS)	19.5	10.0
Outside Plant Systems (OSP)	14.4	10.0
U.S. Training	.5	-
Contract Audit	0.1	-
Contingency	2.0	1.0
Total	40.0	21.0

3.2.2 FUNDING RESPONSIBILITIES:

AID grant funds will finance the foreign exchange and local currency costs for the consultant services. AID will also finance the foreign exchange costs associated with the design, supply, installation and training contracts for the DSS and OSP equipment. Payment will be made by USAID through direct letters of commitment. The GOE will finance all other local currency costs associated with the project including land acquisition, exchange building construction and OSP civil works. The GOE will issue appropriate local currency letters of credit to eligible suppliers of equipment and materials.

3.2.3 DISBURSEMENT PROJECTIONS:

Disbursement of the $40 million in AID funds over the project implementation period is outlined in Table III - 2 below. It is assumed that the project will begin early in 1989 and be completed by the end of January 1993.

TABLE III - 2
(U.S.$ millions)

YEAR	DISBURSEMENT
First Year	$ 1.5
Second Year	$13.5
Third Year	$20.0
Fourth Year	$ 5.0
	$40.0

3.3 ASSESSMENT OF ARAB REPUBLIC OF EGYPT NATIONAL TELECOMMUNICATIONS ORGANIZATION CONTRACTING AND VOUCHER PROCESSING CAPABILITIES AND PAYMENT PROCEDURES:

ARENTO is the Government of Egypt implementing agency for the Telecommunications I, II and III projects and will serve in the same capacity for the Telecommunications IV Project.

Throughout the implementation of the existing Telecommunications I, II and III projects, ARENTO has performed well in the review of project documents, including invoices, the approval and award of contracts, and the overall management of contractor performance. In our opinion, ARENTO supported by a project-financed consultant has the contracting capability to satisfactorily acquire and manage the construction services needed for implementation of the Telecommunications IV Project.

3.4 AUDIT COVERAGE

Funds provided by this project will be used to finance two lump sum, fixed price host country contracts with U.S. companies. Since these are lump sum, competitively bid, fixed price contracts they are not subject to audit of costs except for any cost reimbursable items. They are however subject to audit for compliance with other AID regulations and, therefore, a small amount of audit funds are allocated for this purpose. The project will also utilize consultant engineering services financed through an AID Direct Contract which is subject to audit of costs. The project budget includes approximately $100,000 to cover the estimated auditing costs of these contracts. Audit funds budgeted by activity are as follows:

Activity	Number of Contracts	type of Contract	Estimated Contract Amount ($000)	Audit Funds Budgeted
Consultant Services	1	AID-CR	3,500	20,000
Digital Switching Systems Installation	1	HC-FP	20,000	30,000
Outside plant systems Installation	1	HC-FP	14,400	30,000

TABLE III-3

TELECOMMUNICATIONS IV PROJECT

METHODS OF IMPLEMENTATION AND FINANCING

- In accordance with the requirements of the Sixteen Payment Verification Policy Statements the following table illustrates the methods of implementation and financing for AID funds as planned in the Telecommunications IV Project Paper.

ACTIVITY	METHOD OF IMPLEMENTATION	TYPE OF CONTRACT	METHOD OF FINANCING	APPROXIMATE COST ($000)	HOST COUNTRY IMPLEMENTING AGENCY
1. Consulting Services	AID-Direct	Cost + Fixed Fee	Direct Payment	3,700	AID
2. Digital Switching Systems Installation	Host Country Contract	Lump Sum	Direct L/Comm	21,000	ARENTO - Projects Dept.
3. Outside Plant systems Installation	Host Country Contract	Lump Sum	Direct L/Comm	15,100	ARENTO - Projects Dept.
4. Monitoring Audit, Evaluation	AID Direct PSC or IQC	Fixed Price	Direct Payment	200	AID

The justification for using Direct L/Comm is that the host country does not have the financial resources to make payment and seek daily reimbursement from AID.

4.0 PROJECT IMPLEMENTATION PLAN:

4.1 IMPLEMENTATION SCHEDULES:

The following table lists major project implementation actions keyed to date of obligation. The proposed schedule is based on the assumption that AID will obtain the services of a U.S. consultant under an "Indefinite Quantity Contract" (IQC) to assist ARENTO with the completion of bid documents for the outside plant and digital switching systems contracts.

ACTIONS	MONTHS
Authorize/Obligate Project	0
Grant Agreement Signed	+1
IQC mobilized	+1
Advertise for Construction Management (CM) Services	+2
Advertise for expressions of interest for the design, supply, and installation of DSS & OSP equipment	+2
Requirements Precedent to Disbursement Satisfied	+4
Completion of bidding documents for OSP and DSS contracts	+5
Prequalify DSS & OSP Contractors	+5
Prequalify CM firms	+6
IFBs for DSS and OSP issued	+8
Selection and Award of CM Contract	+10
Mobilization of CM Firm	+11

Award of DSS and OSP contracts	+12
Mobilization of DSS and OSP turnkey Contractor	+14
First Exchange 30,000 line cutover	+32
Second Exchange 30,000 line cutover	+34
Provisional Acceptance First Exchange	+33
Provisional Acceptance Second Exchange	+35
Final Acceptance First Exchange	+45
Final Acceptance Second Exchange	+47
Project Assistance Completion Date	+52

4.2 PROCUREMENT PLAN:

4.2.1 CONSULTING ENGINEER:

ARENTO will require the services of a qualified U.S. consulting firm to assist in the evaluation and selection of bidders, contract management and supervision of the works associated with the procurement and installation of the outside plant and digital switching systems . Host Country Contracting has been the standard AID vehicle for contracting of technical and professional services. However, in the interest of project scheduling and implementation and in order to assure the consultants independence of action a Direct AID contract will be utilized in the procurement of the consulting engineer's services. The Federal Acquisition Regulations "FAR" procedures will be followed in the selection and contracting of the consulting firm. The Consulting services contract will include any local professional services required or merited. Use of minority owned, small and or economically and socially disadvantaged subcontractors will be encouraged through appropriate incentives to be applied in the selection process. However, a set-aside for Section 8(a) small business enterprises is not considered appropriate given the technical complexity and demonstrated experience required.

In addition, AID will obtain the services of a U.S. consultant under an Indefinite Quality Contract (IQC) to assist ARENTO in the preparation of tender documents for the equipment contracts.

4.2.2 DSS AND OSP PROCUREMENT:

ARENTO has expressed a desire to have both the DSS exchange equipment and the outside plant equipment performed by a turnkey contractor. There are a number of options to be considered:

I. Turnkey contractor for both the exchange and OSP systems combined: There is merit in having both the exchange and associated OSP provided by the same contractor. The interface problems are minimized and readily resolved when the firm is contractually responsible for the performance and operability of both systems. There are 2 or 3 U.S. suppliers of DSS systems all of whom we believe may be interested in the Egyptian market. However, there are many firms capable of providing and installing the OSP. These firms would be locked out of the opportunity to participate in the project if a total turnkey package were to go to one firm.

II. Turnkey contractor for DSS and turnkey contractor for OSP: This option would provide maximum opportunity and competition for U.S. suppliers. It would also require the Consultant to provide overall contract management, to resolve interface questions and to assure that civil works, provisional and final acceptance dates are met.

III. Turnkey contractor for DSS with the Consultant providing detailed specifications and drawings for the OSP effort: The role of the OSP contractor would then be somewhat lessened and the role of the Consultant increased. The Consultant's contract management role would also be increased.

It will be noted that a turnkey contract for the DSS is listed with all options. Based upon discussions with ARENTO and the Telecommunications I, II and III experience, it is proposed to implement both the DSS and OSP contracts using the turnkey approach (Option II). It is anticipated that ARENTO with the assistance of an IQC consultant and the project consulting engineer and following competitive bidding procurement will award the DSS and OSP host-country contracts to prequalified U.S. contractors. The contracts will include the design, supply, installation and testing (i.e. turnkey) of the DSS and OSP equipment and training of

ARENTO personnel. It is planned that the U.S. OSP contractor will subcontract the civil works to a suitably qualified Egyptian construction firm. However, the U.S. prime OSP contractor will be held responsible for the quality and performance of all works. AID Handbook 11 procedures will be followed in the selection and contracting of the works. Utilization of minority and/or section 8(a) small/disadvantaged firms will be encouraged.

4.2.3 MODE OF CONTRACTING AND FINANCING PROCEDURES:

AID grant funds will finance the consultant engineers foreign exchange and foreign exchange equivalent of local currency costs under an AID direct contract. A cost reimbursement contracting mode is being considered for the consulting services contract. Payment will be made by check issued by USAID directly to the consultant.

Funds provided by this project will be used to finance host-country contracts between ARENTO and U.S. suppliers of equipment and installation services. The DSS and OSP turnkey contracts will be fixed lump sum contracts. All equipment and materials to be financed by AID funds will comply with the standard U.S. source/origin rules. These implementation methods and contracting procedures have been successfully adopted for the contracts financed by AID under the Telecommunications I, II and III projects. The contractors will be paid through use of Mission Direct Letters of Commitment and where ARENTO is responsible for payment, L.E. letters of credit.

4.3 TRAINING PLAN:

4.3.1 DSS TRAINING:

An allocation has been made in the budget for training of selected personnel in the United States by the Digital Switch contractor. The training can only be taught in the U.S. because of the requirement for hands-on training on a digital switch dedicated for training purposes. The training switch will have identical features to those procured for the two exchanges in Egypt. Courses will include introduction to digital switching, switch maintenance, switch translations and switch analysis.

In addition, the DSS contractor will provide in-country on-the-job training to the ARENTO engineers in the operations and maintenance of the digital equipment. This training will take place following the operation of the new DSS equipment and during the one-year maintenance period.

4.3.2 OSP TRAINING:

It is anticipated that outside plant training of personnel will be conducted in Egypt by the outside plant contractor for those determined to have the need for training. Main topics to be included are:

OSP engineering & planning;
fiber optics terminal equipment;and
underground construction methods

Most of the training will be provided sufficiently in advance of the operation of the exchanges so that ARENTO staff will be knowledgeable about equipment and procedure to allow their participation in the provisional acceptance and cutover of the exchanges.

4.4 IMPLEMENTATION RESPONSIBILITIES:

ARENTO will have prime responsibility for the overall management of the project and for providing direction to the engineering consultant and turnkey contractor. ARENTO plans to assign a project manager to head a team of OSP and switching engineers, financial managers and contracts officers to manage the daily project progress. This team will report directly to the ARENTO Vice Chairman of Planning.

4.5 MONITORING AND EVALUATION:

Upon signing of the Grant Agreement, U.S.A.I.D. will issue an Implementation Letter which, among other things, will contain the necessary guidance and details on the types of reports (e.g. progress and shipping) and the reporting formats to be followed. Throughout the life of the project, the U.S. Consultant will monitor the project to ensure satisfactory project progress. Any routine problems, together with corresponding suggested solutions will be brought to the attention of U.S.A.I.D. in the form of monthly reports from the Consultants and ARENTO. Upon commencement of construction and installation activities, frequent progress review sessions will be held with ARENTO,

the Consultant, the contractors, and, as appropriate, USAID Staff, to closely monitor project progress. Serious problems requiring immediate attention will be brought to the personal attention of the U.S.A.I.D. Project Manager and his/her counterpart in ARENTO. Project progress will be determined by measuring actual results against the project schedule developed by the U.S. Consultant and will be discussed at monthly meetings between ARENTO, the U.S. Consultant, Contractors and U.S.A.I.D.

This project will fund evaluations and studies, as needs are identified, to identify and resolve design or implementation problems as they arise, to measure progress on achieving improved financial viability of ARENTO through revisions to the tariff systems, and to identify project benefits. Given the timeframe for project implementation, it may be difficult to measure developmental benefits in the two project areas by the PACD. However, it is possible to compare these project areas to areas which have already received services through previous telecommunications projects. Based upon this comparison, some judgments can be made as to the changes which will eventually occur in project areas as a result of the project. The project budget contains sufficient funds to carry out such a study.

During project life, USAID and ARENTO will determine whether an external final evaluation is useful, or whether a Project Activity Completion Report (PACR) prepared by USAID and ARENTO staff will suffice. Sufficient funds are included in the project budget to fund an external evaluation if it is deemed appropriate.

5.0 SUMMARIES OF ANALYSIS

5.1 TECHNICAL ANALYSIS:

The digital switching technology which is the basis of the project is a proven technology. Through 1986, over 1400 exchanges and 17 million digital telephone lines have been shipped worldwide. Exchanges in service today number over 1,000. Digital switching exchanges, particularly in the larger sizes, are less costly to install and maintain than any other type of exchange. Among the advantages of digital switching are its compatability with computer output and potential savings when operated in conjunction with digital systems (such as the existing Cairo microwave and fiber optics junction systems). Digital equipment can be introduced alongside analog equipment, such as the existing AID-financed equipment, and the interface between systems presents no problems. Therefore, as recommended by the AID-financed telecommunications sector study issued in April 1978, the World Bank and the Independent Commission for Worldwide Telecommunications Development, digital switching systems is the technology to be utilized for new telephone exchange installations. Given the many years of ARENTO operating experience with a wide variety of telephone exchange facilities, minimal additional personnel training will be required to effectively operate and maintain the proposed digital exchanges.

The sites for the two exchange buildings that will house the equipment are in the desired locations and are already owned by ARENTO. Utilities, water, sewer and electricity are nearby each site and require connections.

The outside plant system including the fiber optics junction system will be of the same design and technical specifications, successfully utilized under the Telecommunications I, II and III project.

5.2 FINANCIAL AND ECONOMIC ANALYSIS:

This analysis is an incremental or marginal analysis in which the stream of additional costs incurred for this project is compared with the estimated revenue stream. The financial analysis determines whether the project is likely to generate sufficient revenues to ARENTO, the semi-autonomous implementing agency and assumed profit center, to justify the necessary stream of expenditures. The economic analysis, on the other hand, determines whether the project is a worthwhile investment of Egypt's scarce resources, i.e., whether from a national perspective the value of the additional services expected from this project are sufficient to cover the costs. The focus of the analysis is on the direct costs and benefits of the project. There are, however, some additional indirect economic benefits which may arise from the project, but cannot be captured by ARENTO. These are used to buttress the economic justification of the project. However, these economic arguments must be used with caution. If ARENTO does not take the necessary steps to generate sufficient revenues to enable it to borrow funds to finance the required expansion in telecommunication services, the fact that the project is economically justified will not do much to satisfy the unmet demand for telecommunication services in Egypt.

The actual costs and revenues accruing to ARENTO are the financial variables while in the economic analysis it is the costs and benefits to the national economy that matters. We assume that the prices are the same for both the financial and economic analysis. This is justified because the equipment is imported, the construction industry is competitive and the skilled labor who will operate the project is highly mobile internationally. Other variables such as energy use are ignored in this price dichotomy because (1) they are not thought to be very important in telecommunication and (2) we do not have sufficiently detailed data to make this differentiation. The main difference between our financial and economic analysis is, therefore, the exclusion of the land cost in the financial analysis, because ARENTO is not being charged for it and, the inclusion of taxes in ARENTO's costs and of subsidies in its revenues.

Although it is relatively easy to quantify the costs, the benefits depend not only on the existence of the capability provided by the two telephone switches and related infrastructure but also on how soon the service is made available to consumers and on the extent to which the subscribers use the system to make local, national and international toll calls. There is also the potential for increased revenues in the existing system because of decreased

congestion and concomitant increase in the rate of completed telephone calls. Moreover, as already noted above, for the economic analysis there are additional benefits to the economy which arise from expanded and improved communication. These are even more difficult to quantify but include a potential decrease in road congestion as telephone calls substitute for other means of information exchange and related improvements in resource use as well as additional business activities which would not be undertaken in the absence of a reliable telephone system. On the other hand to the extent that telephones replace workers who currently deliver the messages, it will add a social cost to an economy which has had difficulty absorbing its labor force.

The project will add 60,000 lines to the current telephone network. An additional 60,000 lines can be added with less than proportional increases in costs. We use the rate structure and financial information on the current system to estimate the revenue accruing from the additional capacity provided by the project. The revenue statistics are shown in tables one through six. The costs appear in tables seven through ten. The financial and economic calculations are shown in table eleven. The basic scenario assumes (1) that the services provided by this project are proportional to the amount of additional capacity it will add to the current network, (2) that the current fee structure will be maintained, and (3) that fees will be adjusted to compensate for inflation. Based on these assumptions, the financial internal rate of return (FIRR) is 8.8 percent and the net present value of the project, calculated at a discount rate of 12 percent, is minus LE 12.8 million. The economic internal rate of return (EIRR) is 7.2 percent and the net present value on economic terms at the 12 percent discount rate is minus LE 21.7 million.

Simulations with alternative assumptions provide alternative revenue and profit scenarios for the project. We note, however, that ARENTO's current structure is highly skewed, and that improvements in the financial and economic streams may require more complex and comprehensive changes outside the scope of this analysis. On a net present value basis, with a discount rate of 12 percent, international revenues expected from the project account for 45 percent of the total revenues. Equipment installation fees account for 24 percent and the remainder is distributed between basic fees with nine percent and above quota local calls and national toll calls with four percent each. Equipment installation and international toll calls seem to be providing a disproportionate share of the revenues without nevertheless being able to provide enough revenues to cover all the costs of the system. The relatively high share of equipment installation revenues seems to be needed to ration the number of telephones which ARENTO can provide with its present tariff

structure, revenue generation capacity and consequent ability to finance the expansion of the system. This situation should be corrected as soon as possible to improve the efficiency of the current system and to broaden access to it. To obtain immediate telephone service at present, a household has to pay LE 1800 to have a phone installed and a business has to pay LE 3500. Through the waiting list which may mean a wait of over five years, the cost is LE 280 for a household and LE 500 for a business. By contrast, the annual subscription fee is LE 50. (See exhibit six for the domestic tariff structure).

Although the project will provide only 60,000 lines initially, we calculated the profitability of the project on the assumption that starting in year eight, an additional 60,000 lines will be added at the rate of 10,000 per year and at the cost of 2.5 million dollars per 10,000 lines. This simulation raised the FIRR to 9.2 percent and the EIRR to 7.6 percent. Reverting back to the assumption of the initial 60,000 line project we obtain the results shown below.

In alternative I we assume that the basic scenario is changed by doubling the current subscription fee while everything else remains as in the basic scenario. The FIRR rises to 12.3 percent and the EIRR rises to 10.5 percent. This change would improve the financial net present value significantly and provide a NPV, at 12 percent, of LE 1.4 million. This relatively small increase of LE 50 per year would provide a significant improvement in ARENTO financial status. Alternative II assumes that per call fees on local and national service are increased to generate twice the current revenue. This would also raise the FIRR to a little over 12 percent, and the net present value to a positive LE 375 thousands. The EIRR rises to 10 percent. Alternative III, which increases the share of priority telephone installations from 30 percent to 50 percent, results on an FIRR of 12.9 percent and an EIRR of 10.6 percent. In alternative IV, we assume the introduction of an annual fee of LE 25, LE 50 and LE 100 for telephones with national, international operator assisted and direct dial features, respectively. This scenario gives a financial internal rate of return of 9.4 percent and an economic rate of return of 7.8 percent.

These simulations show that although the direct benefits of the project, at current rates are probably not sufficient to cover all of ARENTO's costs, the required increase in revenue to make the project financially viable are within reach. The economic figures we have presented are somewhat weaker, but as noted above our economic calculations underestimate significantly

the economic potential of the project. We agree with most analysts that in a country such as Egypt with such a low density of telephones the economic value of the project is significantly higher than the directly quantifiable benefits we have identified. Our conclusion, however, is not that we should ignore the financial calculations because the project is justified on economic criteria. Rather, our interpretation of this relatively higher economic value is that the users would be willing to pay somewhat more than they are currently paying because they benefit a great deal more than they are charged for today.

We conclude that the project is financially and economically justified with the proviso that ARENTO needs to commission a study to analyze its rate structure and recommend the required adjustments to generate enough revenue to enable ARENTO to finance the required expansion by borrowing in the market place. We reiterate, that our analysis assumes that the benefit stream of the project is obtained on the assumption that, even in the absence of an adjustment in the rate structure, current rates are raised to compensate for inflation.

5.3 SOCIAL SOUNDNESS ANALYSIS:

A basic assumption of this project and past telecommunications projects is that reliable telephone service is essential for growth in a modern industrial society. Business and banking transactions, government services, tourism, emergency police and medical services, all become faster and more efficient with access to reliable telecommunications.

A 1984 survey of telephone service in several areas of Cairo demonstrated the need for improved service in Bab El Khalk and the Pyramids West areas. It showed that businesses and residences in these areas have been on waiting lists for telephone services for several years. Businesses which did not have their own telephones would use the phones of neighboring businesses or go in person to transact business. Citizens of these areas ranked better phone service as an important need, one for which they were willing to pay.

Because access to improved services will not occur until late in the project life, the project timeframe limits the use of these two areas as a case study to show the changes in how telephones are used and how the economy is transformed as a result of greatly improved services. However, since three previous telecommunications projects are already completed, it is possible to find an area included under a previous project which had characteristics similar to Bab El Khalk or Pyramids West before the project began. By comparing such an area now with the current situation in this project's target areas, one can identify more clearly the benefits and the beneficiaries of telecommunications.

5.4 MANAGERIAL/ADMINISTRATIVE ANALYSIS:

The project will be implemented by the Arab Republic of Egypt National Telecommunications Organization who is the GOE authority responsible for the planning, engineering, procurement, distribution, operation and maintenance of the Egyptian telecommunications system. ARENTO will assign a project manager to head a team of outside plant and switching engineers, financial managers and a contracts specialist to manage the daily project progress. This team will report directly to the ARENTO Vice Chairman of Planning. ARENTO will assign engineers and technicians to effectively operate and maintain the two new switching systems and related outside plant. These operation and maintenance staffs will be trained to operate and maintain the new equipment. The training for the digital switches will be conducted mainly in the United States. The outside plant training will be provided in Egypt. The operation and maintenance staff will be trained using classroom instruction, on-the-job study instruction and hands on experience.

The Power Systems Group within the Office of Urban Administration and Development will have monitoring responsibilities for AID. The Group has been responsible for implementation of the Telecommunications I, II and III projects and has developed an excellent working relationship with all levels of ARENTO personnel.

5.5 ENVIRONMENTAL ANALYSIS:

This project is a continuation of the efforts in the telecommunications sector similar to those conducted under the Telecommunications, I, II and III project for which the Initial Environmental Examination performed in May 1979 resulted in "Negative Determinations". Therefore, the Mission environmental Officer has concluded that no further information would be gained by additional studies or examinations of this project and approves a negative determination of the Telecommunications IV Project. However, attention will be given throughout the project to minimizing any adverse effects caused by the physical construction activities.

6.0 REQUIREMENTS PRECEDENT AND COVENANTS:

6.1 REQUIREMENTS PRECEDENT TO DISBURSEMENT:

The Project Agreement shall contain the following Requirements Precedent:

(1) First Disbursement:

Prior to any disbursement or to the issuance of any commitment documents under the Grant, the Cooperating Country shall, except as the Parties may otherwise agree in writing furnish to A.I.D., in satisfactory form and substance:

(a) A statement of the names and titles of the persons who will act as the representatives of the Cooperating Country, together with a specimen signature of each person specified in such statement;

(b) An executed contract acceptable to A.I.D. for consultant services for the Project;

(c) Evidence that the proceeds of the Grant have been lent by the Cooperating Country to the Arab Republic of Egypt National Telecommunications Organization (ARENTO) on terms and conditions acceptable to the Cooperating Country and ARENTO, and for the purpose of financing eligible costs under the Project;

(d) Evidence that the local currency financing for the Project has been budgeted by the Cooperating Country and will be available for expenditure by ARENTO pursuant to ARENTO's cost estimate; and

(e) Evidence that accounting records for local currency and in-kind contributions to the Project will be maintained by ARENTO.

(2) Disbursement for Infrastructure:

Prior to disbursement or to the issuance by A.I.D. of any commitment documents to finance digital switching systems or outside plant, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D., evidence that ARENTO owns the sites for the exchange buildings for the Bab El Khalk and Pyramids West exchanges and that ARENTO has firm commitments for the construction of the exchange buildings based on specifications compatible with the requirements of the digital switching systems being financed by A.I.D.

6.2 COVENANTS:

The Cooperating Country shall covenant substantially as follows:

(a) Project Evaluation. The Cooperating Country, through ARENTO, shall establish an evaluation program as part of the Project. The program will emphasize end-of-Project evaluation and will concentrate on:

(i) Progress toward attainment of the objectives of the Project; and

(ii) Evaluation, to the degree feasible, of the overall development impact of the Project.

(b) Project Management. The Cooperating Country will promote and support the provision by ARENTO of qualified and experienced management for the Project.

(c) Training of Personnel. The Cooperating Country will also promote and support the selection by ARENTO of appropriate numbers and types of personnel for project-related training as follows:

(i) Technical staff to receive comprehensive training in the United States on digital switching systems provided by the switch contractor;

(ii) Engineering staff to receive on-the-job training provided by the switch contractor in the operation and maintenance of digital switching equipment; and

(iii) Engineering, construction and maintenance staff to receive on-the-job training provided by the outside plant contractor in planning and engineering of outside plant facilities, fiber optic terminal equipment and underground construction methods.

(d) Periodic Discussions. The Cooperating Country and A.I.D. will periodically discuss the status of the Project and associated economic issues*.

(e) Payment of Salary Incentives and Supplements. Grant proceeds or funds derived from the Special Account (arising under the Commodity Import Program) will not be used to pay salary supplements and incentives except in accordance with mutually agreed guidelines.

* It is understood that a consultant's study of ARENTO's tariff strucutre, to include review of previous studies on the topic, will form the basis for such discussions.

(f) Local Currency and In-Kind Contributions. The Cooperating Country, through ARENTO, will provide A.I.D., on a quarterly basis, with copies of its accounting records on local currency and in-kind contributions provided for the Project.

(g) Social Insurance and Taxes on Expatriates. The Cooperating Country shall covenant that any social insurance assessments and any taxes on expatriates (non-Egyptians) arising under Grant-financed work will be paid directly or reimbursed by the Cooperating Country from its own resources.

(h) Use of L.E. Letters of Credit. The financial contributions of the Cooperating Country to the local currency costs of construction contracts shall be met through use of L.E. letters of credit.

ANNEXES

ACTION AID 3 INFO DCM ECON /5

ANNEX A

LOC: 056 122
21 JUL 88 0750
CN: 63179
CHRG: AID
DIST: AID

VZCZCCR0191
PP RUEHEG
DE RUEHC #4463 2030748
ZNR UUUUU ZZH
P 210747Z JUL 88
FM SECSTATE WASHDC
TO AMEMBASSY CAIRO PRIORITY 5248
BT
UNCLAS STATE 234463

ACTION TO DR PDS
ACTION TAKEN DUE DATE 7/26
BAB INITIALS

AIDAC

E.O. 12356: N/A
TAGS:
SUBJECT: TELECOMMUNICATIONS IV PROJECT (263-0177) - WAIVER OF PID SUBMISSION

REF: (A) CAIRO 11403, (B) (84) STATE 311144

1. ON JULY 18, 1988, DAA/ANE, THOMAS H. REESE SIGNED ACTION MEMO CONFIRMING PRIOR WAIVER OF PID SUBMISSION (REF. B). ACTION MEMO ALSO IDENTIFIED SEVERAL ISSUES WHICH IT RECOMMENDED MISSION ADDRESS IN FINALIZING PP. THESE ARE DISCUSSED BELOW. COPY OF ACTION MEMO BEING POUCHED TO MISSION FOR YOUR FILES.

2. WITH RESPECT TO QUESTION OF DEPARTURE OF PROPOSED PROJECT FROM COSS, ALL PARTIES - INCLUDING PPC AND DP - AGREED THAT DEPARTURE WAS JUSTIFIED IN THAT CIRCUMSTANCES HAD CHANGED SINCE COSS DECISION THAT COMMERCIAL FINANCING OF TELECOMMUNICATIONS VENTURES WAS APPROPRIATE. SPECIFICALLY, IT WAS RECOGNIZED THAT THE PROJECT HAD ORIGINALLY BEEN PLANNED AS AN FY 1985 SHELF PROJECT, BUT WAS NOT TAKEN UP BY A.I.D. AFTER IT APPEARED THAT COMMERCIAL FINANCING WOULD BE AVAILABLE. THIS HAS NOT BEEN BORNE OUT. THE INTERNATIONAL BANKING

COMMUNITY - INCLUDING EXIMBANK - HAS NOT BEEN MAKING LOANS TO EGYPTIAN GOVERNMENT ENTITIES.

IN ADDITION TO FINANCING CONSIDERATION, THE IMPORTANCE OF IMPROVING THE EGYPTIAN TELECOMMUNICATIONS NETWORK AND ARENTO'S PERFORMANCE WERE FACTORS IN DECISION. IT WAS AGREED THAT AN ORDERLY EXPANSION AND MODERNIZATION OF TELECOMMUNICATIONS SYSTEMS WAS USEFUL TO THE DEVELOPMENT OF EFFICIENCY AND ENHANCEMENT OF THE PROFITABILITY OF ALL SECTORS IN THE EGYPTIAN ECONOMY, PARTICULARLY TO SUPPORT A GROWING PRIVATE INDUSTRIAL SECTOR. ALSO, ARENTO'S STRONG MANAGEMENT AND TECHNICAL SKILLS FOR IMPLEMENTING THE PROJECT WERE RECOGNIZED.

3. PROCUREMENT WAS IDENTIFIED AS AN ISSUE, AND THE MISSION'S PREFERENCE FOR A COMPETITIVE APPROACH WAS

ENDORSED. THE ISSUE SHOULD BE DISCUSSED AND DEALT WITH IN THE PP. WHILE IT WAS UNDERSTOOD THAT THE THREE PRIOR TELECOMMUNICATIONS PROJECTS HAD BEEN SUCCESSFULLY CARRIED OUT BY ONE PARTICULAR CONTRACTOR, IT WAS ALSO RECOGNIZED THAT THE TECHNOLOGY FOR THE FOURTH PROJECT WILL BE DIFFERENT. IN PARTICULAR, THE QUOTE SWITCHES UNQUOTE WILL BE DIGITAL TYPE RATHER THAN ANALOG. THUS, WE AGREE WITH MISSION ASSESSMENT AGAINST A NON-COMPETITIVE PROCUREMENT.

4. OPERATIONS AND MAINTENANCE WAS ALSO IDENTIFIED AS AN ISSUE TO BE DEALT WITH IN THE DEVELOPING THE PROJECT. WHILE IT WAS RECOGNIZED THAT ARENTO IS ONE OF EGYPT'S BETTER MANAGED PUBLIC SECTOR ORGANIZATIONS, THERE CONTINUES TO EXIST SOME LEGITIMATE CONCERN ABOUT THE O AND M BEING DONE ON THE FACILITIES PROVIDED UNDER PREVIOUS PROJECTS. THUS, IT WAS RECOMMENDED THAT THE O AND M ENHANCEMENT REQUIRED TO PROTECT BOTH A.I.D.'S PAST INVESTMENT AND THE INVESTMENT IN THE TELECOMMUNICATIONS IV PROJECT SHOULD BE BUILT INTO THE LATTER PROJECT. THIS SHOULD INCLUDE A REASSESSMENT OF THE STATUS OF O AND M ACTIVITIES UNDER ARENTO AND IDENTIFICATION OF AREAS WHERE FURTHER IMPROVEMENTS ARE APPROPRIATE, FOR EXAMPLE, TRAINING, BUDGETING FOR O AND M, APPROPRIATE RATE STRUCTURE, ETC. WHITEHEAD
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PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1988 to FY 1993
Total U. S. Funding $40,000,000.00
Date Prepared: August 23,1988

Project Title & Number: Telecommunications IV, Project No. 263-0177

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: (A-1) To improve the telecommunication system serving the 12 to 14 million people residing and/or working in Cairo.	**Measures of Goal Achievement: (A-2)** More and improved access to information for all users including private and governmental enterprises.	(A-3) ARENTO records, statistics and survey of sample representations of various user segments.	**Assumptions for achieving goal targets: (A-4)** 1. Other financial resources are available to ARENTO. 2. Telecommunications remains a high GOE priority.
Project Purpose: (B-1) To expand the present Cairo telecommunications system in order to meet some of the public and private sector demand for telecommunications services.	**Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)** 1. Half a million Cairo residents will have access to improved service. 2. A major portion of existing demand for telephone service in Bab-El-Khalk and Pyramids West fulfilled. 3. Fully staffed O&M system for digital switching systems established and functioning.	(B-3) 1. ARENTO traffic reports and records. 2. Waiting list for Bab-El-Khalk and Pyramids West. 3. Inspection of completed exchanges.	**Assumptions for achieving purpose: (B-4)** 1. Demand for Telecommunications services continues to increase as the Egyptian population and economy grows. 2. ARENTO continues to operate and maintain its existing systems. 3. ARENTO will utilize tariff and user rates necessary to recover recurrent costs.
Project Outputs: (C-1) Two digital telephone exchanges each of a capacity of 30,000 lines installed and functioning at the Bab-El-Khalk and Pyramids West areas.	**Magnitude of Outputs: (C-2)** 1. Exchange buildings completed. 2. The two digital systems installed. 3. Outside plant system installed. 4. All air conditioning and generators installed.	(C-3) 1. Progress reports and periodic meetings with U.S. Consultant and ARENTO. 2. Contractor monthly reports. 3. Inspection and examination of the works.	**Assumptions for achieving outputs: (C-4)** 1. U.S. Consultant performs work satisfactorily. 2. ARENTO provides personnel, building and other support. 3. Turnkey contractors will perform per the Contract schedules.
Project Inputs: (D-1) 1. Contract for providing assistance to ARENTO in the evaluation, award, administration, monitoring and supervision of the turnkey equipment contracts. 2. Contracts for the engineering, furnishing, installation, operation and maintenance of the DBS and OSP systems.	**Implementation Target (Type and Quantity) (D-2)** 1. AID Financed Inputs (Dolls 000) a. Technical Assistance $3,500 b. Equipment $34,400 c. Other $2,100 Total $40,000	(D-3) 1. Review of contracts. 2. Reviewing factory inspection and shipping reports for equipment and material. 3. Progress reports. 4. Visual inspection. 5. Evaluation and project completion reports.	**Assumptions for providing inputs: (D-4)** 1. Initial conditions precedent of Grant Agreement will be met in a timely manner. 2. Review and approval of contracts, invoices and other project documentation will be expeditiously performed by the GOE.

ANNEX B

5C(2) - PROJECT CHECKLIST

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A includes criteria applicable to all projects. Part B applies to projects funded from specific sources only: B(1) applies to all projects funded with Development Assistance; B(2) applies to projects funded with Development Assistance loans; and B(3) applies to projects funded from ESF.

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

A. GENERAL CRITERIA FOR PROJECT

1.	FY 1988 Continuing Resolution Sec. 523; FAA Sec. 634A. If money is sought to obligated for an activity not previously justified to Congress, or for an amount in excess of amount previously justified to Congress, has Congress been properly notified?	Congress has bee notified.
2.	FAA Sec. 611(a)(1). Prior to an obligation in excess of $500,000, will there be (a) engineering, financial or other plans necessary to carry out the assistance, and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?	The necesaary planning and cos estimates have been completed.
3.	FAA Sec. 611(a)(2). If legislative action is required within recipient country, what is the basis for a reasonable expectation that such action will be completed in time to permit orderly accomplishment of the purpose of the assistance?	No further legislative acti is required.

4. FAA Sec. 611(b); FY 1988 Continuing Resolution Sec. 501. If project is for water or water-related land resource construction, have benefits and costs been computed to the extent practicable in accordance with the principles, standards, and procedures established pursuant to the Water Resources Planning Act (42 U.S.C. 1962, et seq.)? (See A.I.D. Handbook 3 for guidelines.)	N/A
5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and total U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability to maintain and utilize the project effectively?	The Mission Director has so certified. See Annex E
6. FAA Sec. 209. Is project susceptible to 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.	The Project is not susceptible to execution as part of a regional project.
7. FAA Sec. 601(a). Information and conclusions on whether projects will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, 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.	The grant will increase the flow of international trade and improve technica efficiency of industry, agriculture, commerce, and foster private initiative and competition. It will not have any apparent effe on encouraging cooperative credit unions and savings and loan associations, monopolistic practices nor free labor unions.
8. FAA Sec. 601(b). Information and conclusions 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).	All funds expended will be for goods and services from private U.S. enterprises.
9. FAA Secs. 612(b), 636(h). 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.	The Project Grant Agreeme so provides and the GOE has certified that all local currency funds required will be provided by GOE.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release? — No

11. FY 1988 Continuing Resolution Sec. 521. 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

12. FY 1988 Continuing Resolution Sec. 553. Will the assistance (except for programs in Caribbean Basin Initiative countries under U.S. Tariff Schedule "Section 807," which allows reduced tariffs on articles assembled abroad from U.S.-made components) be used directly to procure feasibility studies, prefeasibility studies, or project profiles of potential investment in, or to assist the establishment of facilities specifically designed for, the manufacture for export to the United States or to third country markets in direct competition with U.S. exports, of textiles, apparel, footwear, handbags, flat goods (such as wallets or coin purses worn on the person), work gloves or leather wearing apparel? — N/A

13. FAA Sec. 119(g)(4)-(6). Will the assistance (a) support training and education efforts which improve the capacity of recipient countries to prevent loss of biological diversity; (b) be provided under a long-term agreement in which the recipient country agrees to protect ecosystems or other wildlife habitats; (c) support efforts to identify and survey ecosystems in recipient countries worthy of protection; or (d) by any direct or indirect means significantly degrade national parks or similar protected areas or introduce exotic plants or animals into such areas? — N/A

14. FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate system for accounting for and controlling receipt and expenditure of project funds (either dollars or local currency generated therefrom)? N/A

15. FY 1988 Continuing Resolution. If assistance is to be made to a United States PVO (other than a cooperative development organization), does it obtain at least 20 percent of its total annual funding for international activities from sources other than the United States Government? N/A

16. FY Continuing Resolution Sec. 541. If assistance is being made available to a PVO, has that organization provided upon timely request any document, file, or record necessary to the auditing requirements of A.I.D., and is the PVO registered with A.I.D.? N/A

17. FY 1988 Continuing Resolution Sec. 514. If funds are being obligated under an appropriation account to which they were not appropriated, has prior approval of the Appropriations Committees of Congress been obtained? N/A

18. FY Continuing Resolution Sec. 515. If deob/reob authority is sought to be exercised in the provision of assistance, are the funds being obligated for the same general purpose, and for countries within the same general region as originally obligated, and have the Appropriations Committees of both Houses of Congress been properly notified? N/A

19. State Authorization Sec. 139 (as interpreted by conference report). Has confirmation of the date of signing of the project agreement, including the amount involved, been cabled to State L/T and A.I.D. LEG within 60 days of the agreement's entry into force with respect to the United States, and has the full text of the agreement been pouched to those same offices? (See Handbook 3, Appendix 6G for agreements covered by this provision). This notification will be made following PROAG signing.

3. Economic Support Fund Project Criteria

a. FAA Sec. 531(a). Will this assistance promote economic and political stability? To the maximum extent feasible, is this assistance consistent with the policy directions, purposes, and programs of Part I of the FAA?

Will enhance ability of GOE to sustain economic growth which will have positive political results. To the extent rural areas will be served, policy directic of Section I will be reflected.

b. FAA Sec. 531(e). Will this assistance be used for military or paramilitary purposes?

No.

c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

N/A

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(a). Are there 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 marine insurance companies authorized to do business in the U.S., will commodities be insured in the United States against marine risk with such a company? — Egypt does not so discriminate.

4. FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a). If non-U.S. procurement of agricultural commodity or product thereof 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 U.S.) — There will be no such procurement.

5. FAA Sec. 604(g). Will construction or engineering services be procured from firms of advanced developing countries which are otherwise eligible under Code 941 and which have attained a competitive capability in international markets in one of these areas? (Exception for those — No.

countries which receive direct economic assistance under the FAA and permit United States firms to compete for construction or engineering services financed from assistance programs of these countries.)

6. FAA Sec. 603. Is the shipping excluded from compliance with the requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 percent 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 such vessels are available at fair and reasonable rates? NO

7. FAA Sec. 621(a). If technical assistance is financed, will such assistance be furnished by private enterprise on a contract basis to the fullest extent practicable? Will the facilities and resources of other Federal agencies be utilized, when they are particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs? YES

8. International Air Transportation Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will U.S. carriers be used to the extent such service is available? YES

9. FY 1988 Continuing Resolution Sec. 504. If the U.S. Government 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? YES

10. FY 1988 Continuing Resolution Sec. 524. If assistance is for consulting service through procurement contract pursuant to 5 U.S.C. 3109, are contract expenditures a matter of public record and available for public inspection (unless otherwise provided by law or Executive order)? YES

B. CONSTRUCTION

1.	FAA Sec. 601(d). If capital (e.g., construction) project, will U.S. engineering and professional services be used?	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 (except for productive enterprises in Egypt that were described in the CP), or does assistance have the express approval of Congress?	YES

C. OTHER RESTRICTIONS

1.	FAA Sec. 122(b). If development loan repayable in dollars, is interest rate at least 2 percent per annum during a grace period which is not to exceed ten years, and at least 3 percent 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. Will arrangements preclude use of financing:

a. FAA Sec. 104(f); FY 1987 Continuing Resolution Secs. 525, 538. (1) To pay for performance of abortions as a method of family planning or to motivate or coerce persons to practice abortions; (2) to pay for performance of involuntary sterilization as method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization; (3) to pay for any biomedical research which relates, in whole or part, to methods or the performance of abortions or involuntary sterilizations as a means of family planning; or (4) to lobby for abortion?

1. YES
2. YES
3. YES
4. YES

b. FAA Sec. 483. To make reimbursements, in the form of cash payments, to persons whose illicit drug crops are eradicated?

YES

c. FAA Sec. 620(q). To compensate owners for expropriated or nationalized property, except to compensate foreign nationals in accordance with a land reform program certified by the President?

YES

d. FAA Sec. 660. To provide training, advice, or any financial support for police, prisons, or other law enforcement forces, except for narcotics programs?

YES

e. FAA Sec. 662. For CIA activities?

YES

f. FAA Sec. 636(i). For purchase, sale, long-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained?

YES

g. FY 1988 Continuing Resolution Sec. 503. To pay pensions, annuities, retirement pay, or adjusted service compensation for prior or current military personnel? YES

h. FY 1988 Continuing Resolution Sec. 505. To pay U.N. assessments, arrearages or dues? YES

i. FY 1988 Continuing Resolution Sec. 506. To carry out provisions of FAA section 209(d) (transfer of FAA funds to multilateral organizations for lending)? YES

j. FY 1988 Continuing Resolution Sec. 510. To finance the export of nuclear equipment, fuel, or technology? YES

k. FY 1988 Continuing Resolution Sec. 511. 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? YES

l. FY 1988 Continuing Resolution Sec. 516; State Authorization Sec. 109. To be used for publicity or propaganda purposes designed to support or defeat legislation pending before Congress, to influence in any way the outcome of a political election in the United States, or for any publicity or propaganda purposes not authorized by Congress? YES

ANNEX D

ARAB REPUBLIC OF EGYPT

MINISTRY OF INTERNATIONAL COOPERATION

DEPARTMENT FOR ECONOMIC COOPERATION

WITH U. S. A

FM
PDS
DD
DIR

Mr. Marshall D. Brown
Director
USAID/C

Sep, 22, 1988

DR
10/4

Dear Mr. Brown,

This is to request A.I.D. funding in the amount of $ 40 million for the Telecommunications IV project (263-0177). The government of Egypt (GOE) contribution of cash and in-kind assistance to this project totals L.E. 21 million.

This project will add two new telephone exchanges totalling 60,000 lines in the Bab-El-Khalk and Pyramids west areas of Cairo, to assist to GOE in meeting the growing demand for public and private sector telecommunications services.

Best regards.

Sincerely Yours,

Ahmad Abdel Salam

Ahmad Abdel Salam Zaki
Administrator

TELECOMMUNICATIONS IV
PROJECT 263-0177

CERTIFICATION PURSUANT TO SECTION
611(e) OF FAA 1961 AS AMENDED

I, Marshall D. Brown, Director, the Principal Officer of 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, do hereby certify that in my judgment Egypt has both the financial capability and the human resources to effectively install, maintain and utilize the capital assistance to be provided for the Telecommunications IV Project.

This judgment is based upon general considerations discussed in the Project Paper to which this certification is to be attached.

Marshall D. Brown
Director

5/25/78
Date

TELECOMMUNICATIONS IV
PROJECT 263-0177

CERTIFICATION PURSUANT TO
GRAY AMENDMENT

As Director and Principal Officer of the Agency for International Development in Egypt, I certify that full consideration has been given to the potential involvement of small and/or economically and socially disadvantaged enterprises, historically black colleges and universities and minority controlled private and voluntary organizations covered by the Gray Amendment.

The attached Project Paper discusses the efforts that will be undertaken in connection with each element of the procurement plan to maximize the participation of minority-owned and small and disadvantaged organizations. At the time of each procurement action, every effort will be made to encourage the participation of these organizations and draw upon their knowledge and expertise.

Marshall D. Brown
Director

9/27/88
Date

TECHNICAL ANALYSIS:

A. GENERAL:

A local telephone exchange system consists of the following:-

A.1 EXCHANGE SWITCHING SYSTEM:

A modern switching system performs basically at a higher speed, more reliability and less cost, the same functions previously performed by the arms and hands of the telephone operator and the jacks of the switchboard. Ever since the early years of telephony, there existed several technologies for telephone switching systems. However, since the late 70's the state-of-the-art in switching systems was determined to be stored program common control analog or digital systems.

A.2 OUTSIDE PLANT SYSTEM:

Associated with each switching system is the outside plant system. The outside plant system consists of the cable connections from the exchange switching systems to the subscriber sets (Feeder and Distribution Systems) and from one exchange to another (Junction System).

These interconnections are accomplished by multiple wire or multiple fiber underground cable placed in ducts with access through manholes and in some cases by microwave radio connecting exchanges by means of antennas mounted on towers. Exhibit 9 is a simplified diagram of the feeder and distribution systems. Transmission terminal equipment are also a part of the system which enable the messages to be transmitted from the switch through the associated outside plant to the next exchange. Specific equipment depend upon the system design, but usually consist of multiplex, demultiplex, channel banks, and protection switches.

B. EXISTING CAIRO TELEPHONE SYSTEM:

B.1 TELEPHONE EXCHANGE SWITCHING SYSTEMS:

There are presently 26 exchanges in the Cairo network. Eleven of these exchanges are the common control crossbar type which can be considered of reasonably modern design. The remaining 15 exchanges including the six AID-financed exchanges are of the analog electronic type.

In the automatic analog switching systems, speech is converted into an electrical signal with varying frequency and amplitude and calls are connected through separate switches in the system. The analog systems such as the 1A ESS equipment previously supplied to ARENTO under the AID Telecommunications I, II and III projects, have stored Program Control (SPC). In these systems, the control functions are performed by a computer and the switching matrix can use solid state electronic crosspoints. Advantages include extensive remote operation and maintenance facilities, built-in test and signalling units and practically no open contacts which make them less sensitive to dust. SPC exchanges are built in compact form and consequently require air-conditioning particularly in the hot or tropical climates. These systems are not yet obsolescent, but most manufacturers are switching production to digital systems.

B.2 OUTSIDE PLANT SYSTEM:

The Cairo feeder and distribution network consists mainly of water-proof, filled outside plant telecommunications cable designed for direct burial and duct applications. The Cairo junction system is primarily composed of voice frequency jelly filled, foam skin insulated cables in addition to an AID-financed Pulse Code Modulation (PCM) 24 channel microwave system and a fiber optics junction system.

C. PROPOSED SYSTEM CONFIGURATION:

ARENTO through traffic studies of telephone service availability and quality as well as the demographic growth of Greater Cairo, the establishment of new businesses, residences and overall population, determined the need for two new exchanges in the Pyramids West and Bab El Khalk areas.

These new local telephone exchange systems will consist of the following:

C.1 DIGITAL SWITCHING SYSTEM:

The Pyramids West and Bab El Khalk exchanges will each be equipped with a digital switching system with an initial capacity of 30,000 lines and an ultimate capacity of 60,000 lines. Each DSS shall be designed for future expansion to the ultimate capacity and will be equipped initially with

processors that can handle the ultimate capacity* of 60,000 lines.

In the proposed digital switching system, telephone speech is converted from the analog signal to a coded form consisting of high speed ON/OFF pulses. Pulses of different conversations are separated from each other by discrete time intervals and switched in turn by the system (time division switching) so that many calls can be handled by the same switch. Digital exchanges particularly in the larger sizes (over 20,000 lines), are less costly to install and maintain than analog exchanges. Among the advantages of digital switching are its compatibility with computer output and potential savings when operated in conjunction with digital transmission systems (such as the existing Cairo microwave and fiber optics junction systems).

Digital equipment can be introduced alongside analog equipment and the interface between systems presents no problems. Changes in the system are accomplished through the software rather than with the hardware. Modular growth in both hardware and software allows rapid introduction of technological changes.

The Integrated Services Digital Network (ISDN) is a network that carries data as easily as voice traffic and can be used for facsimile and videotex systems as well. A number of countries are already introducing it into their national and international operations. Full advantage of the ISDN features can be best realized when the entire network has become digital.

In the report of the AID-financed telecommunications study issued in April 1978, the consultant recommended current state-of-the-art equipment, at that time, the analog electronic stored program control local telephone exchanges for at least the next five years. During that period, it was expected that digital electronic stored program control exchanges would be fully proven and become available. It was recommended that ARENTO then consider the transition to digital systems for subsequent applications.

The World Bank has also recommended the introduction of digital telephone exchanges for new installations or additions since the prices are becoming competitive with

* Historically ARENTO has added 10,000 line increments every 2 years, starting from cutover date. It is estimated that each 10,000 line increment will cost from $2.5 to $3 M.

analog and crossbar switches. The Report of the Independent Commission for Worldwide Telecommunications Development titled: The Missing Link, also recommended digital, discouraged analog equipment even for developing countries on the basis that analog equipment would no longer be manufactured and replacement parts would be unavailable. Ultimate digital equipment would have to be acquired to have the many features it can provide.

Based on the above, ARENTO in 1985 made the decision to procure analog systems only for extensions of existing analog exchanges, but that all new exchange procurement would be digital. To achieve an all digital network, ARENTO plans to develop a digital switch manufacturing capability in Egypt to meet its expansion program. ARENTO has issued an international tender (March 1986) for the establishment of a joint-venture digital manufacturing plant in Egypt. No award has yet been made. The 1986 tender contained technical specifications for a generic digital switch of 30,000 lines expandable to 60,000 lines.

Consequently, much of the work for the switch specifications has been accomplished. What remains to be done is to substitute specific data for the two exchanges and to identify the exchanges in the area with which they interface. Exhibit 10 shows the switch generic data.

C.2 **OUTSIDE PLANT SYSTEM:**

ARENTO plans to use the same design criteria and technical specifications for the project OSP, successfully utilized under the Telecommunications I, II and III project. The following guidelines for the outside plant feeder and distribution system will be employed:

- 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 Distribution Cable Terminal (DCT).

- The ratio of terminated feeder pairs at the Main Distribution Frame (MDF) to DSS subscriber line ports is 1.2:1.0. Feeder pairs are not terminated at more than one Service Area Interphase (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 will be used where estimated future growth is limited.

The fiber optics junction system will be of the same technical specifications and configuration as in the Telecommunications I, II, and III projects. Exhibit 11 is a block diagram of the fiber optics system. ARENTO has prepared preliminary system plan drawings for the two exchange areas. More detailed system plan drawings and an estimated Bill of Quantities will be prepared by a U.S. consultant.

EXCHANGE BUILDINGS:

The sites for the two exchange buildings that will house the equipment are in the desired locations and are already owned by ARENTO. The Pyramids West site is off the Pyramids road, with easy access to the property and with dimensions of 50 meters by 110 meters. See Exhibit 12. At the present time, it is used for cable reel storage and there are two temporary shacks there. The Bab El Khalk site is an old abandoned railroad station which will have to be demolished. The location is in the section of old Cairo and the property measures 30 X 50 meters. See Exhibit 13.

ARENTO has already prepared building drawings for the sites and in one case has tentatively selected a building construction contractor and is prepared to start work shortly. Utilities, water, sewer and electricity are nearby each site and require connections.

CONCLUSION:

The digital switching systems technology is a proven technology. Through 1986, over 1400 exchanges and 17 million digital telephone lines have been shipped worldwide. Exchanges in service today number over 1,000. The design for the proposed project builds on this experience and is consistent with the general body of knowledge on digital technologies. Given the many years of ARENTO operating experience with a wide variety of telephone exchange facilities, USAID believes that the GOE implementing agency will require only minimal additional training to effectively operate and maintain the proposed telephone exchanges. Accordingly, the proposed project design is determined to be technically appropriate and cost effective.

FINANCIAL AND ECONOMIC ANALYSIS:

This analysis is an incremental or marginal analysis in which the stream of additional costs incurred for this project is compared with the estimated revenue stream. The financial analysis determines whether the project is likely to generate sufficient revenues to ARENTO, the semi-autonomous implementing agency and assumed profit center, to justify the necessary stream of expenditures. The economic analysis, on the other hand, determines whether the project is a worthwhile investment of Egypt's scarce resources, i.e., whether from a national perspective the value of the additional services expected from this project are sufficient to cover the costs. The focus of the analysis is on the direct costs and benefits of the project. There are, however, some additional indirect economic benefits which may arise from the project, but cannot be captured by ARENTO. These are used to buttress the economic justification of the project. However, these economic arguments must be used with caution. If ARENTO does not take the necessary steps to generate sufficient revenues to enable it to borrow funds to finance the required expansion in telecommunication services, the fact that the project is economically justified will not do much to satisfy the unmet demand for telecommunication services in Egypt.

The actual costs and revenues accruing to ARENTO are the financial variables while in the economic analysis it is the costs and benefits to the national economy that matters. We assume that the prices are the same for both the financial and economic analysis. This is justified because the equipment is imported, the construction industry is competitive and the skilled labor who will operate the project is highly mobile internationally. Other variables such as energy use are ignored in this price dichotomy because (1) they are not thought to be very important in telecommunication and (2) we do not have sufficiently detailed data to make this differentiation. The main difference between our financial and economic analysis is, therefore, the exclusion of the land cost in the financial analysis, because ARENTO is not being charged for it and, the inclusion of taxes in ARENTO's costs and of subsidies in its revenues.

Although it is relatively easy to quantify the costs, the benefits depend not only on the existence of the capability provided by the two telephone switches and related infrastructure but also on how soon the service is made available to consumers and on the extent to which the subscribers use the system to make local, national and international toll calls. There is also the potential for increased revenues in the existing system because of decreased congestion and concomitant increase in the rate of completed telephone calls. Moreover, as already noted above, for the economic analysis there are additional benefits to the economy which arise from expanded and improved communication. These are even more difficult to quantify but include a potential decrease in road congestion as telephone calls substitute for other means of information exchange and related improvements in resource use as well as additional business activities which would not be undertaken in the absence of a reliable telephone system. On the other hand to the extent that telephones replace workers who currently deliver the messages, it will add a social cost to an economy which has had difficulty absorbing its labor force.

The project will add 60,000 lines to the current telephone network. An additional 60,000 lines can be added with less than proportional increases in costs. We use the rate structure and financial information on the current system to estimate the revenue accruing from the additional capacity provided by the project. The revenue statistics are shown in tables one through six. The costs appear in tables seven through ten. The financial and economic calculations are shown in table eleven. The basic scenario assumes (1) that the services provided by this project are proportional to the amount of additional capacity it will add to the current network, (2) that the current fee structure will be maintained, and (3) that fees will be adjusted to compensate for inflation. Based on these assumptions, the financial internal rate of return (FIRR) is 8.8 percent and the net present value of the project, calculated at a discount rate of 12 percent, is minus LE 12.8 million. The economic internal rate of return (EIRR) is 7.2 percent and the net present value on economic terms at the 12 percent discount rate is minus LE 21.7 million. Simulations with alternative assumptions provide alternative revenue and profit scenarios for the project. We note, however, that ARENTO's current structure is highly skewed, and that improvements in the financial and economic streams may require more complex and comprehensive changes outside the scope of this analysis. On a net present value basis, with a discount rate of 12 percent, international revenues expected from the project account for 45

percent of the total revenues. Equipment installation fees account for 24 percent and the remainder is distributed between basic fees with nine percent and above quota local calls and national toll calls with four percent each. Equipment installation and international toll calls seem to be providing a disproportionate share of the revenues without nevertheless being able to provide enough revenues to cover all the costs of the system. The relatively high share of equipment installation revenues seems to be needed to ration the number of telephones which ARENTO can provide with its present tariff structure, revenue generation capacity and consequent ability to finance the expansion of the system. This situation should be corrected as soon as possible to improve the efficiency of the current system and to broaden access to it. To obtain immediate telephone service at present, a household has to pay LE 1800 to have a phone installed and a business has to pay LE 3500. Through the waiting list which may mean a wait of over five years, the cost is LE 280 for a household and LE 500 for a business. By contrast, the annual subscription fee is LE 50. (See exhibit six for the domestic tariff structure).

Although the project will provide only 60,000 lines initially, we calculated the profitability of the project on the assumption that starting in year eight, an additional 60,000 lines will be added at the rate of 10,000 per year and at the cost of 2.5 million dollars per 10,000 lines. This simulation raised the FIRR to 9.2 percent and the EIRR to 7.6 percent. Reverting back to the assumption of the initial 60,000 line project we obtain the results shown below.

In alternative I we assume that the basic scenario is changed by doubling the current subscription fee while everything else remains as in the basic scenario. The FIRR rises to 12.3 percent and the EIRR rises to 10.5 percent. This change would improve the financial net present value significantly and provide a NPV, at 12 percent, of LE 1.4 million. This relatively small increase of LE 50 per year would provide a significant improvement in ARENTO financial status. Alternative II assumes that per call fees on local and national service are increased to generate twice the current revenue. This would also raise the FIRR to a little over 12 percent, and the net present value to a positive LE 375 thousands. The EIRR rises to 10 percent. Alternative III, which increases the share of priority telephone installations from 30 percent to 50 percent, results on an FIRR of 12.9 percent and an EIRR of 10.6 percent. In alternative IV, we assume the introduction of an annual fee of LE 25, LE 50 and LE 100 for telephones with national, international operator assisted and direct dial features, respectively. This scenario gives a financial internal rate of return of 9.4 percent and an economic rate of return of 7.8 percent.

These simulations show that although the direct benefits of the project, at current rates are probably not sufficient to cover all of ARENTO's costs, the required increase in revenue to make the project financially viable are within reach. The economic figures we have presented are somewhat weaker, but as noted above our economic calculations underestimate significantly the economic potential of the project. We agree with most analysts that in a country such as Egypt with such a low density of telephones the economic value of the project is significantly higher than the directly quantifiable benefits we have identified. Our conclusion, however, is not that we should ignore the financial calculations because the project is justified on economic criteria. Rather, our interpretation of this relatively higher economic value is that the users would be willing to pay somewhat more than they are currently paying because they benefit a great deal more than they are charged for today.

We conclude that the project is financially and economically justified with the proviso that ARENTO needs to commission a study to analyze its rate structure and recommend the required adjustments to generate enough revenue to enable ARENTO to finance the required expansion by borrowing in the market place. We reiterate, that our analysis assumes that the benefit stream of the project is obtained on the assumption that, even in the absence of an adjustment in the rate structure, current rates are raised to compensate for inflation.

TABLE 1. DISTRIBUTION OF PROJECT LINE CAPACITY
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Percent:		1	0.99	DISTRIBUTION OF TELEPHONE LINES					DISTRIBUTION OF TELEPHONE LINES					DISTRIBUTION OF TELEPHONE LINES		
Project						0.45					0.55					
Year	TOTAL LINES	TELEPHONES		----------HOUSEHOLD----------					0	OTHER: (PS,G,BUS.;		0.05	0.45	0.5 **	TELEX	DATA
				BASIC	PRIORTY	NATIONAL	INTRNATOaa	INTRNATdd		BASIC	PRIORTY	NATIONAL	INTRNATOa	INTRNATdd		
				0.3465	0.099	0.11583	0.010692	0.002673		0.3465	0.198	0.14157	0.013068	0.003267	0.01	0
1	0	0		0	0	0	0	0		0	0	0	0	0	0	0
2	0	0		0	0	0	0	0		0	0	0	0	0	0	0
3	0	0		0	0	0	0	0		0	0	0	0	0	0	0
4	15000	14850		5146	1470	1720	159	40		5146	2940	2102.3145	194.0598	48.51495	150	0
5	30000	29700		10291	2940	3440	318	79		10291	5881	4204.629	388.1196	97.0299	300	0
6	45000	44550		15437	4410	5160	476	119		15437	8821	6306.9435	582.1794	145.54485	450	0
7	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
8	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
9	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
10	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
11	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
12	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
13	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
14	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
15	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
16	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
17	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
18	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
19	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
20	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
21	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
22	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
23	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
24	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
25	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
26	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
27	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0
28	60000	59400		20582	5881	6880	635	159		20582	11761	8409.258	776.2392	194.0598	600	0

** Distribution of OTHER Services. About 30 % of sub. are reg. as bus. (DETECON)

Current Telephone Capacity: 1,454,695 Project Capacity: 60,000 Project Share: 0.0412457594

Share Priority: 0.3 0.3 1

50

TABLE 2. UNIT INSTALLATION CHARGES FOR TELECOMUNICATIONS SERVICES
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Percent: Project Year	DISTRIBUTION OF TELEPHONE INSTALLATION FEES					DISTRIBUTION OF TELEPHONE INSTALLATION FEES						
	HOUSEHOLD					OTHER					TELEX	DATA
	BASIC	PRIORTY	NATIONAL	INTRNATIoaa	INTRNATdd	BASIC	PRIORTY	NATIONAL	INTRNATIoaa	INTRNATdd		
	200	1000	9	0	500	500	3500	9	150	500	4500	
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	200	1000	9	0	500	500	3500	9	150	500	4500	0
5	200	1000	9	0	500	500	3500	9	150	500	4500	0
6	200	1000	9	0	500	500	3500	9	150	500	4500	0
7	200	1000	9	0	500	500	3500	9	150	500	4500	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 3. UNIT ANNUAL TELECOMMUNICATION SUBSCRIPTION FEES(LE)
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Project Year	DISTRIBUTION OF TELEPHONE SUBSCRIPTION FEES -- BASIC -- Increase Factor				DISTRIBUTION OF TELEPHONE SUBSCRIPTION FEES -- ADDITIONAL SERVICES --				
	HOUSHLD	PUB.SERV	GOVERNT	OTHER	NATIONAL	INTERNoa	INTERNdd	TELEX	DATA
	30	50	50	50	0	0	0	1000	0
1									
2									
3									
4	30	50	50	50	0	0	0	1000	0
5	30	50	50	50	0	0	0	1000	0
6	30	50	50	50	0	0	0	1000	0
7	30	50	50	50	0	0	0	1000	0
8	30	50	50	50	0	0	0	1000	0
9	30	50	50	50	0	0	0	1000	0
10	30	50	50	50	0	0	0	1000	0
11	30	50	50	50	0	0	0	1000	0
12	30	50	50	50	0	0	0	1000	0
13	30	50	50	50	0	0	0	1000	0
14	30	50	50	50	0	0	0	1000	0
15	30	50	50	50	0	0	0	1000	0
16	30	50	50	50	0	0	0	1000	0
17	30	50	50	50	0	0	0	1000	0
18	30	50	50	50	0	0	0	1000	0
19	30	50	50	50	0	0	0	1000	0
20	30	50	50	50	0	0	0	1000	0
21	30	50	50	50	0	0	0	1000	0
22	30	50	50	50	0	0	0	1000	0
23	30	50	50	50	0	0	0	1000	0
24	30	50	50	50	0	0	0	1000	0
25	30	50	50	50	0	0	0	1000	0
26	30	50	50	50	0	0	0	1000	0
27	30	50	50	50	0	0	0	1000	0
28	30	50	50	50	0	0	0	1000	0

TABLE 4. ANNUAL REVENUE FROM EQUIPMENT INSTALLATION
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Percent: Project Year	ANNUAL TOTAL	TELEPHONES HOUSEHOLD BASIC	HOUSEHOLD PRIORITY	HOUSEHOLD NATIONAL	HOUSEHOLD INTRNATaaa	TELEPHONES INTRNATdd	TELEPHONES OTHER BASIC	OTHER PRIORITY	OTHER NATIONAL	OTHER INTRNATaaa	TELEPHONES INTRNATdd	TELEX	DATA
1													
2													
3													
4	17733444	1440747	2646270	15481	0	19847	2572763	10291050	18921	29109	24257	675000	0
5	17733444	1440747	2646270	15481	0	19847	2572763	10291050	18921	29109	24257	675000	0
6	17733444	1440747	2646270	15481	0	19847	2572763	10291050	18921	29109	24257	675000	0
7	17733444	1440747	2646270	15481	0	19847	2572763	10291050	18921	29109	24257	675000	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													

TABLE 5. ANNUAL REVENUES FROM BASIC SERVICE FEES
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Project Year	DISTRIBUTION OF TELEPHONE SUBSCRIPTION FEES -- BASIC					DISTRIBUTION OF TELEPHONE SUBSCRIPTION FEES -----ADDITIONAL SERVICES------				
	TOTAL	HOUSEHOLD	PUB.SERV	GOVERNT	BUSINESS	NATIONAL	INTERNoa	INTERNdd	TELEX	DATA
1	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	
4	756845	190470	20419	183769	204188	0	0	0	150000	
5	1513691	396941	40838	367538	408375	0	0	0	300000	
6	2270536	595411	61256	551306	612563	0	0	0	450000	
7	3027381	793881	81675	735075	816750	0	0	0	600000	
8	3027381	793881	81675	735075	816750	0	0	0	600000	
9	3027381	793881	81675	735075	816750	0	0	0	600000	
10	3027381	793881	81675	735075	816750	0	0	0	600000	
11	3027381	793881	81675	735075	816750	0	0	0	600000	
12	3027381	793881	81675	735075	816750	0	0	0	600000	
13	3027381	793881	81675	735075	816750	0	0	0	600000	
14	3027381	793881	81675	735075	816750	0	0	0	600000	
15	3027381	793881	81675	735075	816750	0	0	0	600000	
16	3027381	793881	81675	735075	816750	0	0	0	600000	
17	3027381	793881	81675	735075	816750	0	0	0	600000	
18	3027381	793881	81675	735075	816750	0	0	0	600000	
19	3027381	793881	81675	735075	816750	0	0	0	600000	
20	3027381	793881	81675	735075	816750	0	0	0	600000	
21	3027381	793881	81675	735075	816750	0	0	0	600000	
22	3027381	793881	81675	735075	816750	0	0	0	600000	
23	3027381	793881	81675	735075	816750	0	0	0	600000	
24	3027381	793881	81675	735075	816750	0	0	0	600000	
25	3027381	793881	81675	735075	816750	0	0	0	600000	
26	3027381	793881	81675	735075	816750	0	0	0	600000	
27	3027381	793881	81675	735075	816750	0	0	0	600000	
28	3027381	793881	81675	735075	816750	0	0	0	600000	

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TABLE 6. ANNUAL REVENUES
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Project Year	EQUIPMENT INSTAL.	ANNUAL BASIC FEES	ANNUAL FEES FOR NATIONAL + INTERNAT. FEATURES	ABOVE QUOTA LOCAL CALLS	NATIONAL TOLL	TOTAL DOMESTIC REVENUE	INTERNATIONAL TOTAL REVENUE	2,475 Subsidies	TOTAL REVENUE
+ local +national use Revenue incr. factor	0		0	1304397	1505470	10146700	15183595	2,475	
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	17,733,444	756,845	0	326,099	376,368	2,536,675	3,795,899	619	24,066,637
5	17,733,444	1,513,691	0	652,199	752,735	5,073,350	7,591,798	1,237	30,399,830
6	17,733,444	2,270,536	0	978,298	1,129,103	7,610,025	11,387,696	1,856	36,733,022
7	17,733,444	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	43,066,215
8	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
9	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
10	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
11	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
12	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
13	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
14	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
15	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
16	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
17	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
18	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
19	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
20	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
21	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
22	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
23	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
24	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
25	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
26	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
27	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
28	0	3,027,381	0	1,304,397	1,505,470	10,146,700	15,183,595	2,475	25,332,770
TOTAL	70933777.92	71143453.5	0	30653332.8	35378550.1	238447453.9	356814486.89	58156.520783	666253875.
Present Value at: 0.12	38338381.75	14215314.925	0	6124903.39	7069058.46	47644659.96	71295812.213	11620.370072	157290474.
Share of Total	0.243742552	0.0903761972	0	0.03894007	0.04494269	0.302908743	0.453274825	0.0000738784	1

TABLE 7. UNIT EQUIPMENT COST
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Project Year	DISTRIBUTION OF TELEPHONE UNIT EQUIPMENT COST					DISTRIBUTION OF TELEPHONE UNIT EQUIPMENT COST						
	HOUSEHOLD					OTHER					TELEX	DATA
	BASIC	PRIORTY	NATIONAL	INTRNATonaa	INTRNATdd	BASIC	PRIORTY	NATIONAL	INTRNATonaa	INTRNATdd		
	50	50	0	0	0	50	50	0	0	0	2000	2000
1	50	50				50	50				2000	
2	50	50				50	50				2000	
3	50	50				50	50				2000	
4	50	50				50	50				2000	
5	50	50				50	50				2000	
6	50	50				50	50				2000	
7	50	50				50	50				2000	
8	50	50				50	50				2000	
9	50	50				50	50				2000	
10	50	50				50	50				2000	
11	50	50				50	50				2000	
12	50	50				50	50				2000	
13	50	50				50	50				2000	
14	50	50				50	50				2000	
15	50	50				50	50				2000	
16	50	50				50	50				2000	
17	50	50				50	50				2000	
18	50	50				50	50				2000	
19	50	50				50	50				2000	
20	50	50				50	50				2000	
21	50	50				50	50				2000	
22	50	50				50	50				2000	
23	50	50				50	50				2000	
24	50	50				50	50				2000	
25	50	50				50	50				2000	
26	50	50				50	50				2000	
27	50	50				50	50				2000	
28	50	50				50	50				2000	

TABLE 8. QUANTITY OF EQUIPMENT SOLD
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Project Year	DISTRIBUTION OF TELEPHONE EQUIPMENT					DISTRIBUTION OF TELEPHONE EQUIPMENT						
	HOUSEHOLD					OTHER					TELEX	DATA
	BASIC	PRIORTY	NATIONAL	INTERNATaaa	INTERNATdd	BASIC	PRIORTY	NATIONAL	INTERNATaaa	INTERNATdd		
1	0	0				0	0				0	
2	0	0				0	0				0	
3	0	0				0	0				0	
4	5145.525	1470.15				5145.525	2940.3				150	
5	5145.525	1470.15				5145.525	2940.3				150	
6	5145.525	1470.15				5145.525	2940.3				150	
7	5145.525	1470.15				5145.525	2940.3				150	
8	0	0				0	0				0	
9	0	0				0	0				0	
10	0	0				0	0				0	
11	0	0				0	0				0	
12	0	0				0	0				0	
13	0	0				0	0				0	
14	0	0				0	0				0	
15	0	0				0	0				0	
16	0	0				0	0				0	
17	0	0				0	0				0	
18	0	0				0	0				0	
19	0	0				0	0				0	
20	0	0				0	0				0	
21	0	0				0	0				0	
22	0	0				0	0				0	
23	0	0				0	0				0	
24	0	0				0	0				0	
25	0	0				0	0				0	
26	0	0				0	0				0	
27	0	0				0	0				0	
28	0	0				0	0				0	

TABLE 9. EQUIPMENT COST
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTORE

Project Year	DISTRIBUTION OF TELEPHONE EQUIPMENT						DISTRIBUTION OF TELEPHONE EQUIPMENT									TOTAL COST OF EQUIPMENT SOLD
	HOUSEHOLD						OTHER						TELEX		DATA	
	BASIC	PRIORITY	NATIONAL	INTERNATIONAL	INTRANATdd		BASIC	PRIORITY	NATIONAL	INTERNATIONAL	INTRANATdd		???		2000	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	257276	73568	0	0	0	0	257276	147015	0	0	0	0	300000	0	0	1035075
5	257276	73568	0	0	0	0	257276	147015	0	0	0	0	300000	0	0	1035075
6	257276	73568	0	0	0	0	257276	147015	0	0	0	0	300000	0	0	1035075
7	257276	73568	0	0	0	0	257276	147015	0	0	0	0	300000	0	0	1035075
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 10. PROJECT COSTS (LE 000)
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Project Year	--- Buildings --- Land 10000	Constr.	Switches	Outside Plant	Technical Assistance	Contingency	Equipment Costs	Operating Expenses 369241619	Taxes + Duties 9	TOTAL COSTS 000 LE
1	0	5000	1763	1269	493.5	0	0	0	0	8525
2	0	4000	15863	11421	4441.5	0	0	0	0	35725
3	0	2000	23500	16920	1880	4700	0	0	0	49000
4	0	0	5875	4230	1645	0	1035	4759	2	17547
5	0	0	0	0	0	0	1035	9519	5	10358
6	0	0	0	0	0	0	1035	14278	7	15320
7	0	0	0	0	0	0	1035	19037	9	20082
8	0	0	0	0	0	0	0	19037	9	19047
9	0	0	0	0	0	0	0	19037	9	19047
10	0	0	0	0	0	0	0	19037	9	19047
11	0	0	0	0	0	0	0	19037	9	19047
12	0	0	0	0	0	0	0	19037	9	19047
13	0	0	0	0	0	0	0	19037	9	19047
14	0	0	0	0	0	0	0	19037	9	19047
15	0	0	0	0	0	0	0	19037	9	19047
16	0	0	0	0	0	0	0	19037	9	19047
17	0	0	0	0	0	0	0	19037	9	19047
18	0	0	0	0	0	0	0	19037	9	19047
19	0	0	0	0	0	0	0	19037	9	19047
20	0	0	0	0	0	0	0	19037	9	19047
21	0	0	0	0	0	0	0	19037	9	19047
22	0	0	0	0	0	0	0	19037	9	19047
23	0	0	0	0	0	0	0	19037	9	19047
24	0	0	0	0	0	0	0	19037	9	19047
25	0	0	0	0	0	0	0	19037	9	19047
26	0	0	0	0	0	0	0	19037	9	19047
27	0	0	0	0	0	0	0	19037	9	19047
28	0	0	0	0	0	0	0	19037	9	19047

TABLE 11. SUMMARY OF FINANCIAL AND ECONOMIC ANALYSIS
TELECOMMUNICATIONS IV PROJECT
PYRAMIDS WEST AND BAB EL KHALK EXCHANGES AND RELATED INFRASTRUTURE

Project Year	REVENUE	COST	NET REVENUE
1	0	8,525,000	(8,525,000)
2	0	35,725,000	(35,725,000)
3	0	49,000,000	(49,000,000)
4	24,066,637	17,546,708	6,519,929
5	30,399,830	10,558,341	19,841,489
6	36,733,022	15,319,974	21,413,048
7	43,066,215	20,081,607	22,984,608
8	25,332,770	19,046,532	6,286,238
9	25,332,770	19,046,532	6,286,238
10	25,332,770	19,046,532	6,286,238
11	25,332,770	19,046,532	6,286,238
12	25,332,770	19,046,532	6,286,238
13	25,332,770	19,046,532	6,286,238
14	25,332,770	19,046,532	6,286,238
15	25,332,770	19,046,532	6,286,238
16	25,332,770	19,046,532	6,286,238
17	25,332,770	19,046,532	6,286,238
18	25,332,770	19,046,532	6,286,238
19	25,332,770	19,046,532	6,286,238
20	25,332,770	19,046,532	6,286,238
21	25,332,770	19,046,532	6,286,238
22	25,332,770	19,046,532	6,286,238
23	25,332,770	19,046,532	6,286,238
24	25,332,770	19,046,532	6,286,238
25	25,332,770	19,046,532	6,286,238
26	25,332,770	19,046,532	6,286,238
27	25,332,770	19,046,532	6,286,238
28	25,332,770	19,046,532	6,286,238

	FINANCIAL ANALYSIS	ECONOMIC ANALYSIS
ALTERNATIVE V		
TOTAL BENEFITS	1053990066	1053894127
TOTAL COSTS	948484931	958087277
B/C RATIO	1.1111	1.099998
NPV w/r= 0.12	-11391442	-20269385
IRR w/GUE 0.15	0.0923	0.0761

		FINANCIAL ANALYSIS	ECONOMIC ANALYSIS
BASIC CASE			
TOTAL BENEFITS		666,253,875	666,175,719
TOTAL COSTS		556,733,795	566,511,298
B/C RATIO		1.197	1.176
NPV w/r=	0.12	(12,817,755)	(21,713,489)
IRR w/GUESS=	0.15	0.0882	0.0725
ALTERNATIVE I			
TOTAL BENEFITS		737397329	737339172
TOTAL COSTS		556733795	566511298
B/C RATIO		1.325	1.302
NPV w/r=	0.12	1397560	-7498174
IRR w/GUESS=	0.15	0.1231	0.1053
ALTERNATIVE II			
TOTAL BENEFITS		732285758	732227601
TOTAL COSTS		556733795	566511298
B/C RATIO		1.315	1.293
NPV w/r=	0.12	376207	-8519527
IRR w/GUESS=	0.15	0.1208	0.1032
ALTERNATIVE III			
TOTAL BENEFITS		695735283	695677127
TOTAL COSTS		556733794	566511298
B/C RATIO		1.25	1.228
NPV w/r=	0.12	3116395	-5779339
IRR w/GUESS=	0.15	0.1286	0.1062
ALTERNATIVE IV			
TOTAL BENEFITS		677723986	677665829
TOTAL COSTS		556733795	566511297
B/C RATIO		1.217	1.1962
NPV w/r=	0.12	-10525889	-19421623
IRR w/GUESS=	0.15	0.0944	0.0783

ASSUMPTIONS

BASIC CASE	Increase Factor
Basic Subscription Fee	0.00 set = 0
Fees on Additional Use	0.00 set = 0
Share Priority Phones	0.30 set = .3
Additional Features Annual Fees	0.00 set = 0
ALTERNATIVE I	
Basic Subscription Fee	2.00 set = 1
Fees on Additional Use	1.00 set = 0
Share Priority Phones	1.00 set = .3
Additional Features Annual Fees	1.00 set = 0
ALTERNATIVE II	
Basic Subscription Fee	1.00 set = 0
Fees on Additional Use	2.00 set = 1
Share Priority Phones	1.00 set = .3
Additional Features Annual Fees	1.00 set = 0
ALTERNATIVE III	
Basic Subscription Fee	1.00 set = 0
Fees on Additional Use	1.00 set = 0
Share Priority Phones	1.67 set = .5
Additional Features Annual Fees	1.00 set = 0
ALTERNATIVE IV	
Basic Subscription Fee	1.00 set = 0
Fees on Additional Use	1.00 set = 0
Share Priority Phones	1.00 set = .3
Additional Features Annual Fees	2.00 set = 1

SOCIAL SOUNDNESS ANALYSIS

A basic assumption of this project and past telecommunications projects is that reliable telephone service is essential for growth in a modern industrial society. Business and banking transactions, government services, tourism, emergency police and medical services, all become faster and more efficient with access to reliable telecommunications.

The Bab El Khalk and Pyramids West areas of Cairo are growing areas. Extensive construction has taken place. Numerous small businesses, hotels and tourist facilities have been established. Both areas are at this time primarily residential (Pyramids West - 72% residential; Bab El Khalk - 58% residential). The economic growth of these areas is being hindered by inadequate access to telecommunications.

A 1984 survey of telephone service in several areas of Cairo demonstrated the need for improved service in Bab El Khalk and the Pyramids West areas. It showed that businesses and residences in these areas have been on waiting lists for telephone services for several years. Businesses which did not have their own telephones would use the phones of neighboring businesses or go in person to transact business. Citizens of these areas ranked better phone service as an important need, one for which they were willing to pay.

It was partly because of the serious inadequacy of access to telephone service revealed in this survey that ARENTO selected Bab El Khalk and Pyramids West as target areas. Both of these areas have enormous potential for expansion of business activity, but poor telecommunications is a serious deterrent to such expansion.

Because access to improved services will not occur until late in the project life, the project timeframe limits the use of these two areas as a case study to show the changes in how telephones are used and how the economy is transformed as a result of greatly improved services. However, since three previous telecommunications projects are already completed, it is possible to find an area included under a previous project which had characteristics similar to Bab El Khalk or Pyramids West before the project began. By comparing such an area now with the current situation in this project's target areas, one can identify more clearly the benefits and the beneficiaries of telecommunications. Part of the funding set aside for evaluation will/may be used to hire an Egyptian social research firm to carry out such a comparison study. It might be expected to answer such questions as:

- What are the sizes of businesses which have telephones, and to what uses do they put them? Are there specific examples of the ways in which telephone service allows them to operate more efficiently?

- Does the amount of business activity increase with telephones? What kind of enterprises (e.g., small, medium, or large) increase the greatest?

- Can one measure any impact on employment?

- Do government offices typically have telephones? Health centers? Schools? How are they used - for what purposes?

- What are the characteristics of residences with phones and how are the phones used?

MANAGERIAL/ADMINISTRATIVE ANALYSIS

A. ORGANIZATION:

The Arab Republic of Egypt National Telecommunications (ARENTO) is the Government of Egypt's authority responsible for the planning, engineering, procurement, distribution, operation and maintenance of the Egyptian telecommunications system. ARENTO is a semi-autonomous agency which reports directly to the Minister of Transport, Communications and Marine Transport.

Exhibit 14 depicts the present internal organizational structure of ARENTO. The Chairman presides over a Board of Directors composed largely of representatives from governmental ministries, and is the chief executive officer of ARENTO. While six staff offices of various sizes and responsibilities report directly to the Chairman, his principal line managers are the deputy chairmen for Operations & Maintenance, for the Planning and Execution of Projects, and for Administrative, Financial and Commercial Affairs.

The Deputy Chairman for Operations and Maintenance is responsible for the day-to-day operations and maintenance of all telephone, telegraph and telex services. The seven sectors within Operations and Maintenance include four regional telephone service sectors in Cairo, Alexandria, and Upper and Lower Egypt; and three other service sectors for International Operations, Transmission Maintenance, and Inspection Maintenance. The four geographical telephone service sectors are further divided into zones which may be further sub-divided into districts. The Operations and Maintenance sector employs 82 percent of the ARENTO workforce and is by far the largest single functional grouping within the organization.

The Deputy Chairman for the Planning and Execution of Projects is in charge of what is essentially a centralized engineering function. He and his staff plan, design, supervise, and execute the installation of new facilities for the telecommunications system. His sector accounts for 11 percent of ARENTO employees. In addition, for construction projects outside of Cairo and Alexandria, laborers from the Operations and Maintenance sector may be supervised by the Projects Department.

Finally, the Deputy Chairman for Administrative, Financial and Commercial Affairs is responsible for establishing policies, implementing procedures, and controlling the financial, commercial and personnel activities of ARENTO. Also reporting to this Deputy Chairman is the Telecommunications Training Sector and the Stores and Purchases sector.

B. ARENTO PROJECT MANAGEMENT:

We anticipate that ARENTO will assign a project manager to head a team of outside plant and switching engineers, financial managers and a contracts specialist to manage the daily project progress. This team will report directly to the ARENTO Vice Chairman of Planning.

C. OPERATIONS AND MAINTENANCE:

To effectively operate and maintain the two new switching systems and related outside plant, ARENTO will assign six switching systems engineers, six outside plant engineers, 24 outside plant repair technicians and six administrative employees.

The operation and maintenance staffs to be assigned to these new exchanges will be trained to operate and maintain the new equipment. The training for the digital switching systems will be conducted mainly in the United States. The outside plant training will be provided in Egypt. The operating and maintenance staff will be trained using classroom instruction, on-the-job study instruction and hands on experience. The training will be provided sufficiently in advance of the operation of the exchanges so that ARENTO staff will be knowledgeable about the equipment and procedure to allow their participation in the provisional acceptance and cutover of the exchanges.

In addition the turnkey DSS and OSP contractors will be required to maintain the new equipment for a period of one-year starting from provisional acceptance and ending at the final acceptance by ARENTO of the systems.

C. USAID:

The Power Systems Group within the Office of Urban Administration and Development (DR/UAD) will have monitoring responsibilities for AID. The Group has been responsible for implementation of the Telecommunications I, II and III projects and has developed an excellent working relationship with all levels of ARENTO personnel. The assigned personnel are experienced in the design, construction, operation and maintenance of telecommunications systems, and should provide sufficient AID monitoring support for this project.

CONCLUSIONS:

ARENTO has many years of extensive and successful experience in the construction, operation and maintenance of telecommunications systems. The proposed project is designed to build on this experience. ARENTO over the years, has demonstrated a capability to effectively manage the implementation of much larger and more complex telecommunications projects. At the same time, the available DR/UAD staff should be sufficient to provide the necessary AID monitoring support. Accordingly, the project appears to be administratively feasible.

ENVIRONMENTAL ANALYSIS:

This project is a continuation of the efforts in the telecommunications sector similar to that in the completed Telecommunications I, II and III projects. The Telecommunications IV Project consists of the installation of two digital switching systems and related outside plant. Physical activity will include construction of two buildings and some outside work mainly involving excavation in streets and, after completion of cable installation, restoration of the sites for traffic use.

The Initial Environmental Examination (IEE) performed in May 1979 and reviewed by the Environmental Coordinator for each project subsequently resulted in a Negative Determination in compliance with the requirements of 22 CFR 216, "AID Environmental Procedures".

Since this project is identical in basic scope as the other parts of the project for which the IEE's resulted in "Negative Determinations"; no further information would be gained by additional studies or examinations for this continuation of the project. Therefore, the Mission Environmental Officer approves, and requests AID/PD/ENV concur with, a negative determination for the Telecommunications IV Project.

Although the net effect of the above discussion is a negative determination as to the need for an environmental assessment, attention will be paid throughout the project to minimizing any negative effect by: ensuring civil works contractors use barriers and or warning lights to protect pedestrians and vehicles from open ditches; expediting the resurfacing of streets and side walks following cable installation; part of the training program will attempt to instill pride in a clean and pleasant environment and will include housekeeping instructions for the exchange buildings, provision will be made at the sites for trash disposal including trash bins and containers and trucks for removal to offsite disposal; and adequate provision will be made for clean-up of spills from the fuel storage tanks and for maintenance of piping for fuel to generators.

CONCLUSION:

Since the Telecommunications IV project is identical in scope to the existing Telecommunications I, II and III projects for which the IEE's resulted in "Negative Determinations", the Mission Environmental Officer approves and requests ND/PD/ENV concur with, a negative determination for this project.

TELECONSULT RECOMMENDATION SUMMARY

Teleconsult Recommendation	ARENTO Comment and/or Action
1. Modify purpose level of log frame: Add goal level assumption: "ARENTO will seriously consider implementation of the consultant's recommendation." (P 3)	1. ARENTO agrees to the addition of a third assumption as stated. However, ARENTO presently studies all recommendations presented by the Consultants and implements those as are considered in the best interest of ARENTO.
2. Provide additional OSP inspectors. (P 7)	2. ARENTO recognizes the need and has increased the number of inspectors within the last six months.
3. Reform payroll system to pay employees by check. (P 8)	3. In a cash society such as Egypt the use of commercial banks by the average employee is very limited. Top management only are being paid by check, or employees who have bank accounts.
4. Computerize personnel files and financial forecasting system. (P 8)	4. USAID has agreed to supply ARENTO with a new mini-computer for payroll and personnel systems. Software for personnel files is being developed. The financial forecasting system will be part of the long-range financial plan requested by ARENTO as part of the financial systems consultancy.
5. Include past due to balances in current billing printouts. (P 9)	5. Past due balances fall within the scope of the Unified Billing System. A specification has been proposed and awaits ARENTO approval of the Consultant extension.
6. Establish Data Management Sector Chief, plan now where to locate a computer processing center, and add a programming force. (P 9)	6. ARENTO will take into consideration the centralization of the computers under a Sector Chief when the number of computers and the organization size justifies. Training is presently going forward on the training of ARENTO personnel to assume the necessary computer program and design functions.
7. Provide additional hardware for O&M (P 12) - Minicomputers for fault reporting - Test equipment and repair part for crossbar offices - Set up program to replace all existing service wire installations	7. ARENTO strongly agrees and recognizes the need for additional O&M test equipment. However, ARENTO does not have the required funds and will seek assistance through future USAID funding.
8. Install Halon fire extinguishing system. (P 12)	8. Halon gas is not now available in Egypt. In addition, the consultant and contractors have stated that the manual fire extinguishing equipment we presently have is adequate in case of equipment fires.
9. Further investigate quality control problems of cable placement and splicing. (P 14)	9. With the addition of more inspectors and the gaining of more experience, we have seen improvement in the quality of the cable placement and splicing and are able to exercise more quality control.
10. Try to reduce delays in obtaining construction permits from government bodies. (P 15)	10. ARENTO presently works with the contractors to reduce delays in obtaining required permits from the various government organizations. Delays as a result of not havin: the required permits has been minimal.
11. Put more emphasis on training regarding installation of outside plant. (P 15)	11. ARENTO agrees that more formal training is required regarding the installation of outside plant and agrees to put more emphasis on this requirement..

Exhibit 1

TELECONSULT RECOMMENDATION SUMMARY (CONT'D)

Teleconsult Recommendation	ARENTO Comment and/or Action
12. FACII should take over the responsibility for installation and maintaining the service wire and the telephone instruments in each ESS exchange area during the maintenance period. (P 15)	12. ARENTO does not agree. ARENTO personnel has gained more experience and the installation rate and qaulity of the installation and maintenance performed has improved. If this responsibility was given FACII, ARENTO would never gain the experience it needs.
13. Consider adding water treatment to the air conditioning system. (P 16)	13. ARENTO strongly supports adding water treatment facilities, however, funding is not available at this time. Funding for water treatment will be requested in future funding.
14. Increase tariff and toll rates. (P 18)	14. Tariff and toll rates are increased from time to time to the extent that service improvement and government policiies permit.
15. Take advantage of special subscriber features offered by the new electronic switching exchanges to obtain additional revenues as soon as adequate billing arrangement are available. (P 19)	15. ARENTO is now offering special subscriber features. Since October 13, 1984, special services (push button, abbreviated dialling, follow-me, hot line and wake up) are offered to those subscribers in terminal exchanges in which these services can be provided.
16. Keep detailed accounting records of disbursement from all sources. (P 19)	16. ARENTO records of disbursements are kept in great dutail, according to Unified Billing System of Accounts and the Ministry of Finance regulations.
17. Delete Covenant E: the transfer of LE 20 million from debt to equity. (P 19)	17. This is a matter for consideration by the government of Egypt and USAID.
18. Change accounting covenants to conditions prece[illegible]t. (P 19)	18. This is a matter for consideration by the government of Egypt and USAID.
19. Adhere to ADLI organizational recommendations including more delegation of decision-making. (P 20)	19. This is a matter for further study and consideration by ARENTO.
20. ATTI consultant should continue to manage the ARENTO training program. (P 20)	20. ATTI will continue to support the ARENTO training program through the contract period.
21. Keep training center clean. (P 21)	21. Effort is being made to improve conditions at the training center.
22. Provide five more classrooms at the training center.	22. ARENTO supports this recommendations and will provide when funds are available.
23. Provide better training aids. (P 21)	23. ARENTO supports this recommendation and will provide when funds are available. It may be noted also that during the last year the training center added new training aids worth about LE 105,000.
24. Arrange adequate housing and food for out-of-town students. (P 21)	24. ARENTO supports this recommendation and will provide when funds are available. In the same way ARENTO have now established a training center in Alexandria to conduct training for the Alexandria and Delta staff.
[illegible] Arrange for transportation to and from the training center for all students. (P 21)	25. ARENTO supports this recommendation and will provide when funds are available.

Exhibit 1

TELECONSULT RECOMMENDATION SUMMARY (CONT'D)

Teleconsult Recommendation	ARENTO Comment and/or Action
26. Establish a student support office. (P 21)	26. ARENTO supports this recommendation and will provide when funds are available.
27. Maintain a cadre of instructors who can assist or replace the consultants. (P 21)	27. ARENTO supports this recommendation and will pursue the training of personnel to assume this responsibility.
28. Confer various levels of management to determine training needs. (P 21)	28. ARENTO supports this recommendation and will initiate contacts to identify training needs.
29. Seek a higher budget allocation for training. (P 22)	29. ARENTO supports this recommendation and will provide when funds are available.
30. Stay current on training methods. (P 22)	30. ARENTO supports this recommendation and will pursue with other national and international training organizations.
31. Keep library up to date. (P 22)	31. ARENTO supports this recommendation and will initiate action.
32. Authorize four additional consultants for the training center. (P 22)	32. The training center recognizes the need for only two (2) more consultant experts; one in program development and one in method developing.
33. Establish a small cash fund for incidental expenses administered by the consultant team leader. (P 22)	33. The training center manager presently has a small cash fund for incedental expenses; this existing procedure meets our requirements.
34. Extend the 24 month ADLI contract period to allow use of the remaining manmonths of effort already funded.	34. With approval of Amendment No. 2 (36 manmonths), the contract period will be extended through August 1985 using all remaining manmonths (excludes Raytheon Microwave consultant). Additional manmonths are also being requested in Amendment No. 3 to complete all Phase II tasks.
35. Consider extending the FACII contract to include station installation work.	35. See Teleconsult Recommendation No. 12.
36. Use existing project funds to: - provide standby generators to 12 x-bar exchanges (P 25) - replace the airconditioning units at 3 x-bar exchanges (P 25 - establish switched data network (P 25) - accelerate station installation (P 25)	36. No existing funds are available for new projects. With Heliopolis II, Gleem OSP expansion, Cairo jucntion requirements and outstanding V.O.'s, funding available under Phase II is exhausted. The projects listed will be included as Phase III requests for funding.
37. Each office of 10,000 lines or more should have an installation and repair technician. (P 37)	37. An immediate need of additional consultants to assist our personnel in the assignment and installation activities has been recognized for the Alexandria exchanges. Plans to expand this program into other exchanges are under consideration.
38. Each crossbar exchange of 10,000 lines or more should have a crossbar technician. Standard maintenance procedures should be developed. (P 38)	38. ARENTO now has enough experienced engineers and technicians in X-bar exchanges. Whenever we feel the need of additional consultants, we will bring them from the country of equipment origin.
39. Award contract to provide at least 10 outside plant technicians. (P 38)	39. Immediate needs of additional cable maintenance technicians has been recognized for our Alexandria exchanges. If these efforts prove to be successful a request for additional technicians will be considered.

Exhibit 1

TELECONSULT RECOMMENDATION SUMMARY (CONT'D)

Teleconsult Recommendation	ARENTO Comment and/or Action
40. A system and adequate funds should be provided to repair test equipment.	40. A well organized inventory control program of spare parts and test equipment including in-country repairs, and repairs and return procedrues is needed. Assistance is requested to manage such a department.
41. A utility coordinating committee should be established to stop the damage being done to other utilities plant by the water authority, electro-power authority, sewer authority, and ARENTO. (P 38)	41. This is a matter for consideration between ARENTO and the other utility authorities.
42. Maintain complete installation and maintenance records; establish work order procedure. (P 39)	42. It is intended to utilise the requested cable maintenance consultants to assist ARENTO in building accurate plant records in our new 1AESS exchanges.
43. Establish a group of building industry representatives. (P 39)	43. ARENTO will raise this subject with the Ministry of Housing and will participate with them to include telecommunications requirements in their building specifications.
44. Turn new facilities over to O&M department. (P 39)	44. ARENTO O&M personnel have already participated in the installation, testing and acceptance of Maadi exchange and all the following projects. It is our plan to have O&M personnel participate in the installation testing and acceptance of all new projects for which they will assume the maintenance responsibility after acceptance.
45. Reform spare parts system, transfer to O&M department. (P 39)	45. ARENTO, with consultant support, is rpesently developing and implementing a computerized spare parts inventory and control procedure. With implementation, centralization of the authority in a single organization, such as O&M, will be studied.
46. Organize a system of plant status reporting. (P 40)	46. A centralized plant status reporting system or network analysis department is under consideration. Efforts to utilize available information of the new 1AESS exchanges are underway and funds are required to build a centralized, mechanized reporting system to include all exchanges into this program.
47. Greater emphasis should be placed on annual construction program procedures to enable ARENTO to become self-sufficient in managing the large expension programs anticipated over the next 15-year period. (P 2)	47. Computer program modification now being undertaken will allow such tighter controls on project sizing, timing and capital and expense requirements and allocations.
48. USAID contributions for ARENTO capital expansion should be reloaned or regranted by GOE to ARENTO as near market terms and conditions as can be negotiated. (P 4)	48. This is a matter for consideration by the government of Egypt and USAID.
B. Recommendations for Follow-On Project: 1. Additional ESS (PP 25 & 26) 2. Switched Data Network-(PP 25 & 26) 3. Billing Unification (PP 25 & 26) 4. Expansion of Existing ESS Exchanges (PP 25 & 26) 5. Additional Institutional Programs and Procedures (P 25) 6. Improved Maintenance of Crossbar Offices (P 25)	B. Funding for Phase III telecommunications projects has been requested from the Ministry of Planning. 1. Funding for three new 1AESS exchange offices have been requested for the Cairo area: a. Bab El Khalk 20,000 lines b. Demerdash 20,000 lines c. Pyramids West 20,000 lines

Exhibit 1

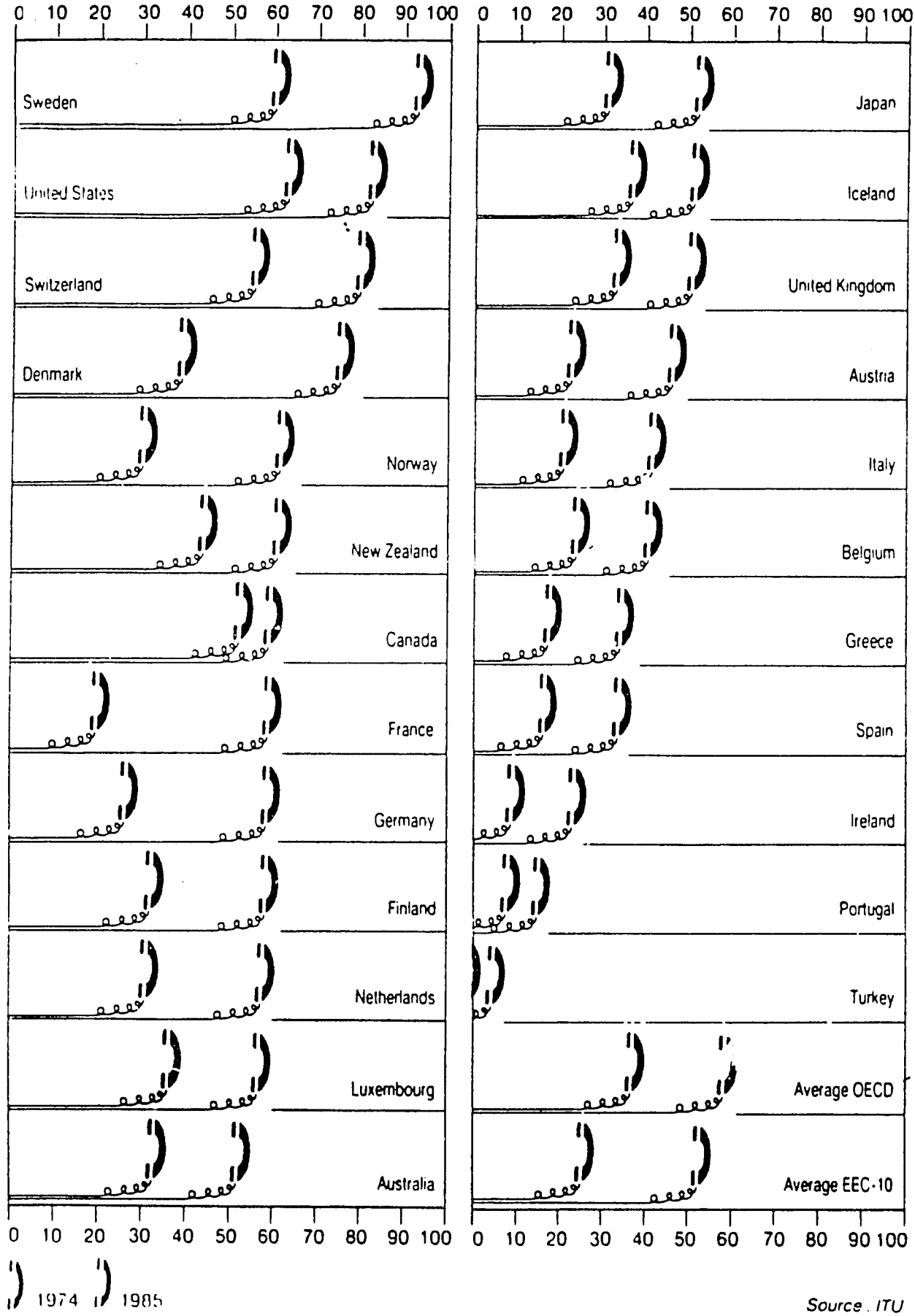
TELECONSULT RECOMMENDATION SUMMARY (CONT'D)

Teleconsult Recommendation	ARENTO Comment and/or Action
	2. Funding for both phases of the Switched Data Network has been requested.
	3. The Billing Unification study, documentation and IFB will be accomplished in Phase II with approval of Amendment No. 3 to Modification No. 6 (and Supplemental Agreement No. 1) to Contract 1-80 between ARENTO and ADLI. Funding for the required hardware, software and implementation would then be requested.
	4. Funding for expansion of existing ESS exchanges will be requested as part of Phase III telecommunications project funding requirements.
	5. ARENTO has and is continuing to mechanize, through computer procurement and programs development, and stream line our operational procedures as it relates to projects, construction budget, stores and purchases and project accounting. With extension of consultant manmonths additional progress will be made in the areas of billing and commercial records.
	6. See No. 38

Exhibit 1

TELEPHONE SETS PER 100 INHABITANTS

Exhibit 2



Source : ITU

STATUS OF WAITING LIST AS OF 29/1/1988

EXCHANGES	PHYSICIANS	BUSINESS	ARMY	POLICE	PRIVATE SCHOOLS	PHARMACIES	ARENTO EMPLOYEES	RESIDENTIAL & COMMERCIAL
Abbassia	1/1/1982	1/3/1983	1/7/1978	1/7/1984	1/3/1986	1/7/1984	1/1/1983	1/1/1975
Nasr City	1/1/1984	1/3/1986	1/4/1984	1/10/1986	1/7/1986	1/7/1986	1/7/1986	1/1/1983
Shoubra	1/7/1981	1/7/1983	1/7/1981	1/1/1983	1/1/1983	1/1/1984	1/1/1975	1/1/1968
Kalioub	1/1/1984	1/1/1984	1/1/1984	1/1/1984	1/1/1984	1/3/1984	1/1/1984	1/7/1981
Al Kanater	1/3/1984	1/3/1984	1/3/1984	1/3/1984	1/3/1984	1/3/1985	1/3/1984	1/3/1982
Heliopolis	15/11/1980	1/3/1983	1/7/1980	1/3/1983	1/7/1986	1/7/1984	1/4/1984	1/7/1979
Al Khanka	1/7/1984	1/7/1984	1/7/1984	1/7/1984	1/1/1986	1/1/1986	1/7/1984	1/7/1981
Al Salam City	1/1/1986	1/1/1986	1/1/1986	1/1/1986	1/1/1986	1/7/1987	1/1/1986	1/1/1986
Almaza	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1986
Sheraton	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/7/1986
Al Kobba	1/5/1985	1/7/1985	1/13/1985	1/1/1987	1/1/1987	1/1/1987	1/7/1987	1/7/1983
Ramses	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1985	1/1/1984
Opera	1/4/1986	1/4/1986	1/1/1983	1/7/1986	1/1/1987	1/1/1987	1/7/1984	1/1/1975
Al Fawala	1/7/1987	1/7/1987	1/1/1986	1/7/1987	1/7/1987	1/7/1987	1/7/1987	1/1/1979
Zamalek	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1987
Mohandessin	1/7/1986	1/7/1986	1/1/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1983
Dokki	1/7/1985	1/1/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/3/1986	1/1/1983
Giza	1/11/1984	1/10/1984	1/11/1984	1/4/1985	1/1/1986	1/1/1986	1/10/1985	1/1/1983
Pyramids	13/8/1981	1/7/1985	1/11/1980	1/7/1985	1/1/1986	1/1/1986	1/1/1986	1/7/1976
Bab El Louk	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1988	1/1/1987
Al Roda	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/1/1985
Maadi (1)	1/1/1986	1/1/1986	1/1/1986	1/1/1986	1/1/1986	1/1/1986	1/1/1986	1/5/1984
Maadi (2)	1/1/1987	1/1/1987	1/1/1987	1/1/1987	1/1/1987	1/1/1987	1/7/1987	1/1/1986
Helwan	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/7/1986	1/1/1983
Helwan Gardens	1/9/1983	1/8/1984	1/13/1983	1/11/1985	1/1/1986	1/12/1985	1/1/1986	1/10/1981
Al Tebbin	25/8/1984	25/8/1984	30/3/1984	30/3/1984	31/12/1984	13/12/1984	31/12/1984	24/8/1983

* Part of the Bab El Khalk Exchange area is currently being served by the Opera Exchange.

Exhibit 3

BAB EL KHALK

BRIEF DESCRIPTION

The area is served by the Opera exchange. After becoming independent the Bab El Khalk exchange will also serve the area of Mokattam temporarily until the demand in Mokattam reaches a sufficient level to become an independent exchange area, too. It is forecasted that Bab El Khalk will have its final form n 1992.

The areas most characteristic of Bab El Khalk are the historical area of Darb El Ahmar and the new area of Mokattam. A typical part of the oriental city is located round the Citadel. Houses in this area are in bad condition because of lack of maintenance. There is a large number of small shops, businesses and workshops. A large cemetery area is located south of the Salah Salem road with an inhabited area within it.

Income level:

It is estimated to range from low to middle high.

The average size of households:

It is estimated to be about 4,81 in 1992 and 4,80 in 2010

Subscriber categories:

Category	1988	Saturation Point	Saturation Factor
Residential	58 %	78 %	1,0
Business/Governorate	42 %	22 %	-

Features and future trends:

The area will keep its character for a long time yet. Many houses will be replaced but in general the structure will not be essentially changed. The planned new road between Maadi and Nasr City touching the area on the east may bring with it new buildings along its route.

The growth of population will be low.

In view of its low income level the area of Bab El Khalk will reach its saturation point very late. Therefore, the number of mainstations is expected to be low in comparison to the saturation point.

The final size of the new exchange building has to allow for 100000 LU according to the saturation point. The capacity of 80000 LU will be sufficient, if a further exchange area is created relying Bab El Khalk and Opera.

PYRAMID WEST

BRIEF DESCRIPTION

It is intended that the planned new exchange area comes into service in 1988. It will cover the west part of the present Pyramid area including the Pyramids themselves and the built up area south of the road to Alexandria. A large new residential area with multistorey-buildings as well as several international hotels and tourist service facilities is located within the area. To the south along the Mansouriah canal small industrial units have been established. The planned area along the road to Fayoum as well as the new city of 6th of October is not included. Both areas are located outside the boundary of the Local Network of Cairo.

Income level ranges from middle high to high. Near the main roads income level is higher than away from them.

The average size of households is about 4,70 in 1988 and 4,48 in 2010.

Subscriber categories:

Category	1988	Saturation Point	Saturation Factor
Residential	72 %	83 %	1,0
Business/Governorate	28 %	17 %	-

Features and future trends:

The proximity of the new settlements in the western desert, the route of the ring road in south of the area as well as the Pyramids themselves will stimulate a high level of new residential building and business activity.

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION
TELEPHONE LINE DEVELOPMENT PROGRAM: 1987/88 - 1991/92
(X 1000)

		TOTAL LINES ADDED		TOTAL LINES 91/92				EXCHANGES 91/92		WORKING LINES 91/92			POPULATION 91/92	DENSITY
AREA	PRIORITY	ANA	DIG	ANA	DIG	TOT	% DIG	ANA	DIG	ANA	DIG	TOT		
Cairo-Urban/Suburban	I	217.0	381.0	812.0	381.0	1,193.0	31.9	33	22	771.4	361.9	1,133.3		
	II	2.0	30.0	2.0	30.0	32.0	93.8	1	3	1.9	28.5	30.4		
	III	0	15.0	0	23.8	23.8	100.0	0	4	0	22.6	22.6		
Total		219.0	426.0	814.0	434.8	1,248.8	34.8	34	29	773.3	413.3	1,186.3	13,586	8.9
Alexandria	I	50	85	270.0	97.0	367.0	26.4	9	8	256.5	92.1	348.6		
	II	0	50	21.0	50.0	71.0	70.4	3	5	20.0	47.5	67.5		
Total		50	135	291.0	147.0	438.0	33.5	12	13	276.5	139.6	416.1	4,533	9.8
Delta	I	0	113.5	131.0	123.9	254.9	43.2	13	14	124.0	118.0	242.0		
	II	0	84.0	49.0	82.4	131.4	58.6	16	24	47.0	78.0	125.0		
	III	0	56.0	4.0	68.7	72.7	94.5	3	55	3.5	65.5	69.0		
Total		0	253.5	184.2	275.0	459.2	56.2	32	93	174.5	261.5	436.0	22,370	1.8
Upper Egypt	I	0	58.0	48.0	58.0	106.0	54.7	9	9	46.0	55.0	101		
	II	0	27.5	27.8	27.5	55.3	49.7	10	14	26.0	26.0	52		
	III	0	32.5	2.0	32.5	34.5	94.2	1	26	1.8	31.0	32.8		
Total		0	118.0	77.8	118.0	195.8	60.2	20	49	73.8	112.0	185.8	12,440	1.5
Sinai/Res Sea/Suez	I	0	40.0	30.0	40.0	70.0	57.1	3	3	28.5	38.0	66.5		
	II	0	5.0	21.0	5.0	26.0	19.2	5	2	20.0	4.8	24.8		
	III	0	3.0	9.2	3.0	12.2	24.6	4	3	8.7	2.8	11.5		
Total		0	48.0	60.2	48.0	108.2	44.4	12	8	57.2	45.6	102.8	2,290	4.5
Total Egypt		252.0	994.5	1427.2	1022.8	2450.0	42.0	110	192	1355.3	971.2	2,326.5	55.2	4.2

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION
TELEPHONE LINE DEVELOPMENT PROGRAM: 1992/93 - 1996/97
(X 1000)

	PRIORITY	TOTAL LINES ADDED ANA	TOTAL LINES ADDED DIG	TOTAL LINES 96/97 ANA	TOTAL LINES 96/97 DIG	TOTAL LINES 96/97 TOT	TOTAL LINES 96/97 % DIG	EXCHANGES 96/97 ANA	EXCHANGES 96/97 DIG	WORKING LINES 96/97 ANA	WORKING LINES 96/97 DIG	WORKING LINES 96/97 TOT	POPULATION 96/97	DENSITY %
Cairo Urban/Suburban	I	105.0	485.0	917.0	866.0	1,783.0	48.5	33	30	871.1	822.7	1,693.8		
	II	0	21.0	2.0	51.0	53.0	96.2	1	3	1.9	48.5	50.4		
	III	0	21.2	0	45.0	45.0	100.0	0	4	0	42.7	42.7		
Total		105.0	527.2	919.0	962.0	1,881.0	51.1	34	37	873.0	913.9	1,786.9	15,253	11.7
Alexandria	I	10.2	180.0	280.0	277.0	557.0	49.7	9	10	266.0	263.1	529.1		
	II	0	50.0	21.0	100.0	121.0	82.6	3	5	20.0	95.0	115.0		
Total		10.0	230.0	301.0	377.0	678.0	55.6	12	15	286.0	358.1	644.1	5,092	12.6
Delta	I	0	77.5	131.0	201.4	320.4	55.0	13	14	124.0	191.0	315.0		
	II	0	68.0	49.0	150.4	197.9	73.0	16	24	47.0	142.9	189.9		
	III	0	142.2	4.0	210.9	210.4	98.0	3	100	3.8	200.4	204.2		
Total			286.7	184.0	562.7	746.7	74.7	32	138	174.8	533.3	709.1	25,500	2.8
Upper Egypt	I	0	66.0	48.0	124.0	172.0	72.0	9	9	46.0	118.0	264.0		
	II	0	42.5	27.9	70.0	97.8	71.5	10	20	26.0	66.0	92.0		
	III	0	37.2	2.0	69.7	71.7	97.2	1	33	1.8	66.0	67.8		
Total			145.7	77.8	263.7	341.5	77.2	20	62	73.8	250.0	323.8	13,660	2.4
Red Sea/Suez	I	0	37.0	30.0	67.0	97.0	69.1	3	3	28.5	63.7	92.2		
	II	0	23.0	21.0	28.0	49.0	57.1	5	5	20.0	26.6	45.6		
	III	0	20.5	9.2	23.5	32.7	71.9	4	11	9.0	22.3	31.3		
Total			80.5	60.2	118.5	178.7	66.3	12	19	57.5	113.6	170.1	2,520	6.7
Total [illegible]		115.0	1260	1542.0	2283.9	2825.9	59.7	110	271	1465.1	2169.9	3634.0	62.0	5.9

ARAB REPUBLIC OF EGYPT TELECOMMUNICATIONS ORGANIZATION
TELEPHONE LINE DEVELOPMENT PROGRAM: 1997/98 - 2001/02
(X 1000)

AREA	PRIORITY	TOTAL LINES ADDED ANA	TOTAL LINES ADDED DIG	TOTAL LINES 2001/02 ANA	TOTAL LINES 2001/02 DIG	TOTAL LINES 2001/02 TOT	TOTAL LINES 2001/02 % DIG	EXCHANGES 2001/02 ANA	EXCHANGES 2001/02 DIG	WORKING LINES 2001/02 ANA	WORKING LINES 2001/02 DIG	WORKING LINES 2001/02 TOT	POPULATION 2001/02	DENSITY
Cairo Urban/Suburban	I	35.0	660.0	952.0	1526.0	2478.0	61.6	33	37	904.4	1449.7	2354.1		
	II	0	40.0	2.0	91.0	93.0	97.8	1	3	1.9	86.4	88.3		
	III	0	35.0	0	80.8	80.8	100.0	0	4	0	76.0	76.0		
Total		35.0	735.0	954.0	1697.8	2651.8	64.0	34	44	906.3	1621.1	2518.4	16,970	14.8
Alexandria	I	0	161.0	280.0	442.0	722.0	61.2	9	12	266.0	419.9	685.9		
	II	0	52.0	21.0	152.0	173.0	87.9	3	5	20.0	144.4	164.4		
Total		0	217.0	301.0	594.0	895.0	66.4	12	17	286.0	564.3	850.3	5,655	15.4
Delta	I	0	77.0	131.0	255.4	386.4	66.6	13	14	124.0	252.5	376.5		
	II	0	86.0	49.0	234.9	283.9	81.8	16	24	47.0	223.0	270.0		
	III	0	77.0	4.0	232.4	236.4	99.0	3	101	3.8	268.0	271.3		
Total		0	239.0	184.0	782.7	966.7	80.6	32	139	174.8	743.5	918.3	28,450	3.2
Upper Egypt	I	0	41.0	46.0	165.0	213	77.4	9	9	46	157	203		
	II	0	25.5	27.8	95.5	123.3	77.4	10	20	26	91	117		
	III	0	22.0	2.0	91.7	93.7	98.0	1	33	1.8	87	88.8		
Total		0	89.5	77.8	352.2	430.0	81.9	20	62	73.8	335.0	408.8	15,050	2.7
Sinai/Red Sea/Suez	I	0	23.0	30.0	90.0	120.0	75.0	3	3	28.5	85.5	114.0		
	II	0	14.0	21.0	42.0	63.0	66.6	5	5	20.0	39.9	59.9		
	III	0	11.5	9.2	65.5	74.4	87.7	4	11	8.7	62.2	70.9		
Total		0	48.5	60.2	197.5	257.7	76.6	12	19	57.2	187.6	244.8	2,775	8.8
Total Egypt		30.0	1,331.0	1,577.0	3,623.4	5,200.4	69.7	110	281	1498.1	3,442.5	4,940.6	68.9	7.2

A.R.E.N.T.O.

HISTORICAL DEVELOPMENT OF INLAND SERVICES TARIFF

FROM 75/76 TO 86/87

YEAR	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87
TARIFF ITEMS:	L.E	L.E	L.E	L.E	L.E	L.E	L.E	L.E	L.E	L.E	L.E	L.E
I TELEPHONE:												
A-ANNUAL SUBSCRIPTION												
1 AUTOMATIC EXCHANGES:												
DOMESTIC	10	10	10	10	10	1	1	1	1		0	30
PUBLIC SERVICE	10	10	10	10	10	1	10	10	10	10	0	30
GOVERNMENTAL	10	10	10	10	10	10	30	0	0		100	100
NON-DOMESTIC	10	10	10	10	10	10	0	0			100	100
2 MANUAL EXCHANGES:												
DOMESTIC	21	21	21	21	1	1	1	1		1	0	30
PUBLIC SERVICE	21	21	21	21	1	1	1	1	1	1	0	30
GOVERNMENTAL	21	21	21	21	1	1	0	0	0		50	50
NON DOMESTIC	21	1	21	21	1	1	0	0	0		50	50
B INSTALLATION FEES:												
DOMESTIC	10	10	10	20	50	50	50			0	100	100
PUBLIC SERVICE	10	10	10	20	100	100			50	100	500	500
INDIVIDUAL ACTIVITIES	10	10	10		0	100	500	500	500	500	500	500
COMPANIES	0	10	10	20	150	150	500	500	500	500	500	500
GOVERNMENTAL	10	10	10	20	50	50	75	75	75	75	125	125
OTHER ORDINARY COMPANIES	10	10	10	20	150	150	1000	1000	1000	1000	1000	1000
U.S. HOTELS.												
C PRIORITY FEES:												
DOMESTIC							1000	1000	1000	1500	1500	1500
NON DOMESTIC AND FOREIGNERS							2000	2000	2000	2000	2500	2500
D TRANSFER FEES:												
OUT OF BOUND TRANSFER:												
DOMESTIC	10	10	10	20	50	50	50	50	50	50	50	50
PUBLIC SERVICES	10	10	10	20	50	50	50	50	50	50	50	50
NON-DOMESTC & PRIVATE COMPANIES	10	10	10	20	50	50	100	100	100	100	100	100
OTHER ORDINARY COMPANIES	10	10	10	20	50	50	150	150	150	150	150	150
INVESTMENT COMP.,BANKS ,HOTELS.	10	10	10	20	50	50	200	200	200	200	200	200
GOVERNMENTAL	10	10	10	20	50	50	75	75	75	75	75	75
INTERIOR TRANSFER:												
FOR ALL SUBSCRIBERS	1.5	1.5	1.5	2	2	2	3	3	3	5	5	5
E ADMINISTRATIVE FEES:								30	30	50	100	100
G ALLOWED FREE "LOCAL" CALLS PER YEAR:												
DOMESTIC	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
NON DOMESTIC	300	300	300	300	300	300	300	300	300	300	300	300
GOVERNMENTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
DOMESTIC TELEPHONE WITH EXTERNAL EXTENTION FOR TRADE ACTIVITY	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
DOMESTIC TELEPHONE USED FOR PROFESSIONS	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

B. EXCESS CALL CHARGES:												
[illegible]	0.01	0.01	0.015	0.015	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05
PER MINUTE SERVICE	0.01	0.015	0.015	0.015	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
C. EXTENSIONS:												
II. INBOUND EXTENSION:												
ANNUAL SUBSCRIPTION	6	6	6	6	6	6	9	9	9	9	9	9
INSTALLATION FEES	3	3	3	6	6	6	9	9	9	9	9	9
ONE OR INBOUND EXTENSIONS:												
ANNUAL SUBSCRIPTION: WITHIN 500 METER	8	8	8	8	8	8	12	12	12	12	12	12
EACH ADDITIONAL 500 METER OR FRACTION	1.5	1.5	1.5	1.5	1.5	1.5	2.25	2.25	2.25	2.25	2.25	2.25
INSTALLATION FEES: WITHIN 4K.M.	10	10	10	20	20	20	30	30	30	30	30	30
EACH ADDITIONAL 500 METER OR FRACTION	4	4	4	8	8	8	12	12	12	12	12	12
I. LEASED TRUNK LINES (PER YEAR):												
DISTANCE IN KILOMETER:												
1-25	216	216	216	435	435	435	544	544	544	544	544	544
26/50	432	432	432	864	864	864	1080	1080	1080	1080	1080	1080
51/75	864	864	864	1296	1296	1296	1620	1620	1620	1620	1620	1620
76-100	1296	1296	1296	1728	1728	1728	2160	2160	2160	2160	2160	2160
101-125	1728	1728	1728	2160	2160	2160	2700	2700	2700	2700	2700	2700
126/150	2160	2160	2160	2592	2592	2592	3240	3240	3240	3240	3240	3240
151/175	2592	2592	2592	3024	3024	3024	3780	3780	3780	3780	3780	3780
176/200	3024	3024	3024	3456	3456	3456	4320	4320	4320	4320	4320	4320
201/250	3456	3456	3456	4320	4320	4320	5400	5400	5400	5400	5400	5400
251/300	3888	3888	3888	5184	5184	5184	6480	6480	6480	6480	6480	6480
301/350	4320	4320	4320	6028	6028	6028	7560	7560	7560	7560	7560	756
351/400	4752	4752	4752	6912	6912	6912	8640	8640	8640	8640	8640	8640
401/450	5184	5184	5184	7776	7776	7776	9720	9720	9720	9720	9720	
451/500	5616	5616	5616	8640	8640	8640	10800	10800	10800	10800	10800	10800
501/550	6048	6048	6048	9504	9504	9504	11880	11880	11880	11880	11880	11880
551/600	6480	6480	6480	10368	10368	10368	12960	12960	12960	12960	12960	12960
601/650	6912	6912	6912	11232	11232	11232	14040	14040	14040	14040	14040	14040
651/700	7344	7344	7344	12096	12096	12096	15120	15120	15120	15120	15120	15120
701/750	7776	7776	7776	12960	12960	12960	16200	16200	16200	16200	16200	16200
751/800	8208	8208	8208	13824	13824	13824	17280	17280	17280	17280	17280	17280
801/850	8640	8640	8640	14688	14688	14688	18360	18360	18360	18360	18360	18360
851/900	9072	9072	9072	15552	15552	15552	19440	19440	19440	19440	19440	19440
901/950	9504	9504	9504	16416	16416	16416	20520	20520	20520	20520	20520	20520
951/1000	9936	9936	9936	17280	17280	17280	21600	21600	21600	21600	21600	21600
1001/1100	10800	10800	10800	19008	19008	19008	23760	23760	23760	23760	23760	23760
1101/1200	11664	11664	11664	20736	20736	20736	25920	25920	25920	25920	25920	25920
1201/1300	12528	12528	12528	22464	22464	22464	28080	28080	28080	28080	28080	28080
J. LONG DISTANCE CALLS CHARGE (D:DAY N:NIGHT)												
DISTANCE IN KILOMETER:	D	N	D	N	D	N	D	N	D	N	D	N
1-25	.015/.015		.03/.03		.04/.04	.04/.04	.04/.04	.04/.04	.04/.04	.04/.04	.04/.04	.04/.04
26/50	.03/.03		.05/.03		.07/.04	.07/.04	.07/.04	.07/.04	.07/.04	.07/.04	.07/.04	.07/.04
51/75	.04/.04		.10/.05		.13/.07	.13/.07	.13/.07	.13/.07	.13/.07	.13/.07	.13/.07	.13/.07
76-100	.045/.045		.10/.05		.13/.07	.13/.07	.13/.07	.13/.07	.13/.07	.13/.07	.13/.07	.13/.07
101-125	.06		.15/.10		.19/.13	.19/.13	.19/.13	.19/.13	.19/.13	.19/.13	.19/.13	.19/.13
126/150	.075/.075		.15/.10		.19/.13	.19/.13	.19/.13	.19/.13	.19/.13	.19/.13	.19/.13	.19/.13
151-175	.09		.20/.15		.25/.19	.25/.19	.25/.19	.25/.19	.25/.19	.25/.19	.25/.19	.25/.19
176/200	.10		.20/.15		.25/.19	.25/.19	.25/.19	.25/.19	.25/.19	.25/.19	.25/.19	.25/.19
201-250	.11		.25/.20		.32/.25	.32/.25	.32/.25	.32/.25	.32/.25	.32/.25	.32/.25	.32/.25
251-300	.13		.25/.20		.32/.25	.32/.25	.32/.25	.32/.25	.32/.25	.32/.25	.32/.25	.32/.25
301-350	.15		.30/.30		.44 .30	.44 .30	.44/.30	.44/.30	.44/.30	.44/.30	.44/.30	.44/.30
351-400	.15		.30/.30		.44 .30	.44 .30	.44/.30	.44/.30	.44/.30	.44/.30	.44/.30	.44/.30

Exhibit 6

1. JURISDICTIONAL:												
1. THROUGH CABLE:												
ANNUAL SUBSCRIPTION FOR EACH 500 METER	6	6	6	6	6	6	9	9	9	9	9	9
INSTALLATION FEES WITHIN 4 K.M.	24	24	24	24	24	24	36	36	36	36	36	36
FOR EACH ADDITIONAL 500 METER	8	8	8	8	8	8	12	12	12	12	12	12
2. THROUGH MICROWAVE:												
ANNUAL SUBSCRIPTION										800	800	800
INSTALLATION FEES										150	800	800
II. TELEX												
ANNUAL SUBSCRIPTION:	240	240	240	240	240	240	1000	1000	1000	1000	1000	1000
INSTALLATION FEES:												
COMPANIES, HOTELS & FOREIGNERS	15	15	15	15	500	500	1000	1000	1000	1000	500	500
OTHER SUBSCRIBERS	15	15	15	15	500	500	750	750	750	750	500	500
PER PULSE CHARGE	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PRIORITY FEES:												
COMPANIES, BANKS, HOTELS & FOREIGNERS							3000	3000	3000	3000	2000	2000
OTHERS							2000	2000	2000	2000	1000	1000
III TELEGRAPH:												
ORDINARY WORD CHARGE	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
URGENT WORD CHARGE	0.02	0.02	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
CONGRATULATION CHARGE EXTRA FEES	0.04	0.04	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06

8

Exhibit 6

Exhibit 7

	1984/85	1985/86	1986/87
OPERATING REVENUES			
WORKSHOP PRODUCTION FOR OTHERS	0	0	75,87
TELEGRAPH REVENUES	10,894,727	11,447,589	12,[illegible],892
TELEPHONE REVENUES	89,591,562	105,517,972	184,771,209
INTERNATIONAL REVENUES	145,509,294	170,197,107	224,514,918
SOLD GOODS	0	0	8,[illegible],105
TOTAL	246,995,783	317,159,667	429,[illegible],795
OPERATING EXPENSES			
CASH SALARIES	72,53[illegible],179	9,[illegible],704,982	87,211,[illegible]31
SALARIES IN KIND	469,479	1,[illegible]90,267	877,8[illegible]
SOCIAL INSURANCE	17,518,481	17,[illegible]77,021	1,[illegible]
SUB-TOTAL	90,567,729	96,[illegible]72,267	89,[illegible]1[illegible]
LESS SALARIES ASSIGNED TO CHAPTER 7	3,400,246	3,[illegible]87,221	3,[illegible]12,7[illegible]
SUB-TOTAL	87,167,487	92,[illegible]75,046	89,[illegible]47,[illegible]28
GENERAL EXPENSES			
COMMODITIES	9,049,988	14,119,177	9,[illegible]19,[illegible]73
SERVICES	6,747,905	6,[illegible]16,817	11,[illegible]28,877
SUB-TOTAL	15,797,893	21,[illegible]35,994	20,[illegible]48,[illegible]11
CURRENT TRANSFER EXPENSES:			
TAXES AND DUTIES	63,463	[illegible]38,227	[illegible]87,841
DEPRECIATION:			
BUILDING & CONSTRUCTION	6,864,667	13,602,386	26,[illegible]78,182
MACHINERY & EQUIPMENT	23,719,183	44,426,955	57,039,554
TRANSPORTATION SYSTEM	1,031,824	1,[illegible]54,287	2,[illegible]28,147
TOOLS & MACHINERY	157,494	4,391,754	3,150,423
FURNITURE & OFFICE EQUIPMENT	313,144	1,039,168	2,[illegible]16,892
DEFERRED REVENUE EXPENDITURES	2,667,093	7,881,686	27,704,771
SUB-TOTAL	34,753,405	72,[illegible]96,876	1[illegible],728,958
RENT:			
ACTUAL RENT	88,187	107,749	117,251
DIFFERENCE OF CALCULATED RENT	1,931,013	1,088,646	2,304,220
SUB-TOTAL	2,019,200	1,192,595	2,417,481
TOTAL OPERATING EXPENSES	139,401,444	187,738,694	234,622,22[illegible]
INCOME BEFORE INTEREST CHARGES:	107,594,339	129,419,969	195,368,575
INTEREST CHARGE			
LOCAL	31,523,618	32,317,148	26,599,577
FOREIGN	29,588,158	40,678,594	71,110,924
DIFFERENCE IN CALCULATED INTEREST	10,830,894	5,871,287	16,177,482
GOODS FOR SALE	0	0	7,718,659
SUB-TOTAL	72,042,670	78,867,029	121,[illegible]16,6[illegible]7
NET INCOME FROM OPERATIONS	35,551,669	50,556,940	74,[illegible]51,973
ADJUSTMENT TO INCOME:			
TRANSFER INCOME			
INTEREST INCOME(PAYABLE)	555,784	1,595,153	2,536,750
RENT INCOME	10,112	13,117	12,711
CAPITAL INCOME			
PREVIOUS YEARS REVENUES(NET)	20,857,223	9,877,758	41,487,272
FINES AND INDEMNITIES(NET)	113,658	(47,207)	123,002
MISCELLANEOUS INCOME(NET)	1,260,710	20,759,083	9,607,585
DIFFERENCE IN CALCULATED RENT	1,931,013	1,088,647	2,304,220
DIFFERENCE IN CALCULATED INTEREST	10,830,894	5,871,287	16,177,482
PROVISION FOR REPLACEMENT VALUE OF ASSETS			
SUBSIDES	(80,131)	(60,335)	(58,15[illegible]
ALLOCATIONS -OTHER THAN DEPRECIATION	(1,853)	0	(37,667,830)
TOTAL	35,477,410	39,097,499	[illegible]4,[illegible]14,[illegible]16
CARRIED OVER SURPLUS	71,029,079	89,654,439	108,[illegible]86,344

PREPARED BY: FINANCIAL SECTOR

-GV

Exhibit 7

A.R.E.N.T.O.
SOURCES AND USES OF CAPITAL

SOURCES

CODE	SELF FINANCE	1984/85	1985/86	1986/87
226	RESERVE FOR REPLACEMENT VALUE OF ASSETS	1,[illegible]28,450	7,84[illegible],609	7,8[illegible],[illegible]
227	OTHER RESERVES	60,626,620	72,201,150	75,[illegible],[illegible]
228	CARRIED OVER SURPLUS	71,029,178	89,954,479	109,[illegible],84[illegible]
231	DEPRECIATION	33,022,056	52,[illegible]95,256	115,[illegible]86,[illegible]
233	PROVISION FOR DOUBTFUL ACCOUNTS			
	SUB-TOTAL	165,716,207	217,811,457	323,[illegible]71,[illegible]
	LIQUIDITY			
11	COSTS OF RETIRED ASSETS	708,693	17,391,122	0
	DECREASE IN STORES			
	COMMODITIES	96,825	589,656	197,154
172	UNFINISHED WORK IN PROGRESS	26,691		94,5[illegible]
136	LETTERS OF CREDIT		122,[illegible]7	
	SUB-TOTAL	123,516	811,663	281,65[illegible]
	DECREASE IN SECURITIES & OTHER INVESTMENT		116	
	DECREASE IN RECEIVABLES			
	SUBSCRIBERS	465,857	2,588,663	11,634,152
163	MISCELLANEOUS RECEIVABLES	87,465	522,150	276,[illegible]68
171	VARIOUS RECEIVABLES			
172	OTHER RECEIVABLE BALANCES	4,779	31,248	
18	CASH ON HAND AND IN BANK	9,282,890	15,605,655	1,204,552
	SUB-TOTAL	9,840,591	18,747,716	13,[illegible]57,[illegible]
	LONG TERM LOANS			
241	LOCAL	49,782,000	38,267,031	
242	FOREIGN	92,651,233	80,248,567	458,[illegible]74,247
	SUB-TOTAL	142,433,233	118,515,598	458,[illegible]74,247
	PAYABLES AND BANK			
261	ACCOUNTS PAYABLE-SUPPLIERS	711,229		1,427,[illegible]83
262	MISCELLANEOUS PAYABLES	8,286,102	4,077,657	6,202,[illegible]37
272	VARIOUS PAYABLES	29,035,665		16,526,[illegible]5
273	OTHER PAYABLE BALANCES	8,968,503	24,039,297	52,013,477
274	CURRENT EARMARKED EXPENDITURES	5,004,934	711,595	421,351
	SUB-TOTAL	52,006,433	28,828,541	76,590,397
	TOTAL SOURCES	370,828,677	402,106,218	871,[illegible]15,[illegible]84

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USES				
	INVESTMENT USES	1984/85	1985/86	1986 87
	TOTAL CAPITAL USES			
112	BUILDING & CONSTRUCTION	11,187,333		293,521,943
113	MACHINERY & EQUIPMENT	127,336,376		242,765,177
114	TRANSPORTATION	730,570		9,721,482
115	TOOLS & IMPLEMENTS	156,822		411,402
116	FURNITURE & OFFICE EQUIPMENT	701,511		4,296,957
118	DEFERRED REVENUE EXPENDITURES	904,710		[illegible]
	SUB-TOTAL	141,017,322	0	[illegible]
	STORES			
131	COMMODITIES	2,734,890	195,539	1,718,355
132	UNFINISHED WORK IN PROGRESS		85,670	
136	LETTERS OF CREDIT	469,369	884,434	5,190,162
	SUB-TOTAL	3,204,259	1,145,643	6,908,517
	TAXES AND CUSTOMS DUTIES			
	FOR STORES			
	PROJECTS UNDER CONSTRUCTION	85,498,150	180,443,273	40,434,400
	CAPITAL MOVEMENTS			
111	LAND (FIXED ASSETS)	752,220		210,984
	LAND (PROJECTS)			325,791
	SUB-TOTAL	752,220	0	536,775
15	FINANCIAL (INVESTMENT)	965,231		0
	RECEIVABLES			
161	ACCOUNTS RECEIVABLE	5,720,577	17,110,050	16,223,819
167	MISCELLANEOUS RECEIVABLES	3,715	613,029	431,629
172	OTHER RECEIVABLE BALANCE	5,653,591	31,354,733	6,432,612
	SUB-TOTAL	11,377,883	49,077,812	23,087,890
	PAYMENT OF LONG TERM DEBT			
241	LOCAL INSTALLMENTS	26,504,000	30,641,000	25,191,858
242	FOREIGN INSTALLMENT	32,177,718	75,203,930	116,277,748
	SUB-TOTAL	58,681,718	105,844,930	141,368,906
19	CASH IN HAND AND IN BANK	47,817,059	50,653,346	69,098,660
	DECREASE IN PAYABLES			
	SUPPLIERS	370,729	710,992	
	MISCELLANEOUS	1,769,117	202,145	30,173
	DOCUMENTRY CREDIT			
264	DIVIDENDS PAYABLE	0	0	0
272	VARIOUS PAYABLES	0	958,778	195,005
273	OTHER PAYABLE BALANCES	19,383,749	8,921,830	
274	CURRENT EARMARKED EXPENSES PAYABLE	0	4,105,538	25,451
	DECREASE IN PROVISIONS AND SERVICES	1,236	11,922	6,862
	SUB-TOTAL	21,524,831	14,941,205	247,493
	TOTAL USES	370,828,673	402,106,209	871,745,084

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Exhibit 7

	A.R.E.N.T.O. BALANCE SHEET	1984/85	1985/86	1986/87
11	FIXED ASSETS			
111	LAND	7,295,037	8,998,758	7,219,752
112	BUILDINGS & CONSTRUCTION	203,925,565	613,778,603	917,711,578
113	MACHINERY & EQUIPMENT	444,757,315	707,752,151	945,117,755
114	TRANSPORTATION	8,715,141	13,114,677	22,870,[illegible]5
115	TOOLS & IMPLEMENTS	2,267,745	3,998,173	5,115,891
116	FURNITURE & OFFICE EQUIPMENT	4,058,951	22,197,717	27,781,[illegible]8
118	DEFERRED REVENUE EXPENDITURES	17,334,971	99,390,689	128,219,555
-	ASSETS DAMAGED IN WAR	910,666	910,666	911,[illegible]6
	SUB-TOTAL	685,271,360	1,458,543,990	2,148,809,757
12	PROJECTS UNDER CONSTRUCTION			
121	COMMODITY FORMATION	638,528,379	32,359,[illegible]76	71,239,173
122	INVESTMENT EXPENDITURE	109,514,512	105,462,917	149,293,[illegible]85
	SUB-TOTAL	748,042,891	137,822,417	178,532,[illegible]67
13	INVENTORIES			
131	COMMODITY REQUIREMENTS			
1311	RAW MATERIALS	735,009	917,982	781,223
1312	FUEL	37,175	46,857	60,[illegible]00
1313	SPARE PARTS	21,075,162	20,785,506	21,995,[illegible]81
1315	SCRAP	255,646	259,720	247,[illegible]38
132	UNFINISHED WORK IN PROGRESS	144,297	209,967	125,[illegible]17
136	LETTERS OF CREDIT-MERCHANDISE	4,133,812	4,896,039	10,085,[illegible]31
	SUB-TOTAL	26,381,101	26,715,181	33,241,[illegible]94
15	INVESTMENTS	6,961,297	6,861,181	6,861,181
16	DEBTORS			
161	ACCOUNT RECEIVABLE			
1611	PUBLIC SECTOR	31,273,242	28,564,573	44,908,[illegible]27
1612	PRIVATE SECTOR	13,416,419	21,332,090	18,819,[illegible]71
1613	FOREIGN	15,743,603	24,927,982	15,766,149
163	MISCELLANEOUS DEBTORS	5,075,668	5,166,547	5,219,408
	SUB-TOTAL	65,508,932	80,121,197	84,713,[illegible]55
17	VARIOUS DEBTORS ACCOUNTS			
172	OTHER DEBTORS BALANCE	24,058,156	55,081,641	81,814,[illegible]57
177	CURRENT EARMARKED EXPENSES	216	216	21[illegible]
	SUB-TOTAL	24,058,372	55,081,857	81,814,[illegible]69
	CHEQUES SENT FOR COLLECTION BUT NOT ADDED			
18	CASH ON HAND AND IN BANK			
181	CASH ON HAND	(291,613)	(118,457	76,442
1821	INVESTMENT ACCOUNT CURRENT	3,593,922	1,134,302	24,869,[illegible]37-
1822	INVESTMENT ACCOUNT CAPITAL	5,039,182	3,154,755	31,344,[illegible]22
	BANK DEPOSIT	20,636,307	42,738,928	41,650,[illegible]52
	BANK HARD CURRENCY	45,342,674	41,920,785	51,599,[illegible]27
	BANK SERVICE IMPROVEMENT	47,662,481	68,189,630	75,760,[illegible]37
	SUB -TOTAL	121,981,853	157,029,544	224,927,[illegible]52
	SUPPLIERS	373,317	2,060,409	2,211,264
223	LOSSES BROUGHT FORWARD			
	TOTAL ASSETS	1,678,479,123	1,924,535,672	2,541,[illegible]65,687

		1984/85	1985/86	1986/87
	LIABILITIES			
	CAPITAL	29,618,575	154,317,013	154,717,113
	RESERVES & CARRIED -OVER SURPLUS			
	RESERVES FOR REPLACEMENT VALUE OF ASSETS	6,671,270	10,121,870	14,278,377
	GRANTS	110,272,225	155,548,192	199,796,711
	SERVICE IMPROVEMENT FUND	33,240,497	60,139,777	92,187,157
	CARRIED OVER SURPLUS	192,851,055	282,515,491	391,192,338
	OTHER RESERVES			
	SUB-TOTAL	343,039,045	518,751,241	696,574,173
	PROVISIONS			
	PROVISIONS FOR DEPRECIATION			
	BUILDING & CONSTRUCTION	38,878,678	52,125,554	64,728,147
	MACHINERY AND EQUIPMENT	116,242,728	142,534,451	213,294,627
	TRANSPORTATION	6,920,490	7,972,675	12,214,295
	TOOLS AND MACHINERY	1,648,722	3,447,955	5,145,588
	FURNITURE & OFFICE EQUIPMENT	1,855,268	3,385,177	5,417,588
	DEFERRED REVENUE EXPENDITURE	7,302,808	14,996,315	29,182,807
	SUB-TOTAL	172,846,294	224,941,551	360,470,772
	PROVISION FOR TAXES(CONTESTED)	1,181,170	1,181,170	1,181,170
	PROVISION FOR DOUBTFUL ACCOUNTS	667,488	659,647	652,796
	SUB-TOTAL	1,848,658	1,840,817	1,833,966
	OTHER PROVISIONS			
	LOSSES DUE TO WAR	910,666	910,666	910,666
	LITIGATION & DAMAGES	3,500	3,500	3,500
	SUB-TOTAL	914,166	914,166	914,166
	LONG TERM DEBT			
	DOMESTIC	472,501,625	355,429,218	330,774,560
	FOREIGN	466,312,436	471,352,990	817,413,988
	SUB-TOTAL	938,814,061	826,782,208	1,148,748,548
	CREDITORS			
	SUPPLIERS	0	976,100	2,554,024
	MISCELLANEOUS	35,875,261	39,720,770	45,902,728
	DIVIDENDS PAYABLE			
	SUB-TOTAL	35,875,261	40,696,870	48,456,752
27	VARIOUS CREDITOR ACCOUNTS			
272	MISCELLANEOUS	29,426,296	28,467,517	44,994,122
277	OTHER CREDIT BALANCE	75,538,924	87,493,515	114,774,257
274	ACCRUED CURRENT EXPENSES PAYABLE	5,527,877	2,133,934	1,529,797
	SERVICE IMPROVEMENT FUND	45,030,966	68,193,839	72,771,565
	SUB-TOTAL	155,524,063	186,288,805	235,029,741
	CHECKS OUTSTANDING BUT NOT PAID			
	OVERDRAFT FACILITIES			
	DOCUMENTARY CREDIT			
	CENTRAL BANK			
	INVESTMENT BANK			
	CASH VOUCHERS			
	SUB-TOTAL			
	TOTAL LIABILITIES	1,678,479,123	1,924,535,672	2,641,266,687

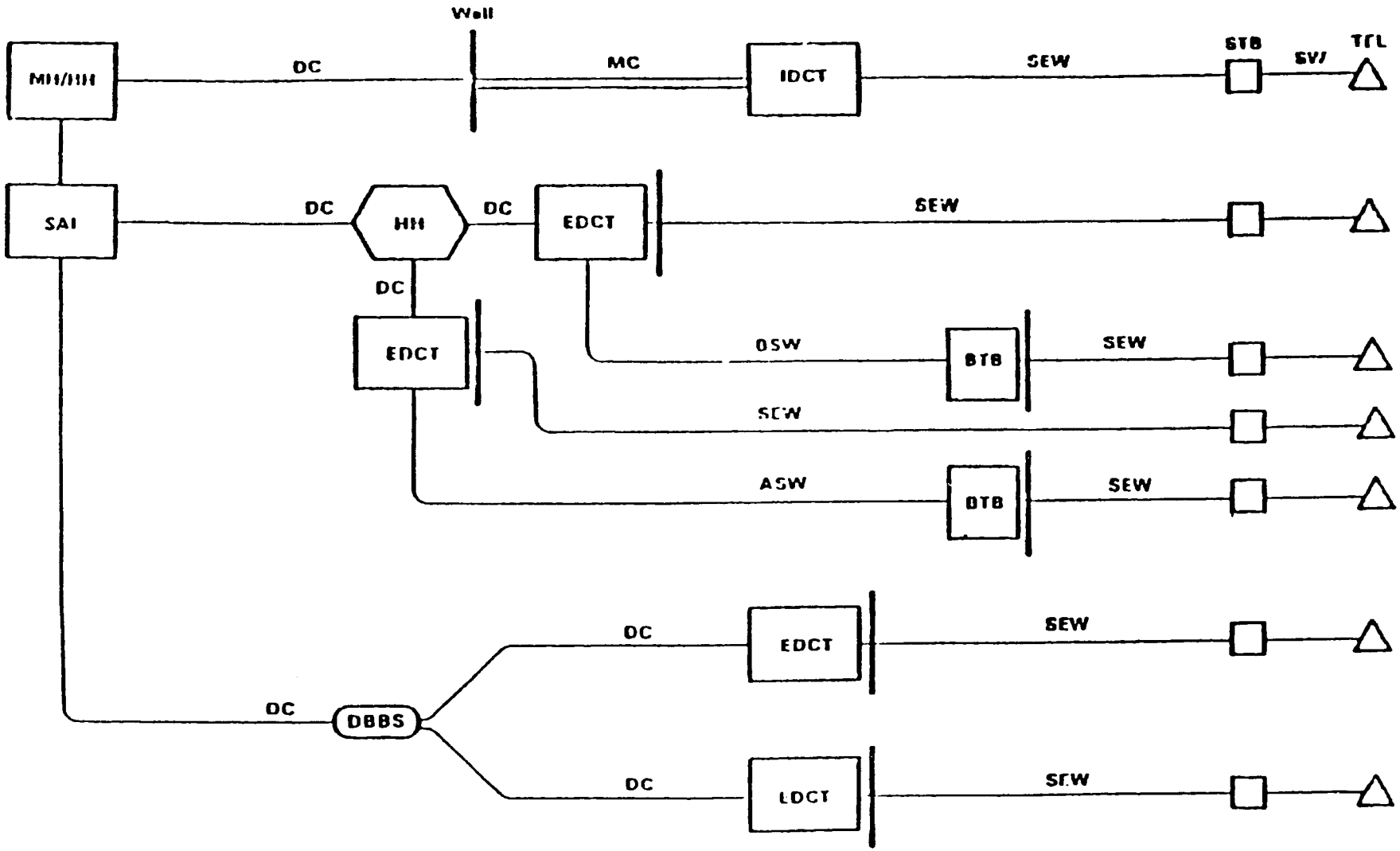
PREPARED BY: FINANCIAL SECTOR

A.R.E.N.T.O.
STATEMENT OF CURRENT OPERATING ACCOUNTS

New Cairo Area Exchanges

Area	Exchange		Outside Plant	
	Initial Capacity	Ultimate Capacity	Feeder pairs	Distribution pair
Pyramids West	30,000	60,000	36,000	54,000
Bab El Khalk	30,000	60,000	36,000	54,000

Exhibit 8

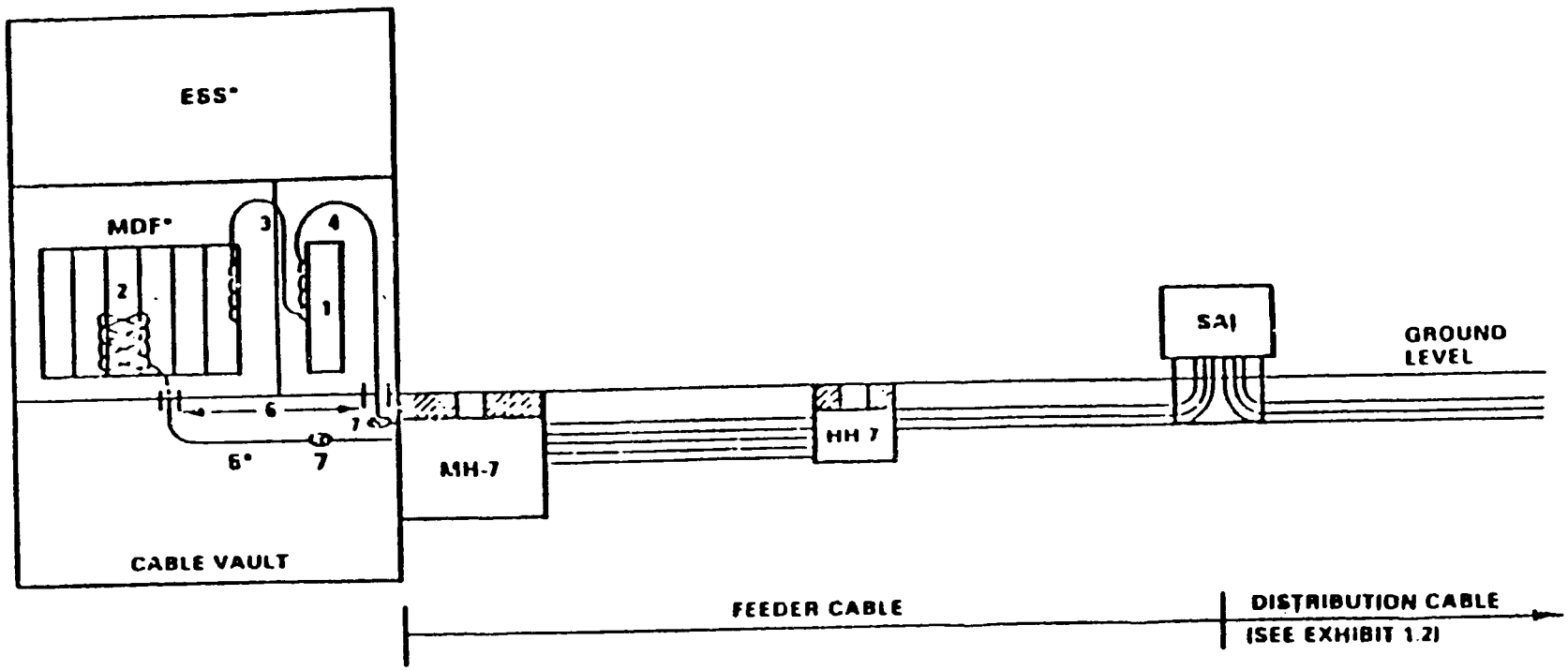


SAI = Serving Area Interface Housing
DC = Distribution Cable
MC = PVC DC in a Metal Conduit
IDCT = Interior DC Terminal
EDCT = Exterior DC Terminal
HH = Handhole
DBBS = Direct Buried Branch Splice
MH/HH = Manhole or Handhole

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

Simplified Diagram of a Local Cable Network

Exhibit 9



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 = Inner Shafts
7 = Splices

* = Provided by ARENTO

Simplified Diagram of OSP from MDF to SAI

Exhibit 9

Traffic and Circuits Distribution of Model Exchange II (Final Capacity 60000 Lines) And Other Exchange in the Same Area.

From / To	LE 1	LE 2	LE 3	LE 4	LE 5	LE 6	LE 7	LE 8	LE 9	LE 10	LE 11	LE 12	LE 13	LE 14	LE 15	LE 16	LE 17	LE 18	LE 19	LE 20	LE 21	LE 22
Erlang	64	48	56	32	24	20	48	34	50	30	30	46	40	40	24	22	32	36	42	44	44	30
Circuits	77	59	68	41	33	28	59	44	62	39	39	57	51	51	33	30	41	46	52	54	54	39

From / To	LE 23	LE 24	LE 25	LE 26	LE 27	LE 28	LE 29	LE 30	LE 31	LE 32	LE 33	LE 34	LE 35	LE 36	LE 37	C.S.S	IAO	TDM 1	TDM 2	L D	M M	
Erlang	50	46	66	46	236	232	344	190	100	126	100	82	82	310	178	115.4	770	--	330.7	80	20	
Circuits	62	57	80	57	264	260	382	214	117	144	117	96	96	345	202	166	--	--	436	94	42	

Exhibit 10

Traffic And Circuits Distribution of Model Exchange II (Initial Capacity 30000 Lines) And Other Exchange in the Same Area.

To / From	LE 1	LE 2	LE 3	LE 4	LE 5	LE 6	LE 7	LE 8	LE 9	LE 10	LE 11	LE 12	LE 13	LE 14	LE 15	LE 16	LE 17	LE 18	LE 19	LE 20	LE 21	LE 22
Erlang	28	23	24	16	13	12	24	15	18	15	15	21	19	17	11	12	15	17	22	24	24	16
Circuits	40	35	33	23	20	22	33	24	26	24	22	33	30	24	20	22	22	24	34	36	33	23

To / From	LE 23	LE 24	LE 25	LE 26	LE 27	LE 28	LE 29	LE 30	LE 31	LE 32	LE 33	LE 34	LE 35	LE 36	LE 37	IAO	TDM 1	TDM 2	LD, MAX Exp. via TDM1			
Eelang	27	23	33	21	118	116	170	92	55	65	53	41	42	158	90	385	47.2	103.3	80			
Circuits	40	32	42	29	154	134	192	107	78	78	65	59	52	179	106	—	76	150	128			

Exhibit 10

101

Traffic and Circuits Distribution of Model Exchange II (Initial Capacity 30000Lines) and Other Exch. in the Same Area

From / To	LE 1	LE 2	LE 3	LE 4	LE 5	LE 6	LE 7	LE 8	LE 9	LE 10	LE 11	LE 12	LE 13	LE 14	LE 15	LE 16	LE 17	LE 18	LE 19	LE 20	LE 21	LE 22
Erlang	32	24	28	16	12	10	24	17	20	15	15	23	20	20	12	11	16	18	21	22	22	15
Circuits	41	33	36	23	18	16	33	24	28	22	22	32	28	28	18	17	23	26	29	30	30	22

From / To	LE 23	LE 24	LE 25	LE 26	LE 27	LE 28	LE 29	LE 30	LE 31	LE 32	LE 33	LE 34	LE 35	LE 36	LE 37	IAO	C.S.S	TDM 1	TDM 2	L D	M M	
Erlang	25	23	33	23	118	118	173	97	50	63	50	41	41	155	89	385	527	—	165.2	40	10	
Circuits	34	32	42	32	136	136	196	113	62	76	62	52	52	177	105	—	90	—	231	51	26	

LE 1 ... LE 37 Local Exchange

IAO Intraoffic traffic

C.S.S Centralized Special Service Exchange

TDM 1 Tandom Exchange I

TDM 2 " " II

L.D Transit Exchange for Long Distance

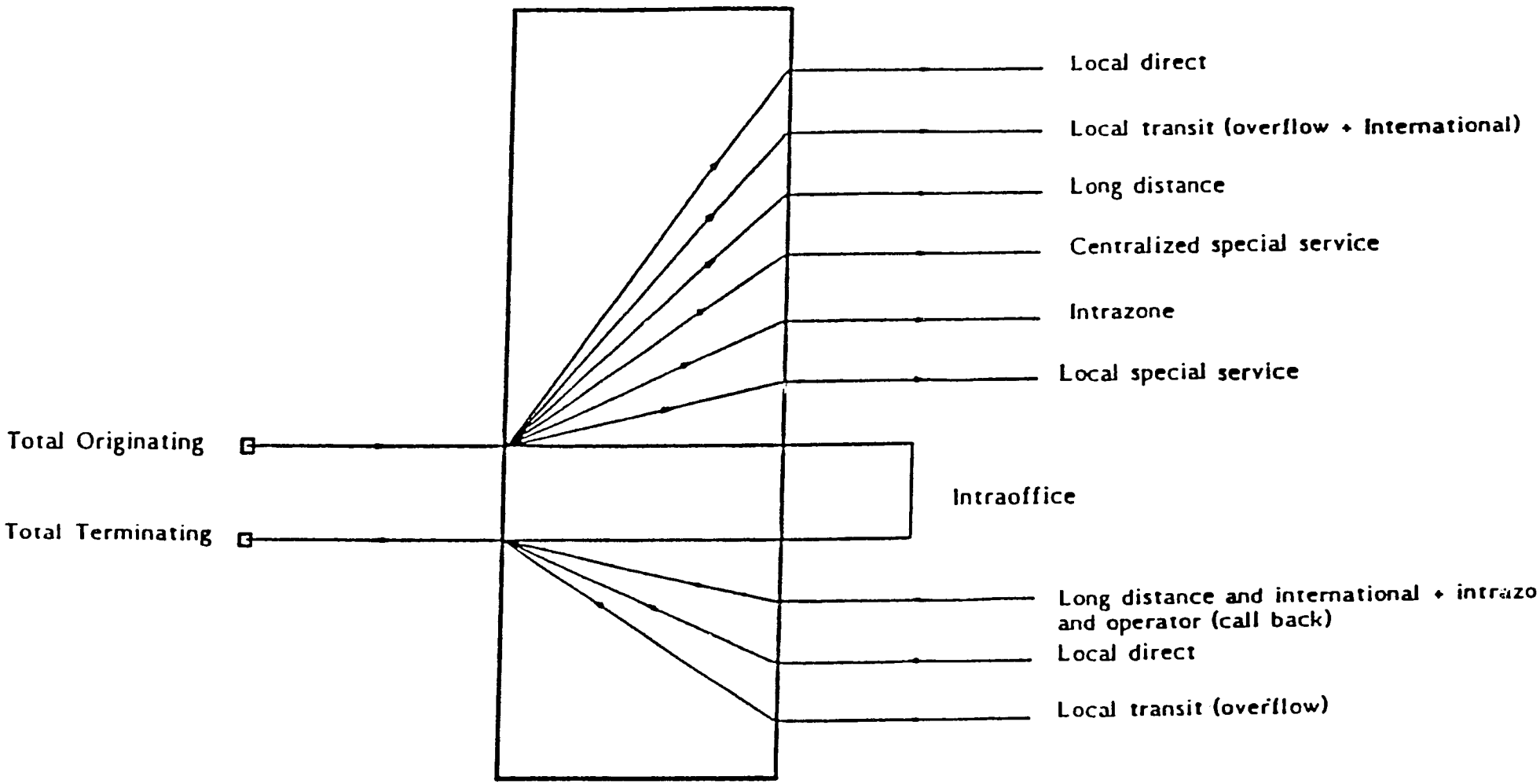
M M " " " Intrazone

Exhibit 10

102

Model Exchange No. 2
Local Exchange(Large Capacity)
Exchange Traffic Data

Description	Initial Capacity	Final Capacity
1- Subscriber Line	30000	60000
2- Route Information		
- Routes	100	100
- Outgoing Circuits	2284	4288
- Incoming Circuits	2304	4346
3- Exchange Busy Hour Calling Rate (Erlang per line)		
a- Average Outgoing	0.128	0.128
b- Average incoming	0.065	0.065
O/G Traffic (Erlang)	0.063	0.063
- To long distance	36	72
- To International	10	20
- To Local Transit	10	20
- To local (Direct)	Intrazone+155.2 Local)	Intrazone+310.4 Local)
- To Special Service	1360.8	2721.6
- Exchange (Intraoffice)	53+10 * 385x1.5 **	106+20 770x1.5
- Total	2020	4040
% Own exchange traffic	19 %	19 %
% MF pushbutton telephone traffic	100 %	100 %
- Incoming traffic (Erlang)		
- From long distance	50	100
- From International	20	40



Traffic Flow diagram of Model Exchange No. II

Exhibit 10

104

- From local transit	150.5 (local)	301 (local)
- From local direct	1354.5	2709
- From operator (Call back)	10	20
- Exchange	385x1.5	770x1.5
- Total	1970	3940
- Average call holding time (Seconds)		
- Local calls	150	150
- Long distance calls	100	100
- International calls	120	120
- Special service calls	80	80
- Effective calls	75 % (of originating)	75 % (of originating)
- Busy Hour Call Attempts	5.8	5.8
(Per Subscriber) Maximum	—	—
- Trunk positions	—	—
- Information positions	—	—
- Supervisor positions	—	—
- Service obseration desk	—	—
- Ring down Circuits	—	—
- Call offices	—	—

* National traffic via operator (on demand semice).

** Second busy hour for Intra office traffic which is non coincidont with the exchange busy hour.