

PDWAY 683
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

June 24, 1987

MEMORANDUM

TO: PPC/PDPR/SP, Frank Method

THRU: S&T/ED, D. Sprague *D Sprague* ✓

FROM: S&T/ED, C. Block *C Block*

SUBJECT: Evaluation of USTTI

Transmitted herewith is the final evaluation report on USTTI, carried out at the request of PPC and S&T. The review was carried out over the past several months by John Daly, from A.I.D.'s Office of the Science Advisor, Birge Watkins, S&T/IT, and Joe Sconce, TDP. During this period, they carried out 35 interviews and reviewed substantial documentation. The evaluation is in two parts, an interim report dated 13 March, 1987, and a final report dated June 22, 1987.

As grant manager, I would like to comment on the key recommendations of the report.

I. KEY RECOMMENDATIONS

1. RECOMMENDATION: A.I.D. should continue funding the USTTI.

COMMENT: Agreed.

2. RECOMMENDATION: A.I.D. funding should be put on a long-term basis, through execution of a five-year grant.

COMMENT: Our support certainly should be put on a multi-year basis. However, I would propose 3 or perhaps 3-1/2 years, rather than 5 years--circumstances change rapidly in this field, and the Agency should review the situation afresh after three years.

3. RECOMMENDATION: A.I.D. funding should grow about 50%, to permit a commensurate growth in the number of USTTI trainees.

COMMENT: Disagree. I would propose holding at the recent level of no more than \$500,000 per year, with growth to come from other sources of funding.

4. RECOMMENDATION: Management should continue to be held by S&T, specifically by ED in collaboration with IT.

COMMENT: Agreed, assuming PPC continues to hold the budget within its own program. Should another Bureau's budget pick up the funding for USTTI, the Bureau may well wish to manage the grant. Meanwhile, within S&T/ED the program has some synergy with other development communications activities carried out by this Office, and makes use of its communications expertise.

II. OTHER RECOMMENDATIONS

1. RECOMMENDATION: An inter-agency advisory committee should be set up to represent U.S. Government interests more widely in terms of the allocation of the A.I.D. grant.

COMMENT: Opposed. Other agencies' interests in this field arise from mandates different from those of A.I.D., such as trade and telecommunications regulation issues. While those issues are of genuine importance to the U.S. Government, the relevant agencies should find a way to fund USTTI participation themselves.

Alternative suggestion: have a one-time meeting, called by A.I.D., to discuss this issue frankly and to solicit wider U.S.G. support. The most germane other agencies include State's Communications Policy Office, Commerce's NTIA and ITA, JDP, and USIA. Within A.I.D., PRE and IT would also be engaged in the meeting.

2. RECOMMENDATION: A policy round-table, aimed at the ministerial level, be developed as an added USTTI program.

COMMENT: An excellent idea for USTTI to consider. I would hope that foundation or USIA funding could be made available, in order to preserve A.I.D. funding, and I would

2

be glad to work with USTTI to seek such. If some A.I.D. funding is needed, I would limit it to per diem only, since policy people should be able to secure their own travel funds.

3. **RECOMMENDATION:** A few courses should be carried out in LDCs.

COMMENT: If USTTI decides to proceed with such courses, which makes sense for many technical skill areas, there is no reason we should not fund some of the participants, so long as our funding is limited, as usual, to travel and per diem, and the A.I.D. mission in the host country has no objection. USTTI is cautionary about this approach because of the heavy management load it imposes on its small staff. However, overseas installations of U.S. companies might be encouraged to take on full responsibility for actual course logistics, just as is now the case for U.S.-based USTTI courses.

III. RECOMMENDATIONS FOR THE U.S. GOVERNMENT

1. **RECOMMENDATION:** That A.I.D. consider a complementary effort in overseas telecommunications and information technology training, through support of regional training centers in the LDCs.

COMMENT: Substantively, this is attractive, in that it would fill a strongly perceived need, and with A.I.D. involvement could accelerate the utilization of these advanced technologies within development programs. However, it would mark a major initiative, with substantial recurring funding obligations, in a field which the Agency has not yet marked out as a priority. PPC will have to decide whether to proceed further with an investigation of this suggestion.

2. **RECOMMENDATION:** This model of industry-government cooperation should be applied to other scientific and technical training needs, in addition to telecommunications.

COMMENT: Strongly agree. S&T/ED and PPC should convene a meeting to ascertain the interest of other groups in A.I.D. PRE and IT would seem to be likely candidates to take a lead in studying this possibility, with participation from John Daly, who explored the idea while conducting this evaluation.

IV. OTHER COMMENTS

1. I recommend that USTTI be asked to submit, by the end of 1987, a business plan that will outline a strategy for decreasing its dependence on A.I.D. funding, through a gradual increase in other sources of funding. We should ask them to set some targets.
2. We should ask USTTI to explore with us a modest increase in the range of courses on new information technology, notably microcomputers, text storage devices, and microcomputer-communications networking. There is a ravenous market for such information and training in the developing world, outside of telecommunications authorities. An observation of the response to new offerings in this field could help guide the Agency's policy in this area of growing importance.
3. I believe A.I.D. management of the grant should take a few additional steps; should I continue as manager, I will do so. First, there should be a regular presentation to all trainees on A.I.D.'s interests in telecommunications, in the process noting A.I.D.'s major role in making possible the USTTI. Members of my staff previously gave such presentations, which were well-received, but with staff reductions that is no longer possible. A taped presentation, largely using available videos, can be developed. Second, we should have TDP regularly present a review of its feasibility studies program to USTTI trainees, conceivably along with other U.S. agencies with potential services to offer to the LDCs. Third, as the report suggests we should encourage participation in USTTI by private sector entities in the LDCs. Finally, we should cable those few missions that have not taken full advantage of the USTTI opportunity, urging them to bring next year's program to the attention of appropriate authorities.

4. We should add funding to the grant to permit continuation of the A.I.D.-sponsored USTTI course, "Satellite Systems Applications For Rural Telecommunications." This popular course has been offered for the past two years through funding from the ST/Ed Rural Satellite Program, which is coming to an end in December, 1987. The course is an important vehicle for disseminating A.I.D. work in development applications of telecommunications. It also gives us a more substantive involvement with USTTI, helpful on the management side. An addition of \$10,000 per year will permit continuation of this program.

5. One issue we should discuss collectively is the use of A.I.D. funding for the more prosperous countries, companies, and telecommunications authorities. Should we perhaps offer them only per diem, requiring that they pick up international travel costs? Equity would suggest we should, but we do not know the impact of a change in policy on the participation of experts from such important A.I.D. countries as Indonesia and the Philippines.

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON DC 20523

June 22, 1987

MEMORANDUM

TO: AID/S&T/ED, Cliff Block
AID/PPC/PDPR, Frank Method

FROM: AID/SCI, John Daly *JAD*
TDP, Joe J. Sconce
AID/S&T/IT, Birge Watkins

SUBJECT: Evaluation of the U.S. Telecommunications Training
Institute (U.S.T.T.I.) Final Report

This evaluation report is complementary to the interim report dated 13 March 1987. The general conclusions are still positive with respect to the performance and importance of U.S.T.T.I. This report is based on a series of interviews conducted after March 15 with trainees, trainers, staff, government officials, and independent observers of U.S.T.T.I. The evaluation team also did some review of files of U.S.T.T.I., in addition to that undertaken for the interim report, and reviewed some pertinent literature on telecommunication policy.

CONCLUSIONS:

The judgment of the performance of the U.S. Telecommunications Training Institute is very positive. Of the numerous informants interviewed, not a single one was negative about the overall performance of the organization. Negative comments and suggestions for improvement were invariably prefaced with comments that specified that they were minor faults with a superior organization. One informant characterized U.S.T.T.I. as "superb--the best instrument of U.S. foreign policy in telecommunications today!"

We wish to specifically acknowledge the excellence of the work of Judith Sparrow. At least half of the persons interviewed voluntarily singled her out for special praise, and were unstinting in that praise.

RECOMMENDATIONS:

It is recommended that a five year grant be made to the U.S.T.T.I. by the Agency for International Development (AID). The grant would allow expansion of the current funding for participants by approximately 50 percent. As discussed below, the limitation on the size of U.S.T.T.I. is primarily from the need to maintain quality and the nature of its services, rather than limits on the need or demand for such training in telecommunications. Thus the recommendation is for modest growth over a sustained period. The grant would be administered by the Science and Technology Bureau of AID, preferably by the Office of Education with the cooperation of the Office of International Training. For the purposes of balancing the targeting of U.S.T.T.I. training to meet the various needs of

the U.S. Government, it is recommended that AID form a project advisory committee with representatives of State, USIA and Commerce.

It is recommended that the U.S.T.T.I. seek additional collaboration from the private sector and other sources to make a comparable increase in course offerings. Finally it is recommended that the U.S.T.T.I. staff be increased modestly both to accommodate this increased service load and to reduce the per-person staff demands that are currently being made. As U.S.T.T.I. makes the transition from an initiative to an established member of the international community, it is important that it seek to further diversify its sources of funding, and avoid too great a dependency on A.I.D. financing.

In general the nature of the program should not be changed. It is especially important to maintain the small unbureaucratic nature of the U.S.T.T.I. organization, and to maintain the courses taught by practicing U.S. experts for selected leaders in developing countries. Modest efforts, of course, should be made to: (1) improve AID missions' understanding of the nature of the U.S.T.T.I. program, (2) improve the descriptive materials available to prospective students about the courses offered, (3) increase the advance notice of students of their acceptance in courses, (4) increase the number of students from countries and regions of special interest to the United States for diplomatic or commercial reasons, (5) make classes more homogeneous in terms of the abilities and backgrounds of the students, (6) improve the design of individual courses using formative evaluation from students, faculty and observers, (7) improve the targeting of training to leaders in telecommunications policy, procurement and management in developing countries of importance to the U.S., and (8) target private sector trainees more effectively in those countries with both public and private sector telecommunications organizations. This recommendation is in effect a recommendation to maintain the trend of product improvement that has been noted by several informants through accepted management practice.

We have two specific recommendations:

- (1) U.S.T.T.I. hold a Roundtable for approximately 12 Ministers of Telecommunications from selected developing countries, with comparably senior U.S. telecommunications executives and government officials. The Roundtable would allow a frank exchange of ideas among participants. While not training in the normal sense of the term, such an exchange should be valuable in improving understanding of developing country leaders of the interests of suppliers of telecommunications technology, and understanding of U.S. officials of the interests of the developing countries. Moreover, such a Roundtable should provide valuable orientation to U.S.T.T.I. as to the developing country needs and demands for training. If the Roundtable were successful, it could be repeated periodically. Foundation support might be available for this activity.
- (2) U.S.T.T.I. provide a small number of courses, on a regular basis, in Third World settings. Several informants were very positive about the Caribbean course last year, and suggested

that such courses be repeated. Thus courses could be offered in the Mideast (perhaps the IBM scientific research center in Cairo), Asia (Asian Institute of Technology, Indian Institute of Technology), and Latin America (or Puerto Rico). For some courses, fully appropriate facilities exist in the developing world. The savings from 15 to 30 students attending a course in their own region should more than make up for the cost of transporting faculty from the U.S. Such courses could facilitate attendance by students not comfortable in English, and would suggest a willingness of U.S. industry to reach out to the developing countries. Moreover, the few interviews held with U.S.T.T.I. students in the Americas suggested that they all had visited the U.S. independently, and were not greatly benefited by exposure to the U.S., per se. It is emphasized that the intent here is to complement a continuing predominant U.S. training program with a small percentage (10 to 25 percent) of overseas courses.

There are two far more general recommendations that the team wishes to make: (1) that AID consider a complementary effort to U.S.T.T.I. for in-country training in telecommunications and information technology, perhaps based on U.S. trade school, college or university models, and (2) that the U.S. seek to replicate the U.S.T.T.I. model in other sectors.

As is discussed in the section on the need and demand for telecommunications training in the Third World, that demand is enormous. Moreover it would be desirable from developmental, commercial and diplomatic perspectives for the U.S. to help meet these needs more fully. However, U.S.T.T.I. has a comparative advantage for only a portion of this training, and to change the nature of U.S.T.T.I. to extend its range of training might well threaten that which it now does well. Specifically, it is recommended that AID consider supporting a small number of regional telecommunications and information technology training centers in developing countries. Centers would provide professional courses for mid and low level engineering personnel and for technicians from the host and neighboring countries. Laboratory equipment and training facilities would be U.S. technology (perhaps facilitated by U. S. industrial donors). U.S. training institutes (commercial technical training, college, or university) would be prime contractors for technical assistance in developing these centers. Private firms would be encouraged to participate through assignment of personnel on detail and in other ways. In this way the U.S. could reach a large number of developing country personnel with training which is critically needed, but who could not justify training in the U.S.

A number of persons interviewed felt that the example of U.S.T.T.I. should be expanded in other fields. Some of the germane characteristics of the situation are: a field of rapidly changing technology in which the developing countries are having difficulties

keeping up with training needs; U. S. firms are locked in competition with European and Asian firms for developing country markets; and international bodies involved in regulation and normalization of the industry. This situation is not found everywhere--for example, a well placed informant in the computer industry doubted that the U.S. mainframe industry was comparable to the telecommunications industry. On the other hand, the pharmaceutical industry does appear to satisfy these conditions, and in fact the U.S. Pharmaceutical Manufacturers Association in cooperation with their international counterpart association to carry out training of developing country governmental officials.

Some of the characteristics of U.S.T.T.I. as a response are real partnership between the private and public sectors, a small, efficient secretariat, use of other organizations to provide the actual training, and dependency on larger organizations to provide some of the logistical support. One of the key elements of the success of U.S.T.T.I. according to all informants has been Micky Gardner. It is not clear that the creation of comparable institutes in other fields such as agribusiness, health, transportation, construction, etc.. will be possible without the dedicated and enthusiastic participation of a private individual who has confidence of and access to leaders in both the public sector and in private industry, and who has the leadership abilities to organize and staff the core organization.

BACKGROUND:

It is necessary to understand something of the economics of information technology in developing countries in order to understand the role and importance of the U.S.T.T.I. We must suggest first that many of the preconceptions for the American reader must be discarded in thinking about the developing world. Most poor countries are not as literate as we, and even the literate do not have our access to print media. Consequently the value of radio and telephone are potentially greatly enhanced. Secondly, the media are not used in the same manner in developing as in developed countries. Thus in rural areas of some developing countries, telephones are not used principally for person-to-person conversations but rather for leaving messages for recipients who come to the telephone to pick them up. Similarly, telephones in rural areas of developing countries may be used proportionately far more frequently for medical and other emergencies than in developed countries.(1)

Information technology has been reduced in cost dramatically in recent decades. At the extreme it has been estimated that in the past fifteen years cost per unit performance in computers decreased 100,000 times. The price of a black and white TV has come down from about \$350 (1983 equivalent) to under \$100 today, and it is estimated that an acceptable model for rural Africa could be manufactured for under \$15. Costs of hard wire telephone lines have come down slightly, and satellite transmission and microwave have dramatically reduced certain kinds of transmission costs. Thus

decreasing cost of technology should drive increasing use of the technology in developing countries.⁽²⁾

There is a clear body of evidence that telecommunications technology use increases with level of economic development. This is true for telephones per capita, radios per capita, televisions per capita, and undoubtedly for more recent innovations such as cellular communications devices⁽³⁾. Consequently, the economic development of the Third World will stimulate demand there for telecommunications and information technology. It should be noted that in the early 1980's per capita availability of radios was estimated as roughly eight times as high in developed as in developing countries, television as 13 times as high, and telephones as roughly 20 times as high.

Information technology has interesting economies of scale. One expects that here will be the general character of decreasing returns to scale in some senses--the phone calls that are made now probably have high value per call; additional access to phones would probably encourage more calls of lower per message value. This is like the situation for many goods and services. However, the more phones exist in a country, the more valuable it is to have a phone--the more people you can contact and the more information that is potentially available. Similarly, the larger the audience for a broadcast, the more resources you can put into the preparation of the broadcast, and the more benefits you can bring to the listener. Thus in many respects the more complete the information infrastructure in a country, the more beneficial is further investment in information and information technology. Thus growth in information sector in developing countries should stimulate more rapid further growth.

The economics of information technology appear very favorable in developing countries. Scattered studies in fisheries, agriculture, social services and manufacturing sectors all suggest high returns to investment in communications technology⁽⁴⁾.

There is a growing consensus that developing countries and donor agencies have underinvested in telecommunications^(5,6,7). Essentially the argument has been made that economic studies of investments in telephone and other telecommunications investments have focused on the revenues appropriated by the organizations running the systems, as compared with the investments required. However, frequently the consumer surplus from use of such media is many times the price of the service. Thus evaluating the utility of a phone call at the price of the call may underestimate the consumer utility by orders of magnitude. More generally, some observers suggest that investment in communications infrastructure has considerable leverage in the the benefits of other investments, and communications investment externalities can be a positive motor for economic development.

Finally, the activities of developing countries and those of developed are profoundly interrelated in specific areas of

telecommunications(8,9,10). Thus, decisions made as to the allocations of satellite orbits, the allocation of broadcast frequency to specific users or types of use, or the granting of international carrier rights to certain classes of carriers have major economic impacts on developed and developing countries. In some degree these interests are complementary, but obviously more attention is directed at areas of competing interests.

In summary, the situation is one of probable rapid investment in telecommunications infrastructure in developing countries. The rapid investment will produce major developmental opportunities. It will also produce considerable market growth for various types of telecommunications equipment. Currently the U.S. is at a disadvantage in competition for this market⁽¹¹⁾. The rapid growth will also inevitably strain the absorptive capacity of the developing countries, especially in terms of technically trained people to run, use and manage the new technological infrastructure. Finally, the degree to which the U.S. is seen as responsibly responding to the real needs and legitimate interests of the developing countries in dealing with the opportunities and challenges of information technology, to that degree may we expect them to respond responsibly to our needs for international cooperation.

QUANTIFICATION OF THE APPROPRIATE SIZE FOR U.S.T.T.I.

Two approaches appear possible for the analysis of the appropriate scale for U.S.T.T.I. On the one hand it is possible to calculate the need for U.S.T.T.I.'s services. This, of course, can only be done in terms of the numbers of people to be trained to meet its several objectives. The alternative approach is to calculate the capacity of U.S.T.T.I. to offer training based on the number of organizations likely to work through U.S.T.T.I., and the capacity of the U.S.T.T.I. team to manage the effort.

In terms of the diplomatic objectives of the U.S.T.T.I. informants in the appropriate agencies gave the organization very high marks. In part this was simply due to their ability to bring the existence of the organization up in meetings and discussions. However, appropriate informants could invariably give examples of individuals that they had met in international negotiations that had been U.S.T.T.I. trainees. U.S.T.T.I. staff at our request reviewed the lists of participants at six international meetings on telecommunications and identified the former trainees in attendance--percentages ranged from 2.3 to 9.5. Particularly noteworthy was the fact that 9.5 percent of the participants at the 1984 Radiodiffusion Conference and 9 percent of the those at the 1985 Space WARC were U.S.T.T.I. trainees. It is suggested that the universe of persons qualified for these fora is quite limited, that U.S.T.T.I. is targetting the participants quite effectively, and that continuation of the training of this group at approximately the current level of effort is appropriate.

It is noted, however, that two informants felt that U.S.T.T.I. was not reaching enough of the most senior developing country

telecommunications policy makers. The review of a sample of application forms is not a good mechanism for evaluating such a claim, but the data in the Appendices does not refute the claim. For that reason a recommendation has been made to initiate a Roundtable Meeting of U.S. and developing country telecommunications policy makers.

In terms the developmental and commercial objectives of U.S.T.T.I., the number of individuals to be trained may be very large indeed. One informant suggested that the number of persons involved in technical aspects of broadcasting and telecommunications in the developing world may be on the order of 250,000. Some data illustrative of the needs are as follows:

Numbers of Radio Transmitters by Region(12)

Africa	700
Asia	3,400
Latin America	5,300
Middle East	450
Oceania	450
Total	<u>10,300</u>

Thus there are estimated to be more than 10,000 radio stations in developing countries, which are likely to have the need for several trained persons each.

A recent study of communications in Andean Pact countries(13) identified the following figures from knowledgeable sources:

Bolivia	16 television stations, 59 radio stations
Colombia	5 channels TV, 404 AM and 92 FM radio stations
Panama	5 channels TV, 75 radio stations
Ecuador	346 radio stations
Venezuela	6 channels TV, 164 radio stations

The 1100 radio stations in these five countries is roughly comparable to the figures given above.

The data in the accompanying table, drawn from the UNESCO Statistical Yearbook (14), suggest very large numbers of persons working in broadcasting in developing countries.

We have been less successful in obtaining data on telephone employment. The following data from Saunders et al(15) suggest both the size of the telephone system and the potential for expansion:

Distribution of the World's Telephones and Population

<u>Region</u>	<u>Telephones (1981)</u>	<u>Population</u>
Developed Countries	470 million	1,205 million
Developing Countries	38 million	2,976 million

ESTIMATES OF
TECHNICAL PERSONNEL IN RADIO/TV

<u>COUNTRY</u>	<u>TOTAL IN RADIO/TV</u>	<u>%TECH</u>	<u># TECH IN R/TV</u>
AFGHANISTAN	1587	N/A	N/A
ALGERIA	2800	39.8	955
ANGOLA	900	11.0	99
BAHRAIN	314	5.4	17
BANGLADESH	2926	N/A	N/A
BELIZE	58	13.8	8
BENIN	154	4.6	7
BHUTAN	25	8.0	2
BOLIVIA	983	N/A	N/A
BOTSWANA	261	4.3	11
BRUNEI DARUSSALAN	839	4.8	40
BURKINA FASO	217	19.2	10
BURUNDI	165	9.7	16
CAMEROON	280	17.9	50
CHAD	125	17.6	22
CHILE	3260	11.4	374
COLOMBIA	1126	35.1	395
ETHIOPIA	781	13.6	106
FRENCH GUIANA	94	6.4	6
GHANA	3229	20.7	668
GUINEA-BISSAU	89	18.0	16
GUYANA	90	7.8	7
INDIA	19,941	N/A	N/A
INDONESIA	8,849	N/A	N/A
IRAN	11,541	N/A	N/A
IRAQ	2,981	N/A	N/A
JORDAN	1281	14.9	191
MADAGASCAR	370	N/A	N/A
MALAYSIA	5,785	N/A	N/A
MALI	336	14.9	50
MOROCCO	1607	19.3	310
PAKISTAN	5,485	N/A	N/A
PHILIPPINES	18,786	N/A	N/A
REUNION	88	11.4	10
RWANDA	84	N/A	N/A
SENEGAL	914	10.5	96
SIERRA LEONE	634	3.2	20
SRI LANKA	2,563	N/A	N/A
SUDAN	909	N/A	N/A
SWAZILAND	51	11.8	6
UNITED REP. OF TANSANIA	557	16.2	90
ZAMBIA	461	N/A	N/A

source: UNESCO STATISTICAL YEARBOOK

We can put these data into the context of Joe Pelton's recent projections for world milestones in information technology⁽¹⁶⁾:

telephones in use	over one billion
television receivers	over one billion
broadcast satellites	nearly 200
fiber optics cables	over 100,000 miles installed
computers	over 200 million in CECD countries
robots and advanced num.. control	nearly 500,000 machines
investment	over one trillion dollars

The suggestion is of a need for training which dwarfs the level of several hundred per year possible for U.S.T.T.I.

On the other hand, the capacity of U.S.T.T.I. to provide training appears to be quite limited. Perhaps the most telling argument is that the vast majority of persons needing training will be best and most efficiently served by training in their own countries or nearby countries. The U.S. has no comparative advantage in training technicians and equipment repair personnel in the very large numbers that are needed in the developing world, especially not in bringing them to the U.S. U.S.T.T.I. as currently constituted has no experience or apparent advantage in providing in-country training, nor in developing institutions to provide such training.

In some cases, such as training in spectrum management or high frequency broadcasting, U.S.T.T.I. appears to us to be close to capacity since it has been fortunate to get unique U.S. organizations to set up special courses. Moreover, various informants cautioned that it is better to keep the administrative staff of U.S.T.T.I. "small and lean (but not starving)." In fact, several informants suggested that at least one additional staff member would be advisable now, because the level of commitment of the four person staff to maintain the very high level of service now provided is unfair and in the long run probably not sustainable.

FINANCING OF THE U.S.T.T.I.

In the process of the evaluation, we discussed the financing of U.S.T.T.I. with officials from AID, State, TDP, NTIA, and USIA, as well as with representatives of the private sector. In general there was agreement that AID was the sole governmental organization with the ability to provide funds for travel and per diem for participants in the training, and that such funding was needed for many participants.

One informant suggested that more of the cost of training should be born by the home institutions of the trainees. In the case of agencies involved in international telecommunications, even in very poor countries, there is usually considerable solvency--international telephone is a money making proposition. In the same sense,

one trainee informant said that he could have found financing if he had had more warning between the time he was accepted and the time he was to report to training. In corroboration, the trainees interviewed were unanimous that they sufficiently valued the training to strongly recommend to their home institutions to send more trainees.

We have not had the resources to investigate other possible sources of funding. Thus it would appear potentially possible to stimulate considerably more demand for training from AID mission funds, from the multilateral development banks, and from other donors. Similarly, it would seem that the airlines, seeing their dependence on well certain telecommunications technology, might be willing to enter into sponsorship of U.S.T.T.I. by subsidizing participant travel (as well as by providing training in telecommunications for civil aviation). We suggest that U.S.T.T.I. staff follow up such ideas, but nonetheless are extremely pessimistic that AID funding can be replaced by other sources.

In the discussions with government agencies, however, there was considerable concern that AID funding targeted countries that were not necessarily consistent with overall U.S. priorities. In general, AID has given the highest priority to Africa for training, based on the argument that the developmental benefits of subsidized training will be greatest in countries with the fewest trained personnel in telecommunications. On the other hand, it is argued that the fastest growing telecommunications infrastructure is in the so called "AID graduate" or newly industrializing countries, and the commercial interests of the U.S. would be most served by emphasizing training in these countries. In terms of diplomatic impact, certain countries such as India, Algeria and Morocco currently have a disproportionate influence in Third World telecommunications fora, and while not AID priority countries might be for State. Ideally one would wish for a funding mechanism that balanced all U.S. interests and balanced humanitarian, commercial and diplomatic interests effectively. While for some years it has been proposed that an agency be created to carry out such a policy in Science and Technology, or in the more advanced developing countries, the problem of lack of an ideal policy instrument still exists.

Some informants suggested that there exists potential congressional support for an initiative in the field of telecommunications training to authorize funding for more developed countries and for more commercial and diplomatic purposes if such an initiative were required. Moreover, these informants suggested that congressional support might be available to authorize such funding in a budget other than AID's if that were deemed useful. However, other informants were quite pessimistic about the potential for such legislative change for other agencies.

NATURE OF THE U.S.T.T.I. COURSES

In one respect the evaluation team was surprised in the evaluation. Initially it appeared that the courses provided through U.S.T.T.I.

were relatively standard courses that were developed by U.S. industry for their domestic clients and purposes, and then opened to developing countries through U.S.T.T.I. Examples of such courses were found, as were courses tailored from standard elements in a general curriculum. Even these courses tended to be tailored for the special needs of the developing country students. In two cases informants specified that they had created new courses for U.S.T.T.I. and were now about to market them.

Perhaps more important, there were several instances in which courses were created by organizations especially for U.S.T.T.I. that used the line expertise of the host organization, pulling experts away from their day-to-day technical and administrative responsibilities for the purpose of the training. In these cases, a unique opportunity is provided for technical exchange between U.S. experts and carefully selected developing country counterparts. The quality of the professional experience provided for the developing country participant must be presumed very high. Such training, by its very nature is modest in scale--the line experts cannot teach too much or they cease to be line experts.

In some cases, however, small numbers of courses for small numbers of developing country experts can have very great benefits. If one considers the international debates on orbit and frequency allocations, for example, the number of developing country experts in decision making situations is quite limited. Providing these people with professional exchanges, in the form of short courses taught by their U.S. professional colleagues, may have profound diplomatic, developmental and commercial benefits. Thus the promotion of specially crafted courses by public and private organizations, drawing on their line staff to provide collegial exchange with very carefully selected developing country colleagues, is a unique and potentially very valuable service of U.S.T.T.I. which it should continue to stress.

COMMERCIAL INTEREST IN U.S.T.T.I.

A number of informants were questioned as to why their corporations were participating in U.S.T.T.I.'s programs. The responses were not uniform. However, while some scattered reports were made of specific commercial follow-ups in the sale of products and services, this was not a predominant theme. One informant articulated particularly well themes inherent in a number of interviews. The informant stressed that there was a corporate responsibility in training and technology transfer owed to developing countries, which his corporation was willing to shoulder. However, he further stressed that he wanted it to be clear to the developing countries that his corporation was willing to shoulder this responsibility. He further stressed that there was a corporate responsibility to the United States to back the countries efforts in international telecommunications, and that his firm sought to fulfill this domestic responsibility as well. It was his position that serious undertaking of these corporate responsibilities to the home country and the client countries was in the long term advantage of his corporation.

COMMENTS ON DATA ON TRAINEES AND APPLICANTS

A relatively brief investigation of the data on trainees was made. The application form is brief, and provides basic data for statistical purposes on the trainees. At least one informant from a training institution commented that there was some difficulty in selection of the most appropriate data from these forms. His suggestion, however, was not that the form itself was lacking. Rather, he suggested that AID and other U.S. Government personnel in the field be motivated and instructed to do a better job in working with candidates to assure the forms were appropriately filled out by the applicants.

It may be noted from the data in Appendix 1 that many of the applicants had had previous training abroad, and that while the U.S. had done more training than any other single country among these applicants, training in other countries was reported more than twice as often as training in the U.S. This was particularly striking in that eight of the sample reported previous U.S.T.T.I. training.

The most common location in the sample for trainees was Africa, and African trainees were less well educated than applicants from other regions. Forty-one of the trainees had less than a B.S. degree. One wonders if this low level of education is representative of individuals making policy or specifying equipment for their countries.

A large percentage of the individuals in the sample were either technicians, or non-technical (i.e. public relations, personnel, programming) employees. Again one may question the degree to which this selection of individuals represents policy makers and those who specify equipment.

It is interesting to note that the sample was drawn very heavily from the public sector. In part this is no doubt due to the fact that the public sector is much more heavily involved in the media in developing countries than in the U.S., and especially so in Africa. Nonetheless one wonders if U.S. Government agencies publicizing the program have an inadvertent bias toward public broadcasting rather than private broadcasting, and toward public telephone organizations as compared to private companies involved in cellular and other areas of telephony?

Reviewing the information on age and sex of applicants and trainees provided in Appendix II, one notes that relatively few women apply for the training, and that unfortunately they are accepted in slightly lower proportions than their male colleagues. It is also noted that applicants are more frequently in their 30's than either their 20's or 40's. Selection appears to favor older applicants, which seems reasonable in terms of selecting more senior and therefore more influential trainees.

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AID/SCI:JDaly:235-3666:06/22/87:C001D

APPENDIX I--DATA ON TRAINEES

The following data was obtained from the files of applications for U.S.T.T.I. trainees. A random seed was selected, and then a sample was drawn of every 10th application.

new applicant	repeat applicant	previous trainee	not specified
53	12	8	3

Previous International Training Noted in Application

U.S.	Britain	France	Germany	Japan	Other
15	13	2	4	6	14

Level of Responsibility of Applicant

Division Manager	Project Officer	Engineer	Technician	Non-technical
9	8	33	27	27

Level of Education

level region	Africa	Near East	Asia	Latin America
less B. S.	26	1	3	11
B. S.	15	8	10	18
more B. S.	1	2	7	3

Type of Home Organization

	Telecommunications	Broadcast	Other Telecom.	Non-Telecom.
Public	46	21	5	4
Private	3	1		

APPENDIX II-DATA PROVIDED SPECIALLY FROM U. S. T. T. I.

**1986 USTTI PARTICIPANTS BY AGE, SEX
TOTAL=339**

		MALES	FEMALES	TOTAL
AFRICA	21-30	11	3	14
	31-40	34	1	35
	41-50	20		20
	51-60	6		6
	OTHER/NA	11		11
	TOTAL		82	4
ASIA	21-30	5	5	10
	31-40	28	5	33
	41-50	17	2	19
	51-60	3	1	4
	OTHER/NA	6	1	7
	TOTAL		59	14
CARIBBEAN	21-30	18		18
	31-40	27	2	29
	41-50	14	2	16
	51-60	3		3
	OTHER/NA	21		21
	TOTAL		83	4
C/S AMERICA	21-30	12	3	15
	31-40	22		22
	41-50	10		10
	51-60	1		1
	OTHER/NA	3		3
	TOTAL		48	3
NEAR EAST	21-30	6	1	7
	31-40	22	2	24
	41-50	4	2	6
	51-60	2		2
	OTHER/NA	3		3
	TOTAL		37	5

1987 USTTI APPLICANTS BY AGE, SEX TO MARCH 18, 1987
TOTAL=410

		MALES	FEMALES	TOTAL
AFRICA	21-30	40	6	46
	31-40	87	4	91
	41-50	38		38
	51-60	7		7
	OTHER/NA	7		7
	TOTAL	179	10	189
ASIA	21-30	30	7	37
	31-40	33	7	40
	41-50	22	2	24
	51-60	11	2	13
	OTHER/NA	3		3
	TOTAL	99	18	117
CARIBBEAN	21-30	9	1	10
	31-40	15	2	17
	41-50	2		2
	51-60	1		1
	OTHER/NA	2	2	4
	TOTAL	29	5	34
C/S AMERICA	21-30	12		12
	31-40	29		29
	41-50	10		10
	51-60	1		1
	OTHER/NA			0
	TOTAL	52	0	52
NEAR EAST	21-30	2	1	3
	31-40	10	1	11
	41-50	3		3
	51-60	1		1
	OTHER/NA			0
	TOTAL	16	2	18

1986 USTTI PARTICIPANTS BY AGE, SEX
TOTAL=339

		MALES	FEMALES	TOTAL
AFRICA	21-30	11	3	14
	31-40	34	1	35
	41-50	20		20
	51-60	6		6
	OTHER/NA	11		11
	TOTAL	82	4	86
ASIA	21-30	5	5	10
	31-40	28	5	33
	41-50	17	2	19
	51-60	3	1	4
	OTHER/NA	6	1	7
	TOTAL	59	14	73
CARIBBEAN	21-30	13		18
	31-40	27	2	29
	41-50	14	2	16
	51-60	3		3
	OTHER/NA	21		21
	TOTAL	83	4	87
C/S AMERICA	21-30	12	3	15
	31-40	22		22
	41-50	10		10
	51-60	1		1
	OTHER/NA	3		3
	TOTAL	48	3	51
NEAR EAST	21-30	6	1	7
	31-40	22	2	24
	41-50	4	2	6
	51-60	2		2
	OTHER/NA	3		3
	TOTAL	37	5	42

U.S. TELECOMMUNICATIONS TRAINING INSTITUTE

HISTORY OF CONTRIBUTIONS

<u>CORPORATION</u>	<u>DATE</u>	<u>AMOUNT</u>
AT&T	6/15/83	25,000
	7/24/84	25,000
	3/18/85	25,000
	5/28/86	25,000
BellSouth Corporation	2/20/86	25,000
CBS	2/8/85	10,000
COMSAT	12/3/82	25,000
	4/24/84	25,000
	6/21/85	25,000
	2/20/86	25,000
Cable and Wireless	7/18/86	25,000
Citibank, N.A. Citicorp Citibank, N.A.	9/25/84	1,000
	1/6/84	4,000
	11/12/85	1,000
Digital Equipment	9/9/86	25,000
Dow Jones & Co., Inc.	11/9/83	5,000
E.F. Johnson	6/22/83	4,000
GTE	2/4/83	25,000
	5/30/85	25,000
	10/28/86	25,000
Hughes Aircraft	8/20/84	1,000
IBM Corporation	6/22/83	10,000
	11/19/84	10,000
	8/15/86	10,000
ITT Corporation	8/23/83	15,000
MCI	12/10/82	25,000
	3/2/84	25,000
	5/23/85	25,000
	3/6/86	25,000
Merrill Lynch	6/14/83	4,000

Motorola, Inc.	2/8/85	15,000
	5/23/85	10,000
	2/28/86	25,000
New York Times Foundation	12/11/84	10,000
Northern Telecom, Inc.	6/14/83	25,000
	3/19/85	25,000
	3/1/86	25,000
Pacific Telesis International	12/31/84	25,000
	2/26/86	25,000
RCA	6/22/83	15,000
	8/11/83	500
	10/15/84	15,000
Rockwell Inter- national Corp.	11/11/84	10,000
SBS	9/18/84	1,500
Southwestern Bell Foundation	2/15/86	1,000
US WEST	4/4/85	25,000
	3/10/86	25,000
Westinghouse	9/16/83	8,000
Western Union	12/23/82	25,000
	1/20/84	25,000
	3/15/85	25,000
	2/20/86	25,000
Xerox The Xerox Foundation	1/3/84	12,000
	10/23/85	15,000

12/20/86

U.S. TELECOMMUNICATIONS TRAINING INSTITUTE

Record of Scholarships*

<u>ORGANIZATION</u>	<u>1983-84**</u>	<u>1985</u>	<u>1986</u>
AID/Washington	33	101 ⁺	132 ⁺⁺
USTTI	22	11	49
ITU	31	10	28
IPDC	33	7	-
USAID (Missions)	-	4	-
World Bank	2	1	9
UNDP	-	2	-
Pakistan Development Support Proj.	-	2	1
Cyprus-America Scholarship Fund	-	3	1
Institute International Education/IIE	-	1	1
Organization of American States/OAS	1	1	-
Partners in Americas	-	3	2
Asia Pacific Telecommunity	2	2	1
Partners/Internat'l Ed. & Training	-	1	7
World Meteorological Organization	-	1	-
U.S. Information Agency	34	-	2
AID/Rural Satellite Program	1	-	-
Trade & Development Program (Dept. of Commerce)	2	-	-
Fulbright Fellowship	1	-	-
Chinese Coord. Advisory Association	11	-	-
COMSAT	1	-	-
Nord Resources Corporation	2	-	1
Brazil Science Research Council	1	-	-
Digital Equipment Corp.	-	-	2
Hubert Humphrey Fellowship Prog.	-	-	1

*Includes full and partial scholarships

**Combined first two years of training

⁺Includes funds from FY84 and FY85 AID grants

⁺⁺Includes half of FY85 grant & \$300,000 extension in 1986

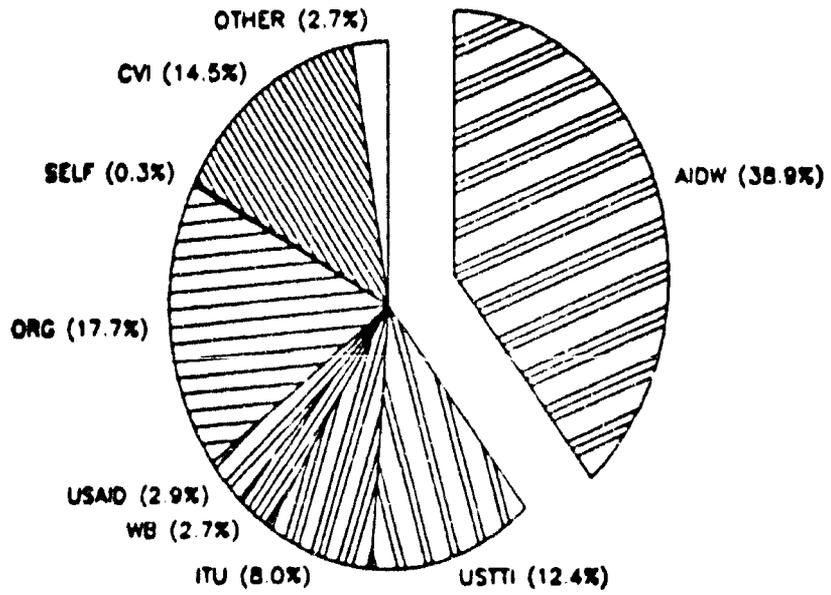
NOTE: Average stay in 1986 for each AID funded participant was 26.58 days.

U.S. TELECOMMUNICATIONS TRAINING INSTITUTE

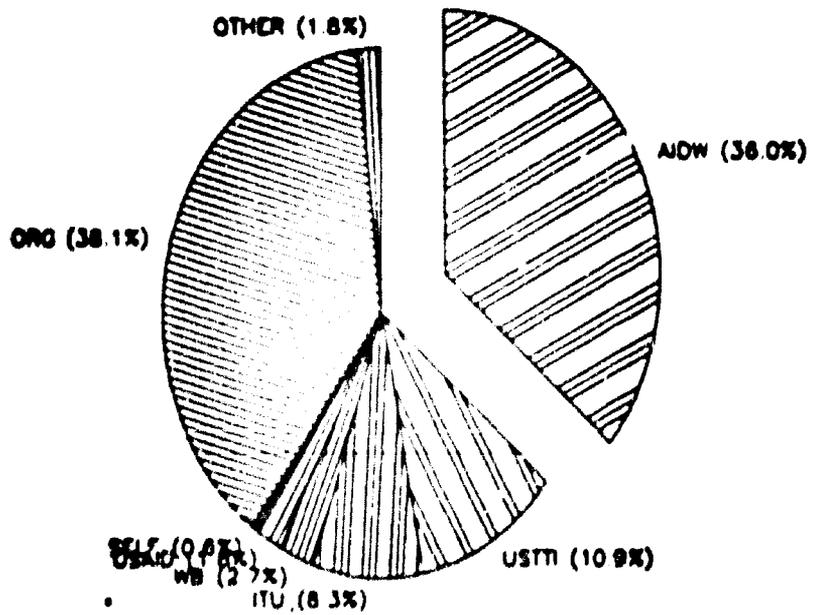
1986 SOURCES OF FUNDING

FUNDING SOURCE	TRAVEL SOURCE	PER-DIEM SOURCE
AIDW	122	132
USTTI	37	42
ITU	28	27
WORLD BANK	9	9
PART-INTL EDUC/TRAINING	3	7
PART FOR THE AMERICAS	2	2
PAKISTAN TRAINING PROG	1	1
DIGITAL EQUIPMENT CORP	1	2
NORD RUTILE RESOURCES	1	1
USIA		2
INST FOR INTL EDUCATION	1	1
ASIA-PAC TELECOMMUNITY	1	1
CYPRUS-AMER SCHOLARSHIP	1	1
HUMPHREY FELLOWSHIP	1	1
EMPLOYER	129	60
SELF	2	1
COLLEGE-VIRGIN ISLANDS		49
TOTAL	339	339

SOURCES OF SUBSISTENCE FUNDING (1986)



SOURCES OF TRAVEL FUNDING (1986)



AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

13 March 1987

MEMORANDUM

TO: AID/S&T/ED, Cliff Block
AID/PPC/PDPR, Frank Method

FROM: AID/SCI, John A. Daly *JAD*
TDP, Joe J. Sconce *JJS*
AID/S&T/IT, Birge Watkins *BW*

SUBJECT: Evaluation of the U.S. Telecommunication Training
Institute--Interim Report

The evaluation to date has been quite positive. No informant has yet been encountered who does not on the whole approve of the U.S. Telecommunications Training Institute (USTTI). It appears to be an efficient small organization that successfully integrates public and private sector support in pursuit of its objectives. Training arranged by USTTI appears to be of high quality and the fields of training appear to be generally relevant to the objectives of the program.

The team has some reservations as to the program. It appears that USTTI trains too few people to accomplish its full objectives, especially in light of the emphasis on telecommunications training assistance of other donors. It has been suggested by some informants that the program could be better targetted in terms of country and trainee priorities to accomplish USTTI's overall goals. AID financing of the program has been ad hoc, and informants have suggested a need to find a better mechanism to finance the public sector contribution and in so doing enable the program to better meet its commercial and political objectives. It seems that the financing should be put on a more predictable basis with a longer range grant provided to USTTI.

At this time the evaluation team recommends that interim funding be provided to USTTI to finance their efforts for CY 1987 and prevent any programmatic delay. It seems clear that a modest grant will be used in a cost effective manner to achieve goals appropriate to the U.S. Government. The final report of this evaluation team will be delayed for about one month as the team addresses the reservations identified above. It is now perceived that a multi-year grant will be an appropriate

instrument for funding the USTTI in the future, and that a reasonable period will be required for negotiation of such an agreement after the evaluation is completed. However, the momentum and continuity of the effort should not be threatened in the process of stabilizing the support for the program--thus the need for immediate interim funding.

BACKGROUND

USTTI serves as an intermediary in the provision of training to developing country representatives in telecommunications policy and technology. It solicits U.S. private and public sector organizations to provide such training gratis, and solicits funding for travel and per diem grants to deserving developing country participants in such training. A small staff manages the process.

USTTI completed its fourth cycle of training in 1986. In that year 340 people completed one of the 37 courses arranged by USTTI, bringing the total in its history to 903 people from 90 developing countries. Of the 1986 trainees, 132 were recipients of AID scholarship funding.

The resources involved in the program were identified by USTTI as follows (in \$ thousands):

Private sector contributions (note that in-kind resources are USTTI's estimates)

cash	301
in-kind	1,968
U. S. Government	
in-kind	326
Scholarship contributions	
U. S. private sector	10
U. S. government	
A.I.D.*	554
Other	45
International organizations	<u>170</u>
TOTAL	3,374

USTTI has three objectives: (1) developmental, (2) commercial, and (3) diplomatic.

* The AID contribution was from a \$300,000 grant made in 1986 and carry-overs from the grant made the previous fiscal year.

- (1) Telecommunications training is seen as a cost-effective means of providing development assistance. It has been suggested that the donor community has underinvested generally in improving telecommunications, and that such applications as rural telephony have direct benefits to poor people, very high economic rates of return, and rates of return which continue to rise as communication networks increase in coverage and service quality. Mass media offer great potential for formal and informal education, especially for disadvantaged populations. Thus USTTI's provision of training to the telecommunications community in developing countries is a vehicle for development assistance with significant economic and humanitarian potential.

- (2) The market in telecommunications equipment is significant, and developing countries have both to extend coverage of their communications networks and to upgrade facilities. The market is very competitive, with U.S. firms in a superior position technologically, but facing strong marketing competition from European and Japanese firms. The availability of appropriate training improves the market position of a country. Moreover, U.S. trained telecommunications experts are believed more likely to specify U.S. equipment or equipment compatible with U.S. standards than non-U.S. trained personnel.

- (3) The international fora in which telecommunications policies are made have major importance for the U.S. Issues such as allocation of spectrum and allocation of satellite orbits have social, cultural, economic, scientific and military importance. Since developing country spokespersons represent the majority in these fora, it is important that the U.S. be perceived as responding to their needs and arguments. Moreover, appropriate technical training and exposure to U.S. procedures can increase the understanding of LDC representatives of the issues and of the positions of the U.S.

It is suggested that the telecommunications area is prototypical, and consequently that the USTTI be evaluated as a model for possible emulation in other sectors. In terms of the objectives of the U.S. in telecommunications, more advanced developing countries and OPEC countries are of considerable importance--they constitute the most dynamic portion of the LDC market and frequently provide leadership in the Group of 77 in international fora. However, while they also offer significant potential to achieve humanitarian objectives through transfer of advanced technologies, they are not the focus of Agency for

International Development (AID) concessional financing. USTTI has suggested, and it appears reasonable, that the willingness of U.S. private organizations to finance training is limited. Thus, especially in contrast to other developed nations, the U.S. is quite limited in its ability to finance training to achieve its multiple goals in telecommunications policy.

The telecommunication field is not unique in the coincidence of developmental, commercial and political goals of the U.S., nor in a confluence of goals that require emphasis on more advanced developing countries contrasted with a lack of private and public vehicles to promote those goals. The pharmaceutical industry, for example, faces similar problems and has developed a training program through the international association of pharmaceutical manufacturers, to train LDC governmental, pharmaceutical-quality-assurance personnel. The computer industry has developed a number of mechanisms to train developing country computer personnel and have, on occasion, sought U.S. governmental cooperation. Nonetheless informants from these industries are concerned with lack of suitable backup from the U.S. Government for their initiatives.

THE PERFORMANCE OF USTTI

The attached memorandum discusses the trade impact of USTTI. Essentially the conclusions are that USTTI is important in concept, positive in impact, inadequate to have major influence on U.S. commercial telecommunications sales, and capable of improvement. It appears that other donor nations have far more extensive subsidized training programs in telecommunications technology than does the U.S.

In terms of diplomatic impact, U.S. Government informants report that USTTI is useful, but could be improved by more effective targetting of training opportunities. Reviews of participants at six recent international conferences suggest that from two to nearly ten percent had been recipients of USTTI training. Moreover, State reports that the USTTI initiative has proven a useful demonstration of commitment in international fora.

In terms of development impact, the training appears to be of high quality, and to benefit a large number of countries. Attachment 2 provides some comments on the reports of AID International Training experts. However, impact again seems to be quite limited as compared to needs. For example, there are an estimated 8,940 radio transmitters in developing countries serving some 537 million radio receivers. If one were to use a benchmark of three traineeships per transmitter to improve the developmental impact of programming and the technical efficiency

of operation, the demand for traineeships would be approximately 27,000. There are comparable needs in telephony, television, and other fields of telecommunications. Thus it is clear that the few hundred traineeships per year provided by USTTI meets only a small part of the need.

METHODOLOGY

The evaluation team has met with Frank Method and Cliff Block of AID for a detailed briefing on the scope of the evaluation. It has met with the staff of USTTI, and reviewed a significant quantity of materials prepared by USTTI staff describing their program. In this respect, the cooperation of USTTI staff has been exemplary. The team is embarked on an extended series of interviews with trainees, trainers, relevant U.S. Government officials, and board members of USTTI, as well as outside observers. The team is, of course, also relying on their own general knowledge of international training and cooperation.

SPECIFIC ISSUES IDENTIFIED IN THE SCOPE OF WORK

- 1.* USTTI appears to have a good data base, and has quickly responded to specific queries.
2. The profile of the typical USTTI trainee has not yet been established.
3. The comments in the body of the memorandum deal with the fulfillment of objectives by USTTI.
4. Selection of trainees appears to be an involved process. Selection begins in the selective dissemination of information about USTTI by AID missions, the Department of State, and other agencies. Telecommunications agencies in LDCs appear quite selective in offering opportunities for training to their own employees. Nonetheless, the number of applicants for training programs exceeds the number of spaces available. Organizations offering training also screen applicants, apparently primarily to assure that they have the qualifications to participate effectively in the specific class for which they have applied. Applicants to be funded by AID grant funds are also screened by the AID project officer to assure that the balance of training meets AID objectives. Finally USTTI staff integrates the various screening inputs to select the final classes, giving priority to nominees from AID missions.

*. numbers refer to specific points in a memorandum by Frank Method, titled "U.S. Telecommunications Training Institute Evaluation."

Similarly, USTTI seeks to offer training that meets the expressed demands of LDC telecommunications professionals. However, it is limited in doing so to offering those courses that will be given freely by U.S. public or private organizations. Inputs from relevant informants are obviously taken into account in developing the course offerings.

The evaluation team has not yet focussed on the balance of substantive course material.

5. Expansion beyond U.S.-based training is already seen as controversial. There are clear advantages in bringing LDC decision makers to the U.S. where they can see the advantages of U.S. policy preferences in application for themselves. However, there is equally an argument that some training will be more efficient and relevant if done in developing countries. One course was given by USTTI in the Caribbean, but clearly a single experiment is not sufficient to form the basis for a permanent policy decisions. Some of the collaborating training institutions regularly give courses overseas.

6-8. These topics are still under study.

9-10. It seems clear that the current AID process for handling USTTI is capable of considerable improvement. While \$1 million has been provided to USTTI in grants over four years, there is no long term grant agreement. The project is managed by one bureau, but the funding decision is made on the basis of decision memoranda prepared in a second. There is no long term budgetting for USTTI, nor a long term agreement for the appropriate level of U.S. Government funding. The problem is further complicated by the fact that USTTI is regularly involved in programs and the functions of other agencies of the U.S. Government who do not share the contributions to its budget. The identifications of alternatives for the improvement of this situation will be a major focus for the remainder of the evaluation.

Attachments:

TDP/Sconce memo to SCI/Daly dated 10 March 1987
Notes from B. Watkins



U.S. TRADE AND DEVELOPMENT PROGRAM
INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
WASHINGTON, D.C. 20523

March 10, 1987

MEMORANDUM

TO: John Daly, SCI

FROM: Joe J. Sconce ^{js} TDP

SUBJ: Evaluation of the United States Telecommunications
Training Institute (USTTI)

1. In the evaluation Committee for USTTI, I have agreed to examine the impact of its training programs on U.S. exports of goods and services in the telecommunications sector. The AID members of the Committee will give primary emphasis to the developmental impacts of USTTI.
2. In high-technology industries such as telecommunications, training can be a potent instrument for promoting exports. The attached cable from the Commercial Counselor of the U.S. Embassy in Lima, Peru illustrates how the Japanese, in particular, are using training as a sales technique for gaining dominance in the Peruvian telecommunications market. While we have no global data, we must assume that the Peruvian case is typical, i.e., that the Japanese and Europeans are training many more persons from developing countries in telecommunications than is the U.S. For example, France recently established a large telecommunications institute in Guadelupe to train hundreds of Latin Americans annually. Obviously, French manufacturers and service providers will be the principal beneficiaries of this initiative.
3. USTTI believes that its programs are effective in stimulating sales of U.S. telecommunications. Explicit evidence of this, however, has not been provided. As far as we were able to ascertain, USTTI has no deliberate or systematic procedures for evaluating the impact of its training on U.S. exports. This is understandable in view of USTTI's very small permanent staff. But USTTI also takes a very altruistic and indirect view of its trade promotion function, as demonstrated by the following excerpt from its Chairman's Report:

"Another key element of the USTTI's record of success in the first four years is its "no strings attached" approach to providing quality training. Unlike training provided by most developed countries, the USTTI does not require graduates to buy U.S. equipment, nor do we ask USTTI participants to leave our shores converted to our open, free-enterprise society. The only quid pro quo that the USTTI insists upon is that each trainee work diligently while attending USTTI training, and then, when back home in his/her own country, vigorously share the benefits of the training with their colleagues.

4. Substantial additional funding would be essential for USTTI to expand its training to approach the number of persons who are being trained by the main competitors of the U.S. in telecommunications. For reasons which are abundantly clear, it is highly unlikely that the U.S. Government will provide the added resources necessary to build USTTI into a strong force for promoting U.S. sales in the developing countries. The U.S. telecommunications industry and USTTI, however, should be able to take certain deliberate tactical and qualitative measures to enhance the effectiveness of training as a marketing device, e.g.:

A. Target Selection:

USTTI, in consultation with U.S. telecommunications suppliers and consulting firms, should assign priority to training persons from countries in which the U.S. firms are bidding, or intend to bid, on contracts for telecommunications equipment and services. U.S. suppliers should see it as in their interest to pay for the training and also may be able to write off the training costs as a legitimate marketing expense.

B. Choice of Technology: •

USTTI, together with U.S. industry in the sectors, should focus on specific "technological bundles" in which the U.S. is competitive and which U.S. firms are attempting to export. It is known, for example, that the U.S. is not particularly competitive at the low end of telecommunications technology but is highly competitive at the high end. Thus, as a general rule, USTTI should emphasize training in the upper segment of the technology and explicitly stress training in the equipment and systems design which U.S. firms are seeking to export. If country X is calling for bids in integrated digital networks, (IDN) USTTI should tailor training programs for IDN in country X. The U.S. firms which are pursuing this export opportunity in country X should be willing to finance the training.

C. Coordination with Lenders and Donors:

USTTI should remain in contact with lenders and donors to mesh its training programs with "real" projects which are in the planning stage. For example, if the U.S. Trade and Development is contemplating the funding of a feasibility study for satellite earth stations in Country Y, USTTI should attempt to offer training in this subject to country Y. Similar coordination with Ex-Im Bank, IBRD, IDB, the Asian and African Development Banks, should yield trade benefits to the U.S. because the training will be linked to projects which are under serious consideration by both borrowers and lenders and are virtually assured of being implemented.

D. Strengthen the Role of Trade Promotion:

USTTI's subtle approach of "no strings attached" is highly appropriate in presenting the program to developing countries. The U.S. telecommunications industry, however, needs to know how its contributions to USTTI can be efficiently and effectively used to increase U.S. exports. If the industry is to be inspired to provide the additional financing needed by USTTI, the "soft sell" directed toward the developing countries should be supplemented by a more persuasive trade promotion strategy, perhaps along the lines suggested above, in USTTI's fund raising efforts vis-a-vis U.S. industry.

E. Cultivate the USTTI Graduates:

USTTI should provide lists of names and addresses of their graduates to U.S. telecommunications supplier firms. These firms should make it a point to contact the graduates when they are on marketing trips in the graduates' countries. The graduates could be very useful in enhancing the U.S. firms' marketing efforts. Also the U.S. firms should place USTTI graduates on their mailing lists for information about the products and services they offer.

Attachment: Lima 01079 dated 29 January 1987

cc: TDP, C. Holmes
TDP, N. Frame
TDP, L. Desoto

PAGE 01 LIMA 01079 00 OF 02 201002 4031
ACTION CIP-07

INFO LOS-00 COPY-01 ADS-00 IIR-10 CIAE-00 EO-00 ARA-00
NSAE-00 DIB-01 FCC-02 OC-02 /031 U

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R 201002Z JAN 87
FM AMEMBASSY LIMA
TO SECSTATE WASHDC 6560
INFO USIA WASHDC 6567
USDOC WASHDC

UNCLAS LIMA 01079

STATE FOR CIP/ER
USIA FOR P/C, AR
COMMERCE FOR NTIA

E.O. 12336: N/A
TAGS: ICPS, PC
SUBJECT: PERUVIAN TELECOMMUNICATIONS TRAINING

1. DURING A RECENT VISIT TO THE PERUVIAN NATIONAL INSTITUTE FOR TELECOMMUNICATIONS RESEARCH AND TRAINING (INICTEL) THE PRECARIOUSNESS OF U.S. INFLUENCE IN THE TELECOMMUNICATIONS FIELD IN PERU WAS BROUGHT HOME VERY STRONGLY WHEN THE DIRECTOR, CARLOS ROMERO, POINTED OUT THAT THE PRESENT VICE MINISTER OF COMMUNICATIONS, JUAN BARTET, IS THE LAST PERUVIAN TELECOMMUNICATIONS OFFICIAL WITH U.S. TRAINING.

2. THE MESSAGE WAS GRAPHICALLY REINFORCED IN A REPORT ON INICTEL ACTIVITIES BETWEEN 1980 AND 1985. ACCORDING TO THE REPORT, FORTY MEMBERS OF THE INICTEL STAFF HAVE RECEIVED TRAINING OUTSIDE OF PERU. THIRTY OF THEM RECEIVED TRAINING IN JAPAN, PAID FOR BY THE JAPANESE GOVERNMENT. MOST OF THE PROGRAMS WERE FOR THREE TO FOUR MONTH SPECIALIST COURSES IN FIELDS FROM RADIO COMMUNICATIONS TO SATELLITE COMMUNICATION TO MICROWAVE ENGINEERING. ANOTHER TEN STAFF MEMBERS RECEIVED TRAINING IN BELGIUM, ENGLAND, COLOMBIA, BRAZIL, CHILE, AND ARGENTINA. NOT A SINGLE STAFF MEMBER IS REPORTED TO HAVE HAD TRAINING IN THE UNITED STATES, BUT WE UNDERSTAND THAT ONE PERSON, PERHAPS NOT FROM INICTEL DID PARTICIPATE IN A USTTI COURSE.

3. THE PERUVIAN TELECOMMUNICATIONS SYSTEM WAS DEVELOPED AND CONTROLLED BY ITT UNTIL ITS TAKEOVER BY THE VELASCO MILITARY REGIME IN THE EARLY 1970S. AT THAT POINT, U.S. INFLUENCE WAS PREDOMINANT AND U.S. EQUIPMENT AND TRAINING WERE THE RULE. SINCE THEN THE TREND HAS BEEN REVERSED. JAPAN IS THE DOMINANT TELECOM INFLUENCE IN PERU TODAY. SINCE 1980 INICTEL HAS TRAINED 10,549 PERUVIANS IN EXTERNAL PLANT ENGINEERING, TRANSMISSION, DIGITAL COMMUNICATIONS, TELEPHONE SWITCHING, RADIO DIFFUSION, AND PROGRAM PRODUCTION. THE STUDENTS TRAIN ON AN ESTIMATED \$2.5 MILLION WORTH OF JAPANESE EQUIPMENT, ALL DONATED BY THE JAPANESE GOVERNMENT OR PRIVATE JAPANESE COMPANIES. SINCE 1976 THERE HAVE BEEN JAPANESE PROFESSORS AND ADVISORS AT INICTEL ON A CONTINUAL BASIS. IN 1983 THE JAPANESE GOVERNMENT SIGNED AN AGREEMENT WITH INICTEL TO CONDUCT COURSES FOR PROFESSIONALS FROM OTHER LATIN AMERICAN COUNTRIES. SO FAR FOUR COURSES FOR SOME 100 PROFESSIONALS HAVE BEEN HELD, WITH JAPAN PAYING ALL OF THE TRAINING, TRAVEL AND PROFESSIONAL COSTS. INICTEL PROVIDES THE FACILITIES AND MOST OF THE PROFESSORS, ALL OF THEM TRAINED, OF COURSE, IN JAPAN.

4. DESPITE THE MASSIVE JAPANESE PRESENCE, THE PERUVIANS ARE EAGER FOR MORE CONTACT WITH THE U.S. WE BELIEVE

THAT IN AN ERA OF SCARCER RESOURCES IT WILL BE DIFFICULT TO MATCH THE JAPANESE EFFORT. NONETHELESS, THERE IS MUCH THAT CAN BE DONE TO KEEP THE DOOR OPEN.

5. WHAT IS NEEDED IS AN AMERICAN PRESENCE IN INICTEL. THE IDEAL (THING) WOULD BE FOR THE U.S. TELECOMMUNICATIONS SUPPLIERS ASSOCIATION TO SEND SPANISH SPEAKING PROFESSIONALS TO PERU FOR EITHER SHORT OR LONG TERM COURSES. THE COST WOULD NOT BE HIGH AND THEIR PRESENCE WOULD ASSURE THAT STUDENTS AND PROFESSIONALS ALIKE WOULD BE BENEFITED OCCASIONALLY OF DEVELOPMENTS IN THE UNITED STATES.

6. ON A MORE MODEST SCALE, INDIVIDUAL U.S. COMPANIES MIGHT BE PERSUADED TO SCHEDULE VISITS BY ENGINEERS TO PERU. WE COULD ARRANGE FOR THEM TO CONDUCT ONE OR TWO DAY SEMINARS AT INICTEL. IN THE PAST THERE HAS BEEN SOME CONTACT BETWEEN TECHNICAL SALES REPRESENTATIVES OF U.S. COMPANIES AND INICTEL, BUT THEY HAVE NOT BEEN PARTICULARLY FRUITFUL. THE REPRESENTATIVES HAVE HAD INSUFFICIENT KNOWLEDGE OF TELECOM TECHNOLOGY TO ANSWER SATISFACTORILY THE QUESTIONS OF THE PARTICIPANTS IN THE PROGRAMS.

7. POST HAS ALREADY BEEN IN TOUCH WITH JERRY BELL OF MOTOROLA WHO HAS PROMISED TO ARRANGE VISITS BY MOTOROLA REPRESENTATIVES TO PERU. IF CIP BELIEVES IT WOULD BE USEFUL WE CAN SEND YOU IN SPANISH A DESCRIPTION OF ALL COURSES TO BE OFFERED IN 1987, ALONG WITH A CALENDAR SHOWING WHEN COURSES ARE TO BE HELD.

8. A THIRD THING THAT WE COULD DO WOULD BE TO ARRANGE DONATIONS OF TECHNICAL MANUALS AND BOOKS ON TELECOMMUNICATIONS TO THE INICTEL LIBRARY. WHILE THE PRIMARY INFLUENCE AT THE INSTITUTE IS JAPANESE, THE ONE TRUMP CARD WE STILL HAVE TO PLAY IS LANGUAGE. ENGLISH IS THE FOREIGN LANGUAGE OF CHOICE FOR MOST ENGINEERS. INICTEL HAS THE MOST IMPORTANT TELECOM LIBRARY IN PERU, AND ONE OF THE MOST IMPORTANT IN LATIN AMERICA. IT IS TIED INTO THE HISPANIC AMERICAN ASSOCIATION OF CENTERS FOR TELECOMMUNICATIONS RESEARCH AND STUDY (HACTETI), WHICH LINKS INICTEL WITH SIMILAR INSTITUTIONS IN ARGENTINA, BOLIVIA, CUBA, CHILE, ECUADOR, SPAIN, GUATEMALA, EL SALVADOR, COLOMBIA, HONDURAS, NICARAGUA, PANAMA, PARAGUAY, PUERTO RICO, THE DOMINICAN REPUBLIC, URUGUAY, AND VENEZUELA. IT COULD PROVIDE US WITH EASY ACCESS TO THIS FORMAL TRAINING NETWORK AT LOW COST.

9. INICTEL'S DEPUTY LIBRARIAN IS VISITING FLORIDA IN JANUARY AND USIS LIMA IS ARRANGING CONTACTS WITH LIBRARIES IN THE MIAMI AREA SO SHE CAN EXPLORE LATEST CONCERNS IN DATA BASE ACCESS.

10. ACTION REQUESTED: PLEASE EXPLORE OUR SUGGESTIONS WITH OTHER FEDERAL AGENCIES AND WITH YOUR PRIVATE SECTOR ADVISORY COMMITTEES. POST BELIEVES THERE ARE OPPORTUNITIES FOR A REVIVED U.S. PRESENCE IN PERU'S TELECOM FUTURE, BUT WE MUST ACT NOW BEFORE JAPANESE INFLUENCE BECOMES SO DOMINANT THAT IT CAN'T BE DISLOGGED. WATSON

CIP/ER Action

Discussions with members of AID's Office of International Training resulted in high marks for USTTI. In summary, the programs were considered good and cost effective, offering a unique private sector training experience not available elsewhere. Staff also cited the Academy for International Development which manages USTTI as a highly regarded organization.

Partners for International Education and Training, AID's primary placement contractor, has placed participants at USTTI on a limited basis over the past few years. Based on a broad knowledge of training activities in the United States, Partners believes USTTI is an outstanding training institution. USTTI consistently fulfills training objectives and has been very responsive to participant problems.

Discussions with some of the Regional Bureau training officers revealed either a high regard for USTTI or a lack of knowledge about USTTI. Most said that what they heard was good, although they lacked direct experience working with USTTI. The most knowledgeable official said the the training offered by USTTI was what many countries are looking for . He felt that this type of training fit well into AID Participant Training Programs. One training officer had not heard of USTTI.

Rec'd in SCI. MAR 10 1987

Birnie Watkins 29

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

February 2, 1987

TO: PPC/PDPR, F. Method
FROM: S&T/ED, Cliff Block
SUBJECT: Proposal for 1987 Funding from USTTI

USTTI has a proposal before PPC for \$600,000 in A.I.D. funding for FY1987. That sum would fund approximately 145 short-term participant-trainees, about half of those anticipated by USTTI during calendar year 1987. As requested, S&T/ED is providing these technical comments on the proposal.

Since PPC and S&T have organized an independent evaluation of the USTTI by Agency officers drawn from the Office of the Science Advisor, the Trade and Development Program, and the Office of International Training, these remarks will be brief.

Training Quality and Relevance. There is no question that the training offered by the USTTI is of high quality, and is of direct relevance to the work of the vast majority of trainees. I have reviewed the evaluation forms submitted by each aid-funded trainee at course completion; the training gets overwhelmingly positive reviews, 95% rating it excellent or good. I have also talked with dozens of the trainees, and have sat in on some of the training sessions; these observations confirm a high level of engagement by the trainees in the substance of the training, as well as a high level of satisfaction.

Training Cost. As in the past, USTTI this year is asking AID support exclusively for travel and per diem of trainees, plus 15% to cover the cost of orientation, communication with missions and other miscellaneous costs. USTTI uses other resources to fund its staff, and the training itself is provided at no cost by U.S. corporations. The average trainee is in this country for 3 to 4 weeks, typically taking two courses during that time. The cost per trainee last year was \$4,100, a reduction from earlier years because of better scheduling of back-to-back courses by the USTTI staff. If the U.S. Government were to pay for training of this calibre in this highly technical field, the added cost for each trainee would likely average another \$5,000 to \$6,000, for a nine to ten thousand dollar total. The shared-cost arrangement is clearly a bargain, particularly notable given the high quality of the training provided.

Achievement of Political and Trade Objectives. Much evidence supports the view that the USTTI is helpful to the U.S. politically, notably in this government's constant negotiations within the framework of the I.L.O. as the number of trainees grows; so does the number of developing country policy-makers with some relationship to the U.S. (and to A.I.D.). It also will inevitably be helpful in the trade arena, through linkages with specific U.S. companies and through familiarity with U.S. technology and its suppliers.

Achievement of Development Objectives. From a development standpoint, the training certainly assists in improving the operations, decision-making, and possibly management of LDC telecommunications systems. Such systems are slowly becoming more important elements of the development equation. Since HIO has neither resources nor a policy to fund major investments in new telecommunications infrastructure, it can be argued that this investment in training is an appropriately modest, but effective way for H.I.D. to contribute to this development sector.

Support for H.I.D. Development Communications Objectives. Our support of the USIII has provided an opportunity to direct the attention of trainee groups to greater consideration of the role of telecommunications in rural development, supportive of programs in agriculture, health and education. As grant manager, I have made several such presentations. In addition, S&I has presented a USIII course on rural telecommunications, emphasizing the experiences of the HIO Rural Satellite Program. This access to the telecommunications establishment may, in the long run, contribute to policy changes in certain countries that support the rural development objectives of H.I.D.

Distribution of HIO Support. The intended distribution of HIO grants, designed to emphasize Africa and de-emphasize the Middle East, where governments can typically afford to pay for training, has worked well. In 1986, the actual distribution was 51% for Africa, 23% for Asia and the Pacific, 19% for LDC, and 7% for the Middle East. The HIO grant is now making possible participation by technicians and managers from countries that otherwise would be unable to take advantage of the training, most notably in Africa. Within regions, some fine-tuning would be desirable in the future to encourage participation from non-participating countries and to reduce over-concentration from others.

USIII Management. The staff's responsiveness to our geographic criteria is but one evidence that the present USIII management staff is effective. It is a lean, four-person staff, largely new in the last eighteen months, for which I have developed substantial respect. HIO is not a simple organization to deal with. However, with the present staff I have found it possible to work out efficient methods that have left both S&I and the missions very satisfied, while imposing minimal management burdens on HIO.

Summary. In sum, the USIII is a well-run organization providing excellent training at low cost. It does its job through orchestrating private sector contributions of talent with public sector funding of necessary travel costs. HIO gets a good deal for its contribution, while the trainees and their countries are well served.

The appropriate magnitude of any further AID support, in these difficult budget years, is something that PPC will have to decide, with the assistance of the report of the external evaluation team. H.I.D. funding has unfortunately become a fundamental element in the successful operation of the USITI. Last year, AID supported 45% of the trainees. The issue of sustaining such a central role in an ad-hoc fashion is being addressed by the evaluation team. For this year, however, it appears that substantial H.I.D. funding, at close to the requested level, would be needed to sustain USITI activity at a level near last year's, and to continue any significant participation from the poorer LDC's, particularly those in Africa.



U.S. Telecommunications Training Institute

May 18, 1987

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Attorney Wunder, Thelen & Forgotson

Dr. John A. Daly
Office of the Science Advisor
Agency for International Development
Room 720 SA-18
Washington, DC 20523

Dear Dr. Daly:

Ambassador Gardner asked me to provide you with a current status report on the U.S. Telecommunications Training Institute (USTTI) 1987 training year. We understand the final evaluation report is due by early June so that our additional funds can be awarded in a timely fashion. As you know, due to the commencement of the USTTI training year in April, an interim report was completed and, based on that report, interim funding in the amount of \$200,000 was awarded. Unfortunately, these funds did not become available to USTTI until May 1st, a full month after our training courses had already begun. This \$200,000 should cover approximately 48 individuals, at an average cost of \$4,100 per trainee.

While the number of applicants for USTTI courses has never been greater, lack of funding for USTTI participants for travel and/or per diem continues to impact negatively on the size of the courses. Eighty-three percent of the USTTI courses to date (courses 87-101 through 87-112) have not been filled due entirely to a lack of funding for travel and/or per diem. Despite the fact that every course has been oversubscribed by an average three-to-one ratio, unfortunately only 68% of the course slots in these courses have been filled to date.

As of today, USTTI has received 1,534 qualified applications from 746 telecom/broadcast professionals in 78 Third World countries. This is an astounding figure, since a total of 780 individuals applied for training in all of 1986 alone. Applications are still arriving and USTTI expects to have well over 1,000 individuals apply for the 1987 training year.

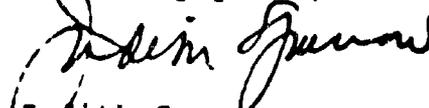
Dr. John A. Daly
Page Two
May 18, 1987

USTTI has graduated another 80 individuals in our first 12 courses, representing 93 course slots. Fifty-two or 65% of these individuals needed assistance from sources outside their own organizations. The breakdown of the travel and per diem funding for each course slot is attached.

Please do not hesitate to call me if you need any additional information or clarification.

With best regards, I am,

Sincerely yours,



Judith Sparrow
Director

Attachments

cc: Michael R. Gardner
Frank Method
✓Clifford Block

SOURCES OF TRAVEL-FUNDING

	COUNTRY	COURSE NUMBER
DIGITAL EQUIPMENT CORP		
ALEXANDRE BARBOSA	BRASIL	87112
JOSE DA SILVA	BRASIL	87105
JOSE DA SILVA	BRASIL	87112
NUMBER OF COURSE SLOTS FUNDED:	3	
INTERNATIONAL TELECOMMUNICATIONS UNION/UNDP		
A.P. CHAUDHURI	INDIA	87107
V.V. SINGH	INDIA	87107
YARIS GUMAY	INDONESIA	87107
D. SOEBONO	INDONESIA	87107
TANTI SRIWIDJAJANTI	INDONESIA	87107
YOUNG CHEN	PEOPLE'S REPUBLIC OF CHINA	87107
KEPHAS MASIYE	ZAMBIA	87106
KEPHAS MASIYE	ZAMBIA	87107
NUMBER OF COURSE SLOTS FUNDED:	8	
NORD RESOURCES INC		
AMARA TARAZID-TARAWALI	SIERRA LEONE	87111
NUMBER OF COURSE SLOTS FUNDED:	1	
ORGANIZATION OF AMERICAN STATES/CYTEL		
CARLOS BARNETO	ARGENTINA	87107
HECTOR BARRON	BOLIVIA	87107
ROSEMOND JAMES	ST. LUCIA	87107
NUMBER OF COURSE SLOTS FUNDED:	3	
ORGANIZATION/EMPLOYER		
GLADFORD EDWARDS	ANTIGUA	87110
CHARLES PETERS	ANTIGUA	87111
CELESTINO LESIRE	ARUBA	87106
REMIGIO RAS	ARUBA	87102
REMIGIO RAS	ARUBA	87104
JEFFREY CHANDLER	BAHAMAS	87101
EUGENE GIBSON	BAHAMAS	87109
DEBENA JOHNSON	BAHAMAS	87109
COLIN JOHNSON	BAHAMAS	87109
SAMUEL ROLLE	BAHAMAS	87110
STANLEY ROLLE	BAHAMAS	87110
PATRICK SWEETING	BAHAMAS	87110
KENNETH WATERMAN	BARBADOS	87104
ROBERT WADLE	BELIZE	87101
CLIFFORD WLEBBER	BELIZE	87103
MICHAEL STENCE	BELIZE	87101
LUTZ GROETJAERS VIANNA	BRASIL	87107
CARLOS ALFARO-HERNANDEZ	COSTA RICA	87109
CARLOS ALFARO-HERNANDEZ	COSTA RICA	87112

SOURCES OF TRAVEL-FUNDING

14 May - 1967
Page 2

	COUNTRY	COURSE NUMBER
CLAUDIO BERMUDEZ AQUART	COSTA RICA	87101
IVAN GARRO	COSTA RICA	87111
RODRIGO JAIKEL CHACON	COSTA RICA	87111
MOHAMED ABDEL HAMID	EGYPT	87104
MOHAMED ABDEL HAMID	EGYPT	87111
TALAAAT EL TOBGY	EGYPT	87107
GOBBY ELSHAMY	EGYPT	87111
ESSAM FATAH	EGYPT	87108
SHAKER GADALAA	EGYPT	87105
ARMED IBRAHIM	EGYPT	87104
ARMED IBRAHIM	EGYPT	87111
NASSER MOHAMED	EGYPT	87108
TAHER SHOKREY	EGYPT	87111
SALAH YOUSEF	EGYPT	87105
JUAN RAMIREZ ESTRADA	GUATEMALA	87107
ESTUARDO VASQUEZ PONCIANO	GUATEMALA	87104
ESTUARDO VASQUEZ PONCIANO	GUATEMALA	87111
ROY HUMES	JAMAICA	87103
MOHAMMED MAHMOUD	JORDAN	87107
HECTOR FERNANDEZ DE LARA	MEXICO	87105
YANG CHUNQING	PEOPLE'S REPUBLIC OF CHINA	87107
YANG ZHAOMIN	PEOPLE'S REPUBLIC OF CHINA	87107
MARIO PAGLIO	PHILIPPINES	87105
MAMADOU AMAR	SENEGAL	87101
KWANG PARK	SOUTH KOREA	87112
EVANS JOHN	ST. VINCENT	87101
ELIFALETA KWEKA	TANZANIA	87108
NUMBER OF COURSE SLOTS FUNDED:		46
PERSONAL/INDIVIDUAL FUNDS		
ALEXANDRE BARBOSA	BRASIL	87105
AIDA EL-SHINNAWI	EGYPT	87107
KEADIJA NAAMAN	MOROCCO	87107
ALEXANDER DIBIE	NIGERIA	87112
NUMBER OF COURSE SLOTS FUNDED:		4
U.S. AGENCY FOR INTL DEVELOPMENT (MISSION FUNDS)		
KAM KARKI	NEPAL	87101
KAM KARKI	NEPAL	87105
SOHAN NYACHHYON	NEPAL	87102
NUMBER OF COURSE SLOTS FUNDED:		3
U.S. AGENCY FOR INTL DEVELOPMENT (USTFI GRANT)		
JOSE BUSTAMANTE	BOLIVIA	87107
NARENDRA PRASAD	FIJI	87111
DANIEL LARBI	GHANA	87110
FRED OHIMPEH	GHANA	87111
LANCEY CONDE	GUINEA	87101
LANCEY CONDE	GUINEA	87105
OUSMANE DIALLO	GUINEA	87105

SOURCES OF TRAVEL-FUNDING

19-May-1987
Page 3

	COUNTRY	COURSE NUMBER
PAUL GITAU	KENYA	87108
ANTHONY MWENJA	KENYA	87108
THULO NTENE	LESOTHO	87110
CHARITO SUAREZ	PHILIPPINES	87106
CHARITO SUAREZ	PHILIPPINES	87107
PRINCE KING	SIERRA LEONE	87104
ALUSINE SIDIQUE	SIERRA LEONE	87102
ALUSINE SIDIQUE	SIERRA LEONE	87104
ABDI-WELI MOHAMUD	SOMALIA	87108
PAUL KANGOMBE	ZAMBIA	87104
JESTONE MASEKA	ZAMBIA	87110
GODFREY NGOSA	ZAMBIA	87111
NUMBER OF COURSE SLOTS FUNDED:		19
U.S. OFFICE OF FOREIGN DISASTER ASSISTANCE		
ARNOLD BARCELONA	PHILIPPINES	87106
ARNOLD BARCELONA	PHILIPPINES	87107
NUMBER OF COURSE SLOTS FUNDED:		2
USTFI DISCRETIONARY FUNDS		
MICHAEL MULOMBE	ZAMBIA	87101
NUMBER OF COURSE SLOTS FUNDED:		1
WORLD BANK		
AURELIANO CORDERO	PHILIPPINES	87101
FIDELCO DUMLAO	PHILIPPINES	87101
AUGUSTO PASAMONTE	PHILIPPINES	87101
NUMBER OF COURSE SLOTS FUNDED:		3

BEST AVAILABLE DOCUMENT

47

SOURCES OF PER-DIEM-FUNDING

19-May-1987
Page 1

	COUNTRY	COURSE NUMBER
DIGITAL EQUIPMENT CORP		
ALEXANDRE BARBOSA	BRASIL	87105
JOSE DA SILVA	BRASIL	87105
NUMBER OF COURSE SLOTS FUNDED:	2	
INTERNATIONAL TELECOMMUNICATIONS UNION/UNDP		
A.P. CHAUDHURI	INDIA	87107
V.V. SINGH	INDIA	87107
YARIS GUMAY	INDONESIA	87107
D. SOEBONO	INDONESIA	87107
TANTI SRIWIDJAJANTI	INDONESIA	87107
YOUMING CHEN	PEOPLE'S REPUBLIC OF CHINA	87107
KEPHAS MASIYE	ZAMBIA	87106
KEPHAS MASIYE	ZAMBIA	87107
NUMBER OF COURSE SLOTS FUNDED:	8	
NORD RESOURCES INC		
AMARA TARAZID-TARAWALI	SIERRA LEONE	87111
NUMBER OF COURSE SLOTS FUNDED:	1	
ORGANIZATION OF AMERICAN STATES/CITEL		
CARLOS BARNETO	ARGENTINA	87107
HECTOR BARRON	BOLIVIA	87107
ROSEMOND JAMES	ST. LUCIA	87107
NUMBER OF COURSE SLOTS FUNDED:	3	
ORGANIZATION/EMPLOYER		
GLASFORD EDWARDS	ANTIGUA	87110
CHARLES PETERS	ANTIGUA	87111
CELESTINO LESIRE	ARUBA	87106
REMIGIO RAS	ARUBA	87102
REMIGIO RAS	ARUBA	87106
JEFFREY CHANDLER	BAHAMAS	87107
EUGENE GIBSON	BAHAMAS	87109
SELENA JOHNSON	BAHAMAS	87109
COLIN JOHNSON	BAHAMAS	87109
CAMMEL ROLLE	BAHAMAS	87110
STANLEY ROLLE	BAHAMAS	87111
PATRICK SWEETING	BAHAMAS	87110
ALEXIS WATERMAN	BARBADOS	87104
LUZ GOITAEERS VIANNA	BRASIL	87107
IVAN GARRO	COSTA RICA	87111
MOHAMED ABDEL HAMID	EGYPT	87104
MOHAMED ABDEL HAMID	EGYPT	87111
TALAAT EL TOBGY	EGYPT	87107
SOBRY ELSHAMY	EGYPT	87107
ESSAM FATAH	EGYPT	87106

BEST AVAILABLE DOCUMENT

48

SOURCES OF PER-DIEM-FUNDING

19-May-1987
Page 2

	COUNTRY	COURSE NUMBER
SHAKER GADALAA	EGYPT	87105
AHMED IBRAHIM	EGYPT	87104
AHMED IBRAHIM	EGYPT	87111
NASSER MOHAMED	EGYPT	87108
TAHER SOKREY	EGYPT	87111
SALAH YOUSEF	EGYPT	87105
JUAN RAMIREZ ESTRADA	GUATEMALA	87107
MOHAMMED MAHMOUD	JORDAN	87107
HECTOR FERNANDEZ DE LARA	MEXICO	87105
KWANG PARK	SOUTH KOREA	87112
ELIFALETI KWEKA	TANZANIA	87108
NUMBER OF COURSE SLOTS FUNDED:	31	
PERSONAL/INDIVIDUAL FUNDS		
AIDA EL-SHINNAWI	EGYPT	87107
ALEXANDER DIBIE	NIGERIA	87112
NUMBER OF COURSE SLOTS FUNDED:	2	
U.S. AGENCY FOR INTL DEVELOPMENT (MISSION FUNDS)		
RAM KARKI	NEPAL	87101
RAM KARKI	NEPAL	87106
SOHAN NYACHHYON	NEPAL	87108
NUMBER OF COURSE SLOTS FUNDED:	3	
U.S. AGENCY FOR INTL DEVELOPMENT (USTTI GRANT)		
ROBERT CADLE	BELIZE	87101
CLIFFORD DUSHER	BELIZE	87103
RICHARD SPENCE	BELIZE	87111
JOSE BUSTAMANTE	BOLIVIA	87107
CARLOS ALFARO-HERNANDEZ	COSTA RICA	87109
CARLOS ALFARO-HERNANDEZ	COSTA RICA	87112
RODRIGO JAIBEL CHACON	COSTA RICA	87111
NARENDRA PRASAD	FIJI	87110
DANIEL LARBI	GHANA	87110
FRED OBIEMPE	GHANA	87111
ESTUARDO VASQUEZ PONCIANO	GUATEMALA	87104
ESTUARDO VASQUEZ PONCIANO	GUATEMALA	87111
LANCEY CONDE	GUINEA	87101
LANCEY CONDE	GUINEA	87105
QUEMANE DIALLO	GUINEA	87105
PAUL GITAU	KENYA	87108
ANTHONY MWENJA	KENYA	87108
THILO NIENE	LESOTHO	87110
KHADJIA NAAMAN	MOROCCO	87107
MARLO PACHIO	PHILIPPINES	87105
CHARITO SUAREZ	PHILIPPINES	87106
CHARITO SUAREZ	PHILIPPINES	87107
MAMAIDOU AMAR	SENEGAL	87101
PRINCE KING	SIERRA LEONE	87101
AUSINE SIDIQUE	SIERRA LEONE	87101

SOURCES OF PER-DIEM-FUNDING

19-May-1987
Page 3

	COUNTRY	COURSE NUMBER
ALUSINE SIDIQUE	SIERRA LEONE	87104
ABDI-WELI MOHAMUD	SOMALIA	87108
EVANS JOHN	ST. VINCENT	87101
PAUL KANGOMBE	ZAMBIA	87104
JESTONE MASEKA	ZAMBIA	87110
GODFREY NGOSA	ZAMBIA	87111
NUMBER OF COURSE SLOTS FUNDED:	31	
U.S. OFFICE OF FOREIGN DISASTER ASSISTANCE		
ARNOLD BARCELONA	PHILIPPINES	87106
ARNOLD BARCELONA	PHILIPPINES	87107
NUMBER OF COURSE SLOTS FUNDED:	2	
USTTI DISCRETIONARY FUNDS		
ALEXANDRE BARBOSA	BRASIL	87112
JOSE DA SILVA	BRASIL	87112
CLAUDIO BERMUDEZ AQUART	COSTA RICA	87101
ROY HUMES	JAMAICA	87103
YANG CHUNQING	PEOPLE'S REPUBLIC OF CHINA	87107
FENG XIAOMIN	PEOPLE'S REPUBLIC OF CHINA	87107
MICHAEL MULOMBE	ZAMBIA	87101
NUMBER OF COURSE SLOTS FUNDED:	7	
WORLD BANK		
AURELIANO CORDERO	PHILIPPINES	87101
FIDELO DURLAO	PHILIPPINES	87101
AUGUSTO PASAMONTE	PHILIPPINES	87101
NUMBER OF COURSE SLOTS FUNDED:	3	

BEST AVAILABLE DOCUMENT

50

U.S. TELECOMMUNICATIONS TRAINING INSTITUTE

GOALS FOR USTTI TRAINING

Through its sharing of telecommunications and broadcast management and technology training for qualified and deserving men and women from the developing countries of the world, the U.S. Telecommunications Training Institute (USTTI) has three major goals: humanitarian, political, and commercial. The three goals are addressed simultaneously through our training outreach; implicit in the training of all USTTI participants is the advancement of these goals, particularly, if the participants respond to our one request--to share the new knowledge with fellow colleagues so that their own domestic infrastructures can be improved. USTTI makes no requests for purchase of equipment or adherence to a particular political philosophy.

HUMANITARIAN

Despite the once popularly held opinion that telecommunications was merely hardware, it has become evident that telecommunications is the actual pipeline for the dissemination of information with the potential for improving overall life--economic, commercial and social. For example, telecommunications effectively support the management of projects in rural areas, including agriculture, health and education. Research also reveals that developing countries suffer the most severe shortage of trained manpower to manage and maintain their national telecommunications systems. USTTI's goal is to provide individuals with the skills necessary to upgrade, operate, maintain and expand their telephone and broadcast facilities and to meet their telecommunications infrastructures demands and requirements in order to improve the quality of life.

POLITICAL

During the U.S. government's preparation for the 1982 International Telecommunication Union (ITU) Plenipotentiary Conference in Nairobi, Kenya, the compelling and unmet need in the Third World for more hands-on and management training in telecommunications became quite apparent. The U.S. Ambassador to the ITU Conference, Michael R. Gardner, heard repeatedly from telecommunications and broadcast leaders in the developing world that the gap between developed and developing nations was increasing and, if the Third World was to enter the "information age" hand-in-hand with the developed world, training was urgently needed.

Telecommunications training in the most modern methods and technology continues to help Third World governments operate more efficiently and effectively. This sharing of telecommunications technology officially and effectively makes the Third World a participant in the worldwide telecommunications explosion.

U.S. representatives to international telecommunications and broadcast meetings are encountering colleagues from developing nations who have participated in USTTI courses and exhibit much greater openness and understanding of the United States and its positions on various international communications issues. There can be no doubt that USTTI promotes political harmony.

COMMERCIAL

USTTI corporate sponsors believe they are making a long-term investment in developing future marketplaces for U.S. equipment and services in the Third World. USTTI sponsors feel that the professional and personal relationships established through training telecommunications and broadcast managers, engineers and technicians from the developing world and exposing them to their own corporate environment will lead to lasting contacts. In addition, the corporations' exposure to these telecommunications professionals from the developing world can only educate and sensitize American corporations to the needs of people in the developing world; in turn, U.S. corporations will be in a better position to develop world markets. In the long-term, these contacts will be a source of information and commerce between the United States and the nations of the developing world.



U.S. Telecommunications Training Institute

ORIGIN OF PARTICIPANTS BY AREA/COUNTRY

1983 - 1984 - 1985 - 1986 - 1987

ASIA/PACIFIC

Brunei	(1984,1985,1986)
Burma	(1985)
China	(1983,1984,1985,1986,1987)
Fiji	(1983,1985,1986,1987)
Hong Kong	(1983,1984,1985,1986)
India	(1983,1984,1985,1986,1987)
Indonesia	(1983,1984,1985,1986,1987)
Iraq	(1986)
Korea	(1983,1984,1985,1986,1987)
Malaysia	(1985,1986)
Maldives	(1984,1986)
Nepal	(1985,1986,1987)
Pakistan	(1983,1984,1985,1986)
Philippines	(1983,1984,1985,1986,1987)
Singapore	(1983,1985,1986)
Sri Lanka	(1985,1986)
Taiwan	(1983,1984,1985,1986)
Thailand	(1983,1984,1985,1986)
Tonga	(1984,1985,1986,1987)

AFRICA

Botswana	(1983)	Malawi	(1983,1985,1986)
Cameroon	(1983,1984,1985,1986)	Nigeria	(1983,1985,1986,1987)
Congo	(1983)	Rwanda	(1983,1984,1986)
Ethiopia	(1983,1984,1986)	Senegal	(1983,1985,1987)
Gambia	(1983,1984,1986)	Sierra Leone	(1983,1984,1985,1986,1987)
Ghana	(1984,1985,1986,1987)	Somalia	(1986,1987)
Guinea	(1983,1984,1985,1986,1987)	Sudan	(1983)
Guinea-Bissau	(1985)	Swaziland	(1983)
Ivory Coast	(1983,1985)	Tanzania	(1983,1984,1985,1986,1987)
Kenya	(1983,1984,1985,1986,1987)	Uganda	(1985,1986,1987)
Lesotho	(1987)	Zaire	(1983,1985,1986)
Liberia	(1983,1984,1985,1986)	Zambia	(1983,1984,1985,1986,1987)
Madagascar	(1983,1984,1985,1986)	Zimbabwe	(1983,1986)

LATIN AMERICA/CARIBBEAN

Anguilla	(1986)
Antigua	(1983,1985,1986,1987)
Argentina	(1987)
Aruba	(1983,1984,1986,1987)
Bahamas	(1983,1984,1985,1986,1987)
Barbados	(1984,1985,1986,1987)
Belize	(1983,1984,1985,1986,1987)
Bolivia	(1983,1985,1986,1987)
Brazil	(1983,1984,1985,1986,1987)
British Virgin Islands	(1986)
Chile	(1983,1984,1985,1986)
Colombia	(1985)
Costa Rica	(1984,1985,1986,1987)
Dominica	(1983,1984,1985,1986)
Dominican Republic	(1983,1985,1986)
El Salvador	(1983,1986)
Grenada	(1986)
Guatemala	(1983,1984,1985,1986,1987)
Guyana	(1983,1985,1986)
Haiti	(1983,1984,1985,1986)
Honduras	(1983,1984,1985,1986)
Jamaica	(1983,1984,1985,1986,1987)
Mexico	(1983,1987)
Montserrat	(1986)
Netherland Antilles (Curacao, St. Maarten)	(1985,1986)
Panama	(1984,1986)
Peru	(1985,1986)
St. Lucia	(1986,1987)
St. Vincent & The Grenadines	(1986,1987)
Suriname	(1984,1985,1986)
Trinidad & Tobago	(1983,1984,1985,1986)
Uruguay	(1985)
Venezuela	(1983,1985)

NEAR EAST

Algeria	(1985)
Bahrain	(1983,1986)
Cyprus	(1983,1985,1986)
Egypt	(1984,1985,1986,1987)
Israel	(1983,1985,1986)
Jordan	(1983,1984,1985,1986,1987)
Kuwait	(1983,1985)
Lebanon	(1983)
Morocco	(1986,1987)
Qatar	(1983,1984,1985)
Saudi Arabia	(1983)
Tunisia	(1984,1986)
Turkey	(1983,1984)
United Arab Emirates	(1985,1986)
Yemen	(1983)

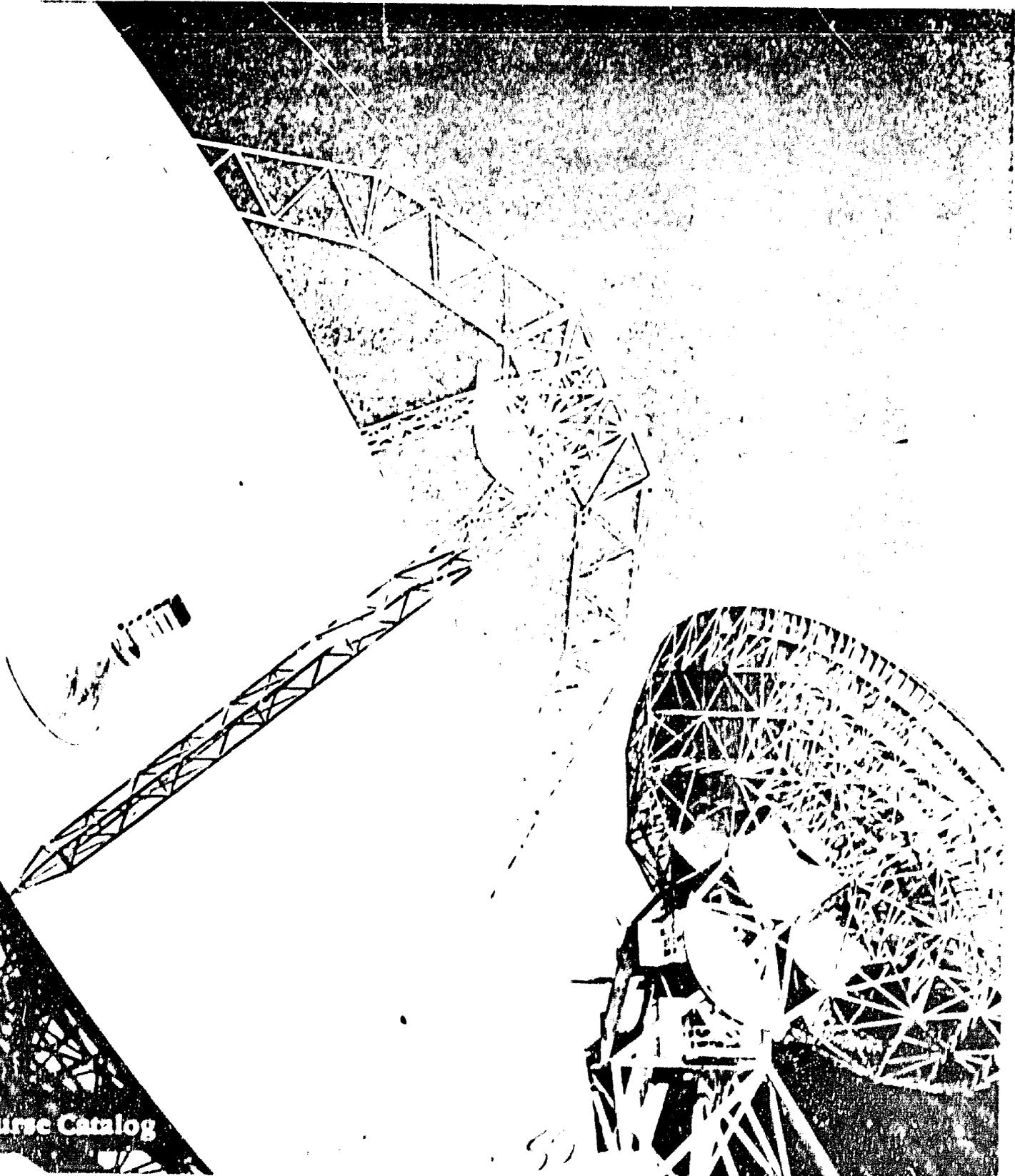
TOTAL COUNTRIES TO DATE: 93

6/16/87

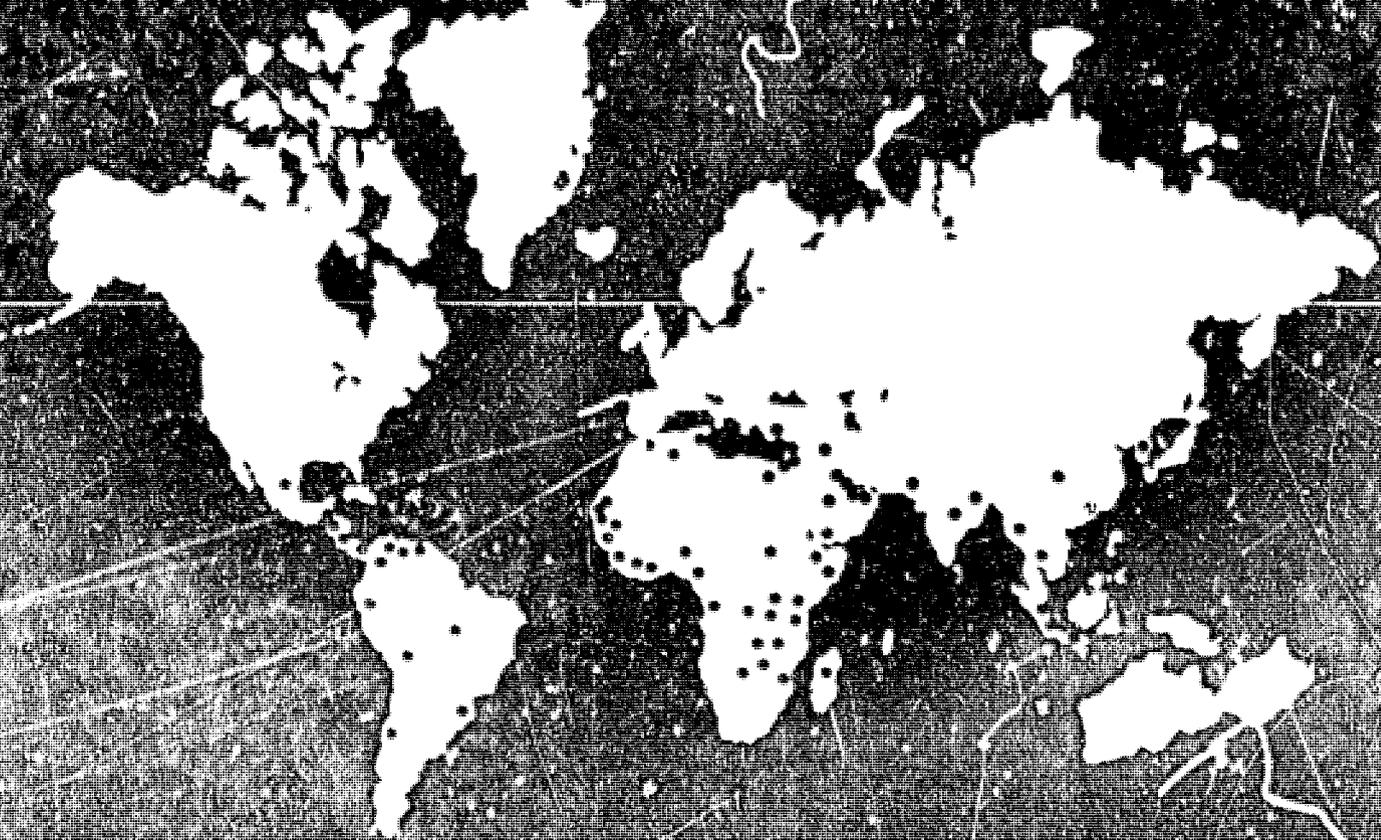


**United States
Telecommunications
Training Institute**

*Global Growth
Through
Telecommunications
Sharing*

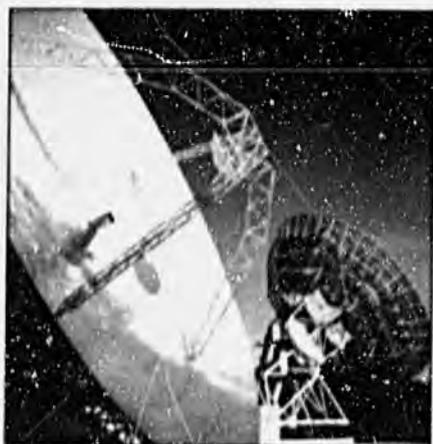


1987 Course Catalog



**COUNTRIES
PARTICIPATING
IN USITC
TRAINING
1983 — 1986**

- | | | | |
|------------------------|-------------|----------------------|----------------------|
| Algeria | Egypt | Kuwait | Singapore |
| Anguilla | El Salvador | Lebanon | Somalia |
| Antigua | Ethiopia | Liberia | Sri Lanka |
| Aruba | Philippines | Madagascar | Sudan |
| Bahamas | Gambia | Malawi | Suriname |
| Bahrain | Ghana | Malaysia | Swaziland |
| Barbados | Grenada | Maldives | Taiwan |
| Belize | Guatemala | Mexico | Tanzania |
| Bolivia | Guyana | Montserrat | Thailand |
| Botswana | Haiti | Morocco | Tonga |
| Brazil | Honduras | Nepal | Trinidad & Tobago |
| British Virgin Islands | Hong Kong | Netherlands Antilles | Tunisia |
| Brunei | India | Nigeria | Turkey |
| Burma | Indonesia | Pakistan | Uganda |
| Cameroon | Iran | Paraguay | United Arab Emirates |
| Chad | Israel | Peru | Uruguay |
| China | Iraq | Philippines | Venezuela |
| Colombia | Iraq-Cosit | Qatar | Yemen |
| Congo | Jamaica | Rwanda | Zaire |
| Costa Rica | Jordan | St. Lucia | Zambia |
| Cyprus | Kazakhstan | Saudi Arabia | Zimbabwe |
| Dominican Republic | Korea | Senegal | |
| | | Sierra Leone | |



“Our century of experience has proven that telecommunications is a flexible resource – a resource whose abundance increases in step with the development it makes possible for all mankind. We have enthusiastically shared our experience with the world for a century, and we look forward to continuing that mutually rewarding cooperation.”*

Ronald Reagan
President of the United States

*The above is an excerpt from President Reagan's message conveyed by Ambassador Gardner to the delegates from 157 nations assembled at the ITU Plenipotentiary Conference in Nairobi, Kenya in the fall of 1982.

CHAIRMAN'S REPORT

In December 1986, the USTTI completed its fourth successful year of providing free telecommunications and broadcast training for the men and women who manage the phone systems and broadcast outlets in the developing world. The leading U.S. corporations and government agencies that comprise the USTTI offered 37 diverse courses in 1986, providing 493 training slots. A record 1,599 applications were received representing a more than three-to-one ratio of qualified applicants for each USTTI training slot available. By the year's end, USTTI graduated 340 people; taken as a whole, the USTTI during its first four years has successfully graduated 903 men and women from 90 developing countries of our world.

As impressive as these statistics may be, they tell only a portion of the USTTI's story of innovative global sharing. For example, even the formulation of the USTTI annual course offering represents a unique collaborative effort where leading, and often fierce, competitors in the U.S. telecom and broadcast marketplace join together several times each year at USTTI headquarters to share training techniques and ideas that collectively shape each new USTTI annual curriculum. It changes each year to accommodate new technologies and techniques which our corporate trainers insist on bringing to our colleagues in the developing world. Moreover, each year USTTI graduates provide valuable input for our evolving curriculum by completing post-

course evaluations designed to tell USTTI trainers what training is most needed for the upcoming year. As a result, the 1987 curriculum of 36 courses is different and hopefully better than the prior four annual curriculums.

Another key element of the USTTI's record of success in the first four years is its "no strings attached" approach to providing quality training. Unlike training provided by most developed countries, the USTTI does not require graduates to buy U.S. equipment, nor do we ask USTTI participants to leave our shores converted to our open, free-enterprise society. The only

quid pro quo that the USTTI insists upon is that each trainee work diligently while attending USTTI training, and then, when back home in his/her own country, vigorously share the benefits of the training with their colleagues.

Finally, there is another dimension to the USTTI story that raw statistics cannot capture. This added element is the good fellowship that develops spontaneously when men and women from different, and sometimes hostile, countries join together for a demanding and often understandably intimidating USTTI training experience in our high tech environment that we in the



USTTI Chairman, Michael R. Gardner, with USTTI Director, Judith Sparrow (seated), addresses USTTI participants as part of the three day orientation that all USTTI participants enjoy upon arrival in Washington. Following their orientation at USTTI's offices, participants travel to their respective corporate or government training sites across the United States.



United States take for granted. In addition to gaining the predictable benefits from the diverse USTTI training, all of our graduates have a full U.S. experience, visiting over dinner with U.S. families, going to weekend sports events, attending movies and concerts, and like most American students, just watching TV in their hotel rooms once "homework" assignments are completed. This added dimension of the total USTTI experience, namely getting to know us as well as their global peers in a rigorous training experience, has proven to be a great human network building enterprise.

In 1987, the real challenge for

the USTTI will be to raise additional funds from the private sector to pay for the travel and living expenses of more than 70% of our qualified applicants. Because of the desperate economic problems which plague many developing countries, the free USTTI training simply is not obtainable for the vast majority of USTTI applicants who cannot gain funding support to travel to the United States. Moreover, due to reductions in federal funds, the U.S. private sector -- as splendid as its support of the USTTI has already been -- simply will have to meet this extra funding requirement of almost one million dollars for 1987. For

every \$4,100 we fail to raise, we will have one less person from the developing world participating in USTTI training in 1987. Based on the past record of sharing that the USTTI represents, the Board of Directors of the USTTI is confident that the robust support of industry and foundations will increase, making 1987 another important year of global growth through telecommunications sharing.

Michael R. Gardner
Chairman, Board of Directors

USTTI FUNDING

The USTTI is a 501(c) (3) non-profit organization, meeting all standards for charitable contributions. In 1986, the private sector contributed \$301,000 in cash and \$1,986,440 through in-kind contributions to the USTTI. The in-kind contributions reflect the cost of training attendant to the 493 training slots offered in 1986, travel and subsistence provided by corporate trainers, educational materials and a host of miscellaneous services donated to the USTTI. U.S. AID contributed \$550,000 to the USTTI in 1986. These funds were used exclusively to provide travel and subsistence for men and women from the least-developed countries who could not have attended the free USTTI training if the USTTI did not provide their basic travel and subsistence. Additional federal governmental support for the USTTI totaling \$326,460 was provided by NTIA of the Commerce Department, the FCC, the VOA, the State

Department and the USIA.

The USTTI's operating budget for 1986 was \$251,000. This amount covers the cost of the three-person professional staff, one secretary, summer interns, rent, utilities, postage, etc. Every cent raised by the USTTI in excess of its tightly-controlled overhead is used to provide additional travel and subsistence support for the more than 70% of USTTI attendees who must have funding assistance to participate in USTTI programs.

In 1987, the USTTI will need to raise at least \$1,000,000 to provide for the travel and subsistence needs of its applicants. This amount presumes a fixed overhead cost for 1987 identical to 1986's expenses. Organizations wishing to contribute to the USTTI should contact Ms. Judith Sparrow, Director of USTTI, (1255 23rd Street, N.W., Washington, D.C. 20037; 202/862-3857).

UNITED STATES TELECOMMUNICATIONS TRAINING INSTITUTE

The U.S. Telecommunications Training Institute (USTTI) is an unprecedented joint venture between the leaders of the U.S. telecommunications industry and ranking officials from the Federal Government. The goal of this joint venture is to share this country's communications advances on a global basis by providing a comprehensive array of free telecommunications and broadcast training courses each year for qualified men and women from the developing countries of the world.

The USTTI was established in the Fall of 1982 by Michael Gardner, President Reagan's Ambassador to the ITU Plenipotentiary Conference in Nairobi, Kenya. In planning for the United States' participation at the Nairobi Conference, it became clear to Ambassador Gardner and to the industry and government leaders working with him on the U.S. Delegation that there was a compelling unmet need in the Third World for more hands-on and managerial training in telecommunications. In order to respond to this legitimate need for increased training and yet, at the same time, to respond in a way that did not unduly burden the ITU, Ambassador Gardner asked leaders of the major (and often competing) U.S. telecommunications corporations to join together to provide this vital training at no cost to worthy applicants.

The response at the outset was outstanding. Initially, five major U.S. corporations agreed to serve as corporate sponsors of the USTTI. As corporate

sponsors, each company agrees to: provide free training at its corporate site; finance the overhead costs of the USTTI; and serve on the USTTI Board of Directors. These founding corporate sponsors of the USTTI are: AT&T, COMSAT, GTE, MCI, and Western Union. Subsequent corporate sponsors who have joined the USTTI Board with the same commitment of resources include: Northern Telecom Inc., Motorola, Inc., Digital Equipment Corporation, US WEST, Inc., Pacific Telesis International, BellSouth Corporation, and Cable and Wireless North America. In addition, more than 30 other ma-

for U.S. organizations annually support the USTTI through provision of free training and/or financial support.

Key leaders in the Federal Government also have played a vital role in the creation and continuation of the USTTI. When the USTTI was merely a concept in mid-1982, these leaders lent important support to Ambassador Gardner in his efforts to organize this initiative so it could be announced at the Nairobi ITU Conference. The Federal Members of the USTTI Board of Directors are: Charles Z. Wick, Director of the U.S. Information Agency (USIA), Mark S. Fowler, Chairman of the Federal Communications Commission (FCC), Edward J. Derwinski, Counselor, Department of State, and Alfred C. Sikes, Assistant Secretary of Commerce for Communications and Information, NTIA. As Board members of the USTTI, these Federal leaders have involved their Departments and Agencies in the important work of the USTTI. Through these Board members and others in the Executive Branch and Congress, the government has become a full venture partner with industry in the success of the USTTI. A definite expression of Congressional support for the USTTI occurred recently when the USTTI Amendment was enacted as part of the "Omnibus Diplomatic Security and Antiterrorism Act of 1986" on August 12, 1986. This latest USTTI Amendment, sponsored by House Foreign Affairs Committee Chairman Dante Fascell and Senate Foreign Relations



During their training, USTTI participants are exposed to the latest in U.S. telecom and broadcast technology. Participants here are shown touring broadcast facilities of a USTTI training sponsor.



Committee member Charles Mathias confirmed the strong bipartisan support of the Congress for this industry-government joint venture. Yet, consistent with President Reagan's call for more private sector involvement, the bulk of training and the direct financing of the USTTI continue to be provided by the U.S. telecommunications industry.

The USTTI's first curriculum outlined at the Nairobi Conference included 13 discrete courses for 1983, ranging from basic spectrum management training to sophisticated satellite technology instruction. At the outset, the USTTI Board of

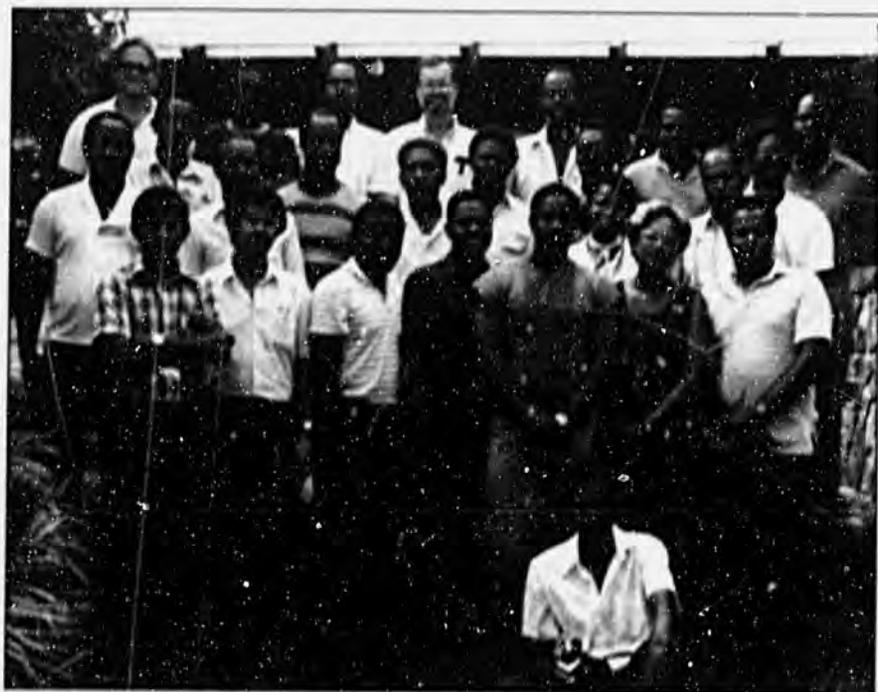
Directors determined to offer its diverse curriculum in an environment most likely to maximize the learning experience for USTTI trainees. Instead of building costly new training facilities, the USTTI offers its training in the training facilities, laboratories and factories of major U.S. corporations. As a result, the same facilities that these corporations use for their own "star" employees have become classrooms for worthy USTTI applicants. In addition to saving in overhead and startup costs, this approach to training has helped to provide immediately the type of relevant telecommunications and broad-

cast training that the leaders of the developing world requested of the United States and other developed countries assembled at the Nairobi Conference.

During the first three annual curriculum offerings in 1983, 1984, and 1985, a total of 53 diverse courses were offered by USTTI, with 563 men and women successfully graduated. These graduates represent key telecommunications and broadcast managers, engineers and technical experts who operate the phone systems and broadcast networks in 82 developing countries of the world.

In 1986, based on increased U.S. corporate and government support, the USTTI offered 37 courses with more than 490 training slots. Responses to USTTI training in the Third World were staggering with almost 1,600 quality applications being received by the USTTI - a three-to-one ratio of applications to training slots. Due to the strong desire of most applicants to attend more than one USTTI course in 1986, most applicants attended several courses. As a result, another 340 people graduated successfully from USTTI training in 1986.

USTTI inaugurated its first regional training program in the Caribbean during July of 1986. Five USTTI corporate sponsors agreed to provide the tuition-free training: Western Union, AT&T, Harris Corporation, Motorola and BellSouth. These USTTI corporate sponsors provided management, telecommunications and broadcast training for 52 individuals from



In 1986, five USTTI corporate sponsors, AT&T, BellSouth, Harris, Motorola, and Western Union, took their training outside the continental U.S. in order to participate in USTTI's regional training effort for the Caribbean island nations in the U.S. Virgin Islands. Graduates of the management course given in St. Thomas are pictured above.



The telex technicians pictured above were able to resolve an equipment problem with their telex machine in their home country via the telex exchange at this training site in Florida.

16 island nations during the month-long program. The Caribbean regional training program was highly successful, creating a new "network" of USTTI graduates in the region.

Besides providing expert training for USTTI applicants, the U.S. private sector has provided valuable in-kind support to the USTTI. Examples of this in-kind support include: telex service credit provided by TRT; a full computer system (hardware and software) donated by Digital Equipment Corporation; direct mail and printing service provided by Western Union; modem equipment donated by Racal-Milgo; public relations support given by Northern

Telecom; and seminar and equipment support from COMSAT and INTELSAT. In addition, the cost of design and pre-press work for the USTTI catalog has been donated by two USTTI sponsors: Northern Telecom for the 1986 catalog and AT&T for the 1987 catalog.

The U.S. Government, in addition to the leadership provided by various Federal Board members, has also been very active with in-kind and cash support for the USTTI. The U.S. Agency for International Development (AID), at Director Peter McPherson's urging, has awarded another \$300,000 grant in 1986 to the USTTI to provide funds for travel and subsistence support for worthy applicants from the least developed countries of the world. Total AID support over the lifetime of USTTI now approaches \$1,000,000. AID also helps to screen USTTI applicants in their Mission offices; the U.S. Department of Commerce prints the USTTI catalogs and also provides extensive spectrum management training; the FCC prints the orientation manual for USTTI trainees and also provides spectrum management training; the U.S. State Department, particularly the Coordinator's Office in the Bureau of International Communications and Information Policy, distributes more than 10,000 USTTI catalogs throughout the developing world, while also providing invaluable support through communications with foreign governments and agencies who propose USTTI candidates for training; and the USIA, with its

constant outreach through field offices, publicizes the course offerings and supports the USTTI curriculum with two VOA broadcast courses.

Through the in-kind and cash support of various U.S. corporations, foundations, and Federal government bodies, the USTTI has been able to operate with a modest three person professional staff, and has been able to direct excess funds away from overhead costs to the more important function of providing travel and subsistence support for worthy applicants from the least developed countries of the world.

At the end of the USTTI's 1986 curriculum, a total of 903 men and women who manage the telecommunications facilities and broadcast outlets in 90 developing countries have successfully graduated from one or more of the 90 USTTI training courses offered during these past four years.

In 1987, the USTTI curriculum has been expanded to include, at a minimum, 36 diverse courses. Ten thousand catalogs outlining these 36 USTTI courses for 1987 will be distributed throughout the developing world in December of 1986. Based on the quality and volume of applications received in 1986, the USTTI anticipates more than 1,600 applications will be presented from developing world candidates for USTTI training in 1987.

A TYPICAL AGENDA FOR USTTI PARTICIPANTS



Arrival and Orientation

Wednesday: Arrival in Washington, D.C. and check-in to downtown hotel arranged by USTTI.

Thursday morning: Orientation at USTTI's offices followed by luncheon hosted by USTTI and staff in a local restaurant.

Thursday afternoon and evening: This time is left open to allow free time for banking and shopping needs, visiting Washington, meeting fellow participants or perhaps resting after a long journey to the U.S.

Friday morning and afternoon: A full day of orientation takes place with cross-cultural training as well as information presented through guest speakers and films regarding the U.S. and its business environment. Training representatives are often present to meet the individual participants and give a brief overview of the upcoming training.

Friday evening: USTTI sponsors a reception and buffet dinner for the USTTI participants and invited guests from private industry and the U.S. government.

Saturday morning: USTTI arranges for a tour by bus of Washington, D.C., which includes the city's historical sites, cultural enclaves and national monuments.

Saturday evening: The International Visitors Information Service (IVIS) and the Washington International Center usually make arrangements for USTTI participants to be the invited guests for dinner in local Washington homes in order to give participants the opportunity to meet Americans in an informal atmosphere.

Telecommunications/ Broadcast Training

Sunday: Departure from Washington for participants traveling to corporate training sites, many of which are not located in the immediate Washington, D.C. area. A representative of the training sponsor usually meets the participants at the local airport and accompanies them to a hotel located close to the training site.

Monday morning: This day marks the beginning of the telecommunications or broadcast training. All USTTI managerial and technical courses take place in the existing training facilities of the corporate and government sponsors. Training lasts anywhere from one to six weeks, depending on the particular course. The USTTI sponsored training is a rigorous and full time program with each training day lasting approximately eight hours. In addition, most USTTI corporate and federal sponsors make a special effort to plan cultural and athletic events, such as professional football games, museum visits, etc.



USTTI participants are shown above enjoying a tour of the U.S. Capitol in Washington. USTTI organizes a bus tour of the capital city as part of the orientation session before the commencement of the individual training courses.

637
7



At the end of each USTTI course, the training sponsor conducts a graduation ceremony where USTTI certificates are awarded for the successful completion of the course.

Graduation and Departure

At the conclusion of each training course, a representative of the USTTI travels to the training location to conduct frank written and oral evaluations with USTTI graduates and trainers. This evaluation process ensures that the USTTI course curriculum is expanded and modified to provide maximum results for future USTTI graduates. The majority of corporate and federal training sponsors conduct a graduation ceremony, where USTTI certificates are awarded in recognition of the successful completion of the course. Many training sponsors also award individual certificates to the USTTI graduates.

At the conclusion of their course and gradua-

tion, USTTI participants depart for their home countries, equipped with valuable training and a better understanding of the United States and its telecommunications industry. Typically USTTI participants return also with extensive training materials, which help them in their own working environment. Shipping of training materials is the responsibility of individual participants, although some training sponsors provide assistance with mailing. In addition, the participants have references and names of their new American colleagues to be consulted in the future for questions they might have or information they may need.



Participant Qualifications

Telecommunications and broadcast professionals currently employed in the public or private sector of a developing country are invited to apply for training in the USTTI program.

To facilitate effective communication and education, participants must have a working fluency in the English language. For certain courses, it may be possible for team applications to be submitted where at least one member has excellent English language skills and will serve as an interpreter for the team. Permission must be requested for such consideration.

A postsecondary education is required, and a university degree in engineering, electronics, telecommunications or management is highly desirable. Equivalent practical experience in telecommunications may be substituted for educational requirements.

Application Process

Applicants are reminded that the USTTI application form must be completed fully, including supervisor's signature. A telex or cable nomination will be accepted provided it includes all of the information requested in the application form. There is an application form on the last page of this catalog to be used for photocopying.

Individuals and nominating organizations should review carefully the course descriptions provided and apply selectively for only those courses from which they would benefit most.

So that participants may take full advantage of the USTTI training program, courses have been scheduled to enable trainees to apply for a single course or for a combination of sequential courses. (See page 11 for possible course sequences.) If applying for more than one course, please rank in order of preference.

Applications should be sent directly to:

United States Telecommunications Training Institute
1255 23rd Street, N.W.
Suite 400
Washington, DC 20037 USA
Telex: 197821 USTTI UT
Cable: USTTI Washington DC
Fax: (202) 862-1947

Selection Process

Qualified individuals will be accepted on a first-come, first-serve basis. Individuals are encouraged to apply early. USTTI will send a confirmation letter to all applicants indicating receipt of application. Generally, applications will be reviewed by USTTI staff and sponsoring training organizations several months prior to the beginning of training.

If selected, participants will be notified by cable or telex approximately four weeks prior to the start of training. Notification of acceptance will include required date and place of arrival, approximate living costs, and itinerary for required travel within the U.S. In addition to telex or cable messages, participants will receive airmailed packets with detailed information.

It is important that participants confirm attendance at least three weeks prior to scheduled date of arrival, in order to reserve a space in the course.

Applicants may be admitted to one or all of the courses for which they apply, depending on number of training places available, applicant qualifications, and course requirements.

Funding Process

The U.S. telecommunications and broadcast industry, with support from the U.S. government, provides tuition-free training and funds for the overhead costs of USTTI. Participants and their organizations are asked only to provide for their own costs of international and domestic U.S. travel, and for their own living expenses during training.

Applicants are encouraged to seek funding support for their living and travel expenses from their own organizations and governments, as well as from international agencies, foundations, etc. Former participants have received funding assistance from a variety of sources which have recognized the importance of USTTI training. These sources have included the ITU Fellows program, USAID, USIS, Institute for International Education, OAS-CITEL, Asia-Pacific Telecommunity, and the World Bank.

Limited financial assistance for the most needy participants may be available from USTTI to

cover costs for travel to and subsistence while in the United States. This assistance is made available through U.S. corporations, private foundations and the U.S. government. The Agency for International Development (AID) has been a major source of funding assistance for worthy applicants from the least developed countries.

To enable USTTI to coordinate effectively with sponsoring corporations, applicants must complete fully the application section on financial information. Applications without a supervisor's signature cannot be considered for funding assistance.

Financial Information

The USTTI suggested subsistence rate while participants are in the U.S. is approximately US \$75.00 per day. This rate is intended to cover hotel and meal costs only. Hotel costs are usually based on double occupancy rates; actual costs will vary depending on training sites.

There is a \$100 insurance and materials fee payable during orientation prior to the start of training. This fee covers general orientation and expenses such as meals, materials, medical insurance, etc. Participants attending more than one course will be charged \$50 for each subsequent course.

Travel Arrangements

Participants should arrive in the U.S. with confirmed airline tickets for all required U.S. travel and for their return home. Participants should purchase "open" and "unrestricted" tickets for domestic U.S. travel; USTTI will make group reservations for travel within the U.S. to training sites.

USTTI policy prohibits spouse and/or family members from accompanying participants during training. Housing arrangements are not made to include family members. Living expense estimates are sufficient to cover essential living expenses for one person only.

Visa Requirements

U.S. Consulates have been requested to grant a B-1 or J-1 visa to participants upon proof of acceptance to USTTI training. Participants will be asked to present their letter of invitation from USTTI by U.S. Immigration officials at port of entry.

Orientation

All participants will attend an orientation program upon arrival in the U.S. (See pages 7-8 for a typical agenda for USTTI participants.) Orientation will be held in Washington, D.C. on the Thursday, Friday and Saturday prior to the beginning of training. Participants attending more than one course will not be required to attend subsequent orientation sessions.

Housing Arrangements

For safety reasons and to insure the maximum learning experience for USTTI students, participants are required to stay in housing arranged by USTTI and training sponsors unless specific exception has been granted by USTTI. It is the general policy of USTTI to make reservations for housing on behalf of participants well in advance of each training program. USTTI will guarantee hotel rooms for participants who send their flight arrival date five days in advance.

USTTI attempts to arrange the most economical accommodations possible. In many cases, hotel accommodations are based on a double occupancy rate. The cost of a single room may be higher and above the suggested per diem rate.

Insurance Coverage

All participants in USTTI programs are covered by medical insurance during their training in the U.S.

COURSE INFORMATION



Course Focus

USTTI training courses have a managerial, technical or combination of managerial and technical focus. Each course description contains a "course focus," which details the particular focus of the training.

Applicants should read course descriptions carefully in order to determine appropriateness of the course for their professional training needs.

Course Sequences

Many courses have been scheduled to allow participants to apply for a number of related courses. The following are some potential course sequences:

Broadcasting:

87-205 (Ampex "C" Format Video Recorder System Theory and Maintenance) and **87-210** (Broadcast Systems Operation and Maintenance)

87-208 (Radio Broadcast Studio Design and Operations) and **87-210** (Broadcast Systems Operation and Maintenance)

Network Communications:

87-102 (Circuit Switch Systems, Operations and Management) and **87-104** (Network Fundamentals)

87-104 (Network Fundamentals) and **87-109** (Lightwave Systems)

87-104 (Network Fundamentals) and **87-111** (Specifying, Installing and Maintaining the Data Communications Network)

87-105 (Telecommunications and Networks in the New Information Environment) and **87-112** (Introduction to Integrated Packet Networks (IPN))

87-113 (Uses of Microcomputers in Telecommunications) and **87-115** (Networking and Information Systems)

87-202 (Network Technical Control, Operations and Management) and **87-204** (Cellular Radiotelephone Systems for Mobile, Portable and Fixed Communications)

87-207 (Digital and Optical Fiber Transmission) and **87-211** (Subscriber Loop Transmission and Fiber Optics)

87-303 (Electromechanical Switching: Step-by-Step in Today's Telephone Network) and **87-307** (Digital Switching Concepts)

Management:

87-301 (Management and Supervisory Techniques) and **87-308** (Management/Supervisor Development)

87-301 (Management and Supervisory Techniques) and **87-306** (Satellite Communications Management)

Satellite Communications:

87-304 (Satellite Systems Applications for Rural Communications), **87-305** (SCPC Satellite Architecture for Rural Communications) and **87-306** (Satellite Communications Management)

Spectrum Management:

87-106 (Amateur Radio Administration) **87-107** (Radio Spectrum Management and Computer-Aided Techniques)

√ = "off the shelf training" (19 of 36) (w/te)

UNITED STATES TELECOMMUNICATIONS TRAINING INSTITUTE 1987 COURSE SCHEDULE

Course Number and Title	Policy	Telecom	Business	Infrared	Orientation
✓ 87-101 Management and Supervisory Techniques		✓			April 9 - 11, 1987
87-102 Circuit Switch Systems, Operations and Management		✓			April 9 - 11, 1987
87-103 Frequency Monitoring and Infringements	+	✓			April 9 - 11, 1987
✓ 87-104 Network Fundamentals		✓			April 23 - 25, 1987
87-105 Telecommunications and Networks in the New Information Environment		✓		✓	April 30 - May 2, 1987
87-106 Amateur Radio Administration	+		✓		April 30 - May 2, 1987
87-107 Radio Spectrum Management and Computer-Aided Techniques	+	✓	✓		May 7 - 9, 1987
87-108 High Frequency Radio Broadcasting			✓		April 30 - May 2, 1987
✓ 87-109 Lightwave Systems		✓	✓		May 7 - 9, 1987
✓ 87-110 Below Ground Cable Locating and Safety/Air Flow Analysis		✓			May 14 - 16, 1987
87-111 Specifying, Installing and Maintaining the Data Communications Network		✓		✓	May 7 - 9, 1987
✓ 87-112 Introduction to Integrated Packet Networks (IPN)		✓			May 14 - 16, 1987
87-113 Uses of Microcomputers in Telecommunications		✓		✓	May 28 - 30, 1987
✓ 87-114 Digital Carrier Transmission		✓			May 28 - 30, 1987
✓ 87-115 Networking and Information Systems		✓		✓	June 4 - 6, 1987
✓ 87-201 Management and Supervisory Techniques		✓			July 9 - 11, 1987
87-202 Network Technical Control, Operations and Management					July 9 - 11, 1987
87-203 Uses of Microcomputers in Telecommunications/Information Systems for Telecommunications Management	✓	✓		✓	July 9 - 11, 1987
87-204 Cellular Radiotelephone Systems for Mobile, Portable and Fixed Communications		✓			July 23 - 25, 1987
✓ 87-205 Ampex "C" Format Videotape Recorder System Theory and Maintenance				✓	July 23 - 25, 1987
✓ 87-206 Management Skills Development		✓			July 23 - 25, 1987
✓ 87-207 Digital and Optical Fiber Transmission		✓			July 30 - August 1, 1987
87-208 Radio Broadcast Studio Design and Operations				✓	July 30 - August 1, 1987
✓ 87-209 Telecommunications Planning and Economic Decision Making	✓	✓			August 13 - 15, 1987
87-210 Broadcast Systems Operation and Maintenance				✓	August 13 - 15, 1987
✓ 87-211 Subscriber Loop Transmission and Fiber Optics		✓			August 13 - 15, 1987
✓ 87-301 Management and Supervisory Techniques		✓			September 24 - 26, 1987
87-302 Store and Forward Switching Systems, Operation and Management		✓			September 24 - 26, 1987
87-303 Electromechanical Switching Step-by-Step in Today's Telephone Network		✓			October 1 - 3, 1987
87-304 Satellite Systems Applications for Rural Communications	✓	✓			October 1 - 3, 1987
✓ 87-305 SCPC Satellite System Architecture for Rural Communications		✓			October 8 - 10, 1987
✓ 87-306 Satellite Communications Management		✓			October 15 - 17, 1987
✓ 87-307 Digital Switching Concepts		✓			October 15 - 17, 1987
✓ 87-308 Management/Supervisor Development		✓			October 15 - 17, 1987
✓ 87-309 The Network		✓			October 15 - 17, 1987
87-310 Telecommunications Transmission Systems		✓			October 29 - 31, 1987

Additional courses other than those listed above are likely to be offered through USTTI in 1987.

Course Dates	Location	Sponsor Corporations/Organizations
April 13 - May 1, 1987	Atlanta, GA	Western Union
April 13 - 24, 1987	Fort Lauderdale, FL	TRT Telecommunications Corp.
April 13 - 24, 1987	Allegan, MI	Federal Communications Commission
April 27 - May 8, 1987	San Francisco, CA	Pacific Telesis International
May 4 - 15, 1987	Merrimack, NH	Digital Equipment Corp.
May 4 - 8, 1987	Newington, CT	American Radio Relay League; IARU
May 11 - June 19, 1987	Washington DC; Chicago, IL; Dallas, TX	NTIA, FCC, Motorola, Inc., and Spectrum Planning, Inc.
May 4 - 22, 1987	Washington, DC	Voice of America
May 11 - 15, 1987	Atlanta, GA	BellSouth Corp.
May 18 - 22, 1987	Fort Lauderdale, FL	BellSouth Corp.
May 11 - 29, 1987	Sunrise, FL	Racal-Milgo
May 18 - 22, 1987	Germantown, MD	M/A-COM Telecommunications, Inc.
June 1 - 5, 1987	Washington, DC	Academy for Educational Development
June 1 - 19, 1987	Denver, CO	US WEST
June 8 - 19, 1987	Princeton, NJ	Unisys Corp.
July 13 - 31, 1987	Atlanta, GA	Western Union
July 13 - 24, 1987	Fort Lauderdale, FL	TRT Telecommunications Corp.
July 13 - 24, 1987	Washington, DC; Raleigh, NC	Academy for Educational Development; IBM Corp.
July 27 - 31, 1987	Chicago, IL	Motorola, Inc.
July 27 - August 14, 1987	Redwood City, CA	Ampex Corp.
July 27 - August 7, 1987	Denver, CO	US WEST
August 3 - 14, 1987	Washington, DC	Cable and Wireless North America
August 3 - 14, 1987	Washington, DC	Voice of America
August 17 - 28, 1987	Princeton, NJ	AT&T
August 17 - 28, 1987	Quincy, IL	Harris Corp., Broadcast Group
August 17 - 28, 1987	Silver Spring, MD	Bell Atlantic Corp.
September 28 - October 16, 1987	Atlanta, GA	Western Union
September 28 - October 9, 1987	Fort Lauderdale, FL	TRT Telecommunications Corp.
October 5 - 16, 1987	Memphis, TN	COM PRO, Inc.
October 5 - 9, 1987	Washington, DC	U.S. Agency for International Development, Academy for Educational Development
October 12 - 16, 1987	Germantown, MD	M/A-COM Telecommunications, Inc.
October 19 - 30, 1987	Clarksburg, MD	COMSAT
October 19 - November 6, 1987	Raleigh, NC; Dallas, TX	Northern Telecom Inc.
October 19 - 30, 1987	Washington, DC	MCI International, Inc.
October 19 - 30, 1987	Philadelphia, PA	Bell Atlantic Corp.
November 2 - 15, 1987	Dallas, TX	Rockwell International Corp., Telecommunications

COURSE DESCRIPTIONS

87-101 Management and Supervisory Techniques

Course Description:

Procedures and techniques for management per-
sonnel. Problem solving, human relations, the
importance of communications in relation to
management of communications systems.

Participant Learning Objectives:

To improve leadership skills in (1) Detecting and
solving problems; (2) Effective oral, written and
visual communications; (3) Working with others;
(4) Planning and organizing.

Focus: Managerial or those entering managerial
field

Orientation: April 9 - 11, 1987

Training Dates: April 13 - May 1, 1987

Location: Atlanta, Georgia

Sponsor: Western Union

87-102 Circuit Switch Systems, Operations and Management

Course Description:

Overview of the structure of a stored program
controlled circuit switch, to include electrical
signal interfaces, distributed hardware and soft-
ware techniques, and program versus user-
definable table controls. Typical operator controls,
alarm conditions and indications, peripheral
operations and support, on-line versus off-line
functions, preventive and on-demand main-
tenance requirements and techniques, line
monitoring and trouble-clearance procedures,
and recovery/restart processes. Physical and en-
vironmental requirements; network interconnec-
tions. Quality of service management techniques.
Emphasis on automatic telex exchanges.

Participant Learning Objectives:

(1) Obtain a detailed working knowledge of the
architecture, hardware and software employed in

a modern digital circuit switching system and (2)
Obtain comprehensive hands-on knowledge of
message processing, network control and com-
puter operations in a modern digital circuit
switching system.

This course is recommended for technical staff
in telex operations with good knowledge of basic
electronics, fundamentals of telex operations
including manual and automatic switching, and
electrical principles of telex.

Focus: Technical

Orientation: April 9 - 11, 1987

Training Dates: April 13 - 24, 1987

Location: Fort Lauderdale, Florida

Sponsor: TRT Telecommunications Corporation

87-103 Frequency Monitoring and Infringements

Course Description:

Trainees will work for two weeks at a fully func-
tional, modern, fixed monitoring station of the
Federal Communications Commission, alongside
monitoring technicians in the service of the
United States Government. Duration of the course
will be at monitoring positions operating receiv-
ing, measuring, and direction finding equipment
and then processing information derived, within
the monitoring system in coordination with other
fixed stations of the monitoring network. Equip-
ment and publications will be used to classify
emissions, ultimately to identify their source. Pro-
cedures, associated with developing and issuing
infringement notices in accordance with domestic
and international Radio Regulations, will be learned.
Emphasis will be placed on teaching participants
to work independently at a monitoring position.
Several days will be devoted to VHF/UHF mobile
monitoring activities, including a short field trip.

Participant Learning Objectives:

To be able to: (1) Operate and effectively use con-
temporary radio monitoring equipment such as
receivers, spectrum analyzers, oscilloscopes, fre-
quency counters, teleprinters, computer terminals,



scanners, etc.; (2) Identify the source of radio emissions from transmitters located anywhere in the world; (3) Classify emissions according to the international Radio Regulations; (4) Measure parameters of signals including frequency, modulation, bandwidth, and field strength; (5) Use a direction finder to establish lines of positions to transmitters and in coordination with other monitoring facilities, establish a transmitter fix on the globe's surface; (6) Operate VHF/UHF mobile monitoring equipment from within a monitoring truck, including planning for and implementing a mobile monitoring operation; and (7) Issue infringement notices in accordance with domestic or international Radio Regulations.

Note: Due to limited working space, this course is limited to individuals who are, or who are expected to be, working directly in the field of radio monitoring.

Focus: Technical

Orientation: April 9 - 11, 1987

Training Dates: April 13 - 24, 1987

Location: Allegan, Michigan

Sponsor: Federal Communications Commission

87-104 Network Fundamentals

Course Description:

Network Fundamentals provides the participant with a general understanding of the network elements of telecommunications technology. In its instructional sequence, the course stresses the growing importance of the stored program controlled digital network and explores present and developing telecommunications technologies.

Participant Learning Objectives:

After completing this course the participant will be able to: (1) Recognize the fundamental terms and concepts of network design; (2) Recognize characteristics of electromechanical, electrical space division and electronic time division switching systems; (3) Identify functions, characteristics and components of subscriber

loop plant; (4) Recognize characteristic principles of analog and digital signal transmission; (5) Recognize characteristics of analog and digital carrier systems; (6) Recognize characteristic principles of radio transmission systems; and (7) Identify characteristics of lightwave transmission systems.

By teaching these objectives, the course gives the participants a working knowledge of the fundamentals of the integrated telecommunications network. In particular, the course stresses the importance of maintaining the critical balance between high quality service and lowest possible cost.

Focus: Managerial and technical

Orientation: April 23 - 25, 1987

Training Dates: April 27 - May 8, 1987

Location: San Francisco, California

Sponsor: Pacific Telesis International

87-105 Telecommunications and Networks in the New Information Environment

Course Description:

Subject areas covered will include: teleco industry review; telephony and the business aspects of an operating company; distributed data processing; computer networks such as X.25, etc.; clustering of computers and the office; MIS, engineering and manufacturing departments; network application and services; public mail and videotext applications and services; internal teleco MIS applications and services; and telephone company as a channel (reseller) for computer equipment and services.

Participant Learning Objectives:

To be able to understand, analyze, and discuss: the conveyance of telephone and computers, "liberalization" in future trends and the impact on an open teleco; distributed data processing, its philosophy, products and services; networking of computers in an open architecture; clustering of computers and its impact on the white collar worker, work stations and the MIS department; and applications in a teleco.

Focus: Managerial

Orientation: April 30 - May 2, 1987

Training Dates: May 4 - 15, 1987

Location: Merrimack, New Hampshire

Sponsor: Digital Equipment Corporation

87-106

Amateur Radio Administration

Course Description:

This course will provide insights into the Amateur Radio Service and Amateur Satellite Service. The applicable frequency bands, international regulatory structures, technical standards, and licensing procedures are reviewed in depth. The course will be tailored, to a large extent, to the student's needs. The principal instructor is expected to be R.I. Balwin, President, International Amateur Radio Union.

Participant Learning Objectives:

To be able to help create, administer and foster an Amateur Radio Service among the citizens of one's country.

Focus: Managerial

Orientation: April 30 - May 2, 1987

Training Dates: May 4 - 8, 1987

Location: Newington, Connecticut

Sponsors: The American Radio Relay League;
The International Amateur Radio Union

87-107

Radio Spectrum Management and Computer-Aided Techniques

Course Description:

Developing, establishing, and managing a national spectrum management unit requires highly trained manpower to meet changing needs due to in-

creased frequency requirements and new technology. This course provides a detailed examination of the various elements required to plan, organize, manage, and control an effective spectrum management unit. It examines national spectrum planning, management, engineering, electromagnetic compatibility (EMC), computer hardware and software requirements, radio monitoring, land mobile radio services, and practical hands-on experience in computer-aided techniques. Computer-aided techniques will include detailed material on how to specify hardware, software, and data base requirements for implementation of a national spectrum management system. Course participants will develop a computer-aided spectrum management system applicable to their own requirements. Participants will also spend one week at a fully operational FCC Monitoring Station and will operate fixed-base HF monitoring, mobile monitoring, engineering measurement (FM/TV/CATV/microwave), and satellite monitoring equipment.

The land mobile radio services section will provide participants with a broad understanding of land mobile radio services from both operational and spectrum management perspectives. The applicable radio frequency bands, regulatory structures, new services, technical standards, and system technologies are reviewed in depth. General administrative structures and licensing procedures applicable to these services are also reviewed.

Spectrum sharing conflicts will be evaluated in the section on computer applications in spectrum management. Mutual interference between satellite earth stations and terrestrial microwave facilities will be analyzed using computer-aided techniques. An historical overview of data base management design and current requirements will be presented along with a study of the computer's role in establishing an efficient spectrum management system. Participants will receive hands-on experience using computer programs from a database management software library.

Participant Learning Objectives:

To be able to: (1) Understand the appropriate principles and components of an effective Radio Spectrum Management system; (2) Identify, evaluate, and select the appropriate management

techniques and procedures needed to establish and conduct an effective Radio Frequency Allocation and Assignment process; (3) Recognize, assess, and select appropriate technical analysis programs needed for specific requirements, such as engineering, EMC, and radio monitoring; (4) Understand the procedures and structures required to plan, develop, and specify computer hardware and software for a computer-aided national spectrum management system; (5) Initiate or review overall regulatory plans for new or expanded land mobile radio services as well as potential improvements to existing regulatory processes; (6) Understand computer-aided techniques used in management of satellite and terrestrial microwave communications systems; and (7) Analyze mutual interference cases between microwave stations and satellite earth stations sharing the same radio spectrum.

Focus: Managerial and technical with managerial emphasis

Orientation: May 7 - 9, 1987

Training Dates: May 11 - June 19, 1987

Locations: Washington, D.C.
Chicago, Illinois
Dallas, Texas

Sponsors: National Telecommunications and Information Administration (NTIA), Federal Communications Commission (FCC), Motorola, Inc., Spectrum Planning, Inc.

87-108 High Frequency Radio Broadcasting

Course Description:

An intensive orientation in the demands of high-frequency broadcasting in today's changing world—with emphasis on the practical applications of signal processing from the broadcast studio to the transmitter station. Topics will include microwave relay systems, land lines, transmission equipment and trends, the use of communications satellites and the requisite managerial skills.

Participant Learning Objectives:

To be able to: (1) Evaluate the latest methods and

techniques in international high-frequency broadcasting; (2) Expand their own staff's awareness of the managerial approaches needed to make effective use of broadcasting's changing technologies; (3) Determine whether the various technologies are suitable to the needs and goals of their home countries or organizations.

Focus: Technical and managerial with technical emphasis

Orientation: April 30 - May 2, 1987

Training Dates: May 4 - 22, 1987

Location: Washington, D.C.

Sponsor: Voice of America

87-109 Lightwave Systems

Course Description:

This course is designed to provide participants a comprehensive overview of lightwave technology. Emphasis will be placed upon the planning, engineering, construction, and maintenance of a generic lightwave system. The course includes case work allowing the participants an opportunity for practical application. A basic knowledge of digital theory and binary numbering system is desirable.

Participant Learning Objectives:

To be able to: (1) Describe how a generic lightwave system operates; (2) Describe the characteristics of lightguide cable; (3) Select fiber grade for a hypothetical FT3 lightwave span; (4) Design and engineer a simplified lightwave span by determining preliminary cable lengths, number of splices, pulling method, and grade of fiber; and (5) Describe technologies used to bypass operating telephone company facilities.

Focus: Technical and managerial

Orientation: May 7 - 9, 1987

Training Dates: May 11 - 15, 1987

Location: Atlanta, Georgia

Sponsor: BellSouth Corporation

87-110
**Below Ground Cable
Locating and Safety/
Air Flow Analysis**

Course Description:

This course is designed to provide participants with the knowledge and ability to efficiently locate buried and underground cable and locate leaks in air pressure systems. The course will address the following topics: (1) safeguarding the work area; (2) testing and ventilating manholes; (3) plat reading; (4) using the Dynatel 573 sheath fault and cable locator; (5) basic configuration of air pressure systems; (6) identifying and discussing the equipment, procedures and operations necessary for effective leak locating; (7) a basic theoretical understanding of the gradient method of leak locating; and (8) the use of calculators and mathematical formulas to solve air pressure problems. The majority of this course will utilize hands-on training.

Participant Learning Objectives:

To be able to: (1) Successfully demonstrate the ability to effectively locate buried and underground cable; (2) Test and ventilate manholes; (3) Interpret plats; and (4) Analyze air pressure leaks in aerial, buried and underground cable routes.

Focus: Technical

Orientation: May 14 - 16, 1987

Training Dates: May 18 - 22, 1987

Location: Fort Lauderdale, Florida

Sponsor: BellSouth Corporation

87-111
**Specifying, Installing and
Maintaining the Data
Communications Network**

Course Description:

This course will explore the importance of the data communications network as an integral part

of the data processing system. It will emphasize the role of the modem, multiplexer and related equipment in the data communications system. During the course, the student will gain a working knowledge of modems, multiplexers, ancillary equipment and common test equipment used in a data communications environment. The unique role of the CCITT in multi-national data communications systems will be described. The participants will spend a considerable amount of time in the laboratory where installation and trouble-shooting skills will be developed.

Participant Learning Objectives:

Those who attend this session should, on completion, be able to: (1) Identify the need for modems in the data communications network; (2) Select appropriate modems for specific applications and environments; (3) Display a working knowledge of the role of the CCITT in data communications, especially those 'V' series recommendations that relate to data communications using voice grade telephone circuits; (4) Define the intrinsic merits of asynchronous and synchronous data transfer techniques; (5) Understand the fundamentals of classic modulation techniques such as amplitude modulation (AM), frequency shift keying (FSK), differential phase shift keying (DPSK), and quadrature amplitude modulation (QAM); (6) Demonstrate the ability to install and operate modems that are connected to leased voice grade telephone circuits; (7) Demonstrate the ability to install and operate modems that are connected to the public switched telephone network (PSTN); (8) Demonstrate the ability to use the modem as a data communications network fault isolation instrument; (9) Demonstrate the ability to specify, design and install modems in extended link applications; (10) Understand the elements of multiplexing techniques such as frequency division multiplexing (FDM), time division multiplexing (TDM), and statistical time division multiplexing (STDM); (11) Understand the applications of secondary channel signalling; and (12) Understand the elements of line control routines and error checking algorithms.

Focus: Managerial and technical with technical emphasis

Orientation: May 7 - 9, 1987

Training Dates: May 11 - 29, 1987

Location: Sunrise, Florida

Sponsor: Racal-Milgo

87-112 Introduction to Integrated Packet Networks (IPN)

Course Description:

This course presents a general introduction to the integration of packet switching networks. Topics covered range from the concepts of packet switching to an overview of major functional components and operational techniques. Emphasis is placed upon a network model that is constructed in segments in order to convey the principles of major elements that comprise the M/A-COM integrated packet network. The course is conducted using formal lecture with some demonstrations provided in order to show the operational characteristics of the model network.

Participant Learning Objectives:

To be able to: (1) Draw the hierarchy structure of the system; list the functions of each of the blocks that comprise the system; state how each of these blocks are interfaced and related to each other; (2) State the minimum and maximum requirements of the NCP, ASP, NOC, and PSN; (3) List the network services provided and what administrative functions are available, as well as explain how to access and control these services/functions; (4) State what interfaces are available; what access restrictions can be imposed; how a call is routed; what a logical channel is and what its limitations are; how cluster congestion is controlled; (5) State what data is downline loaded, what data is upline dumped; and explain the procedures for loading and dumping; (6) State the call establishment process including how the X.121 addressing scheme is used; what access restrictions are available; what the call records are and how they are retrieved; and what statistics are maintained by the system; and (7) State what configuration capability and control is provided by the system; what events are and where they are sent; what system control functions are in place

in the system; what system monitoring and debug capabilities are provided by the system.

Prerequisites: It is recommended, but not necessarily required, that the candidate have a good understanding of why main frame computers are used in a network control environment as well as a working knowledge of the X.25 CCITT Recommendations.

Focus: Technical

Orientation: May 14 - 16, 1987

Training Dates: May 18 - 22, 1987

Location: Germantown, Maryland

Sponsor: M/A-COM Telecommunications, Inc.

87-113 Uses of Microcomputers in Telecommunications

Course Description:

This course provides an understanding of the use of microcomputers in telecommunications activities. It is designed to acquaint top-level personnel with new cost-effective options from use of smaller computers in managing and operating a telecommunications operation. Included in the course will be use of microcomputers for: economic and network analysis, in local area networks linking either minicomputers or microcomputers, in packet switching networks under protocols such as X.25, SNA, or broadband and in remote or satellite billing and administration applications. Also, it will include software and services issues and the characteristics of appropriate training in telecommunications uses of microcomputers. This course is recommended specifically for managers and senior engineers.

Participant Learning Objectives:

Participants will (1) Have used microcomputers in test applications for analytical purposes; (2) Understand their role in modern communications networks and administrations; and (3) Be capable of outlining the basic questions necessary for an effective request for bid from major vendors.

Focus: Managerial and technical with managerial emphasis

Orientation: May 28 - 30, 1987

Training Dates: June 1 - 5, 1987

Location: Washington, D.C.

Sponsor: Academy for Educational Development

87-114

Digital Carrier Transmission

Course Description:

This course begins with a digital introduction to fundamentals of T-Carrier, followed by Digital Network Synchronization, and ends with detailed information on Data Transmission and Digital Data Banks.

Participant Learning Objectives:

To be able to: (1) Identify various parts of T-Carrier System; (2) Install, test and clear D1 Channel Banks, D3 Channel Banks, and T1 Span Line troubles; (3) Turn up the Synchronization Distribution Expander (SDE); (4) Crossconnect input signal to SDE; (5) Crossconnect SDE outputs; (6) Option Digital Channel Bank; (7) Identify trouble synchronization -- bay, Bank, digroup, ESS slipping; (9) Identify a D4 Digital Data Bank system; (10) Utilize test equipment; and (11) Perform installation and trouble analysis.

Focus: Technical

Orientation: May 28 - 30, 1987

Training Dates: June 1 - 19, 1987

Location: Denver, Colorado

Sponsor: US WEST

87-115

Networking and Information Systems

Course Description:

This course enables the participant to understand

the interrelationships of information processing and telecommunications. It provides senior-level personnel with an insight into the application and uses of computers on a network. Topics included in this course are data communications concepts, network components, topologies of networks, network architecture and standards, and business applications. Micro and minicomputers are used in experiential sessions to reinforce the concepts. This course is recommended for technical management and senior technical staff who are responsible for integration of data processing systems with telecommunications.

Participant Learning Objectives:

Upon successful completion of this course, the participant will be able to: (1) Identify and discuss the basic concepts and terminology of a data communications system; (2) Understand the interrelationships of information systems and telecommunications; and (3) Evaluate the application and use of data processing systems on a network.

Note: It is recommended, but not necessarily required, that candidates attend the preceding course, 87-113-- "Uses of Microcomputers in Telecommunications," or have the equivalent experience.

Focus: Technical and managerial

Orientation: June 4 - 6, 1987

Training Dates: June 8 - 19, 1987

Location: Princeton, New Jersey

Sponsor: Unisys Corporation

87-201

Management and Supervisory Techniques

Repeated course, see 87-101 for course description.

Focus: Managerial or those entering managerial field

Orientation: July 9 - 11, 1987

Training Dates: July 13 - 31, 1987

Location: Atlanta, Georgia

Sponsor: Western Union

87-202

Network Technical Control, Operations and Management

Course Description:

Overview of the design and operation of a modern network control facility. Terrestrial and satellite networks and interfaces; frequency and time division statistical multiplexing, concentrators, highspeed multipoint modems, distribution frames, circuit monitoring, testing and troubleshooting. Operational management functions to include reporting, plant in place and circuit records, automatic control of trouble tickets and technical supervisory techniques. Network distributed processing, numbering plans and engineering for prescribed grades of service. Knowledge of equipment, procedures and operations is gained through informal technical seminars alternated with hands-on experience on a live state of the art system.

Participant Learning Objectives:

(1) Obtain a detailed working knowledge of the hardware utilized in a modern network control facility and (2) Obtain comprehensive hands-on experience in technical operation and operational management of network control facilities.

Personnel should be engaged in the technical operation and operational management of digital networks. Participants should understand basic electronics and the fundamentals of analog and digital circuits. Practical experience in the operation of networks and in troubleshooting single and aggregated channels is desirable.

Focus: Technical

Orientation: July 9 - 11, 1987

Training Dates: July 13 - 24, 1987

Location: Fort Lauderdale, Florida

Sponsor: TRT Telecommunications Corporation

87-203

Uses of Microcomputers in Telecommunications/Information Systems for Telecommunications Management

(There are two parts to this course.)

Part 1

Repeated course, see 87-113 for course description.

Part 2

Course Description:

Among the topics to be included in the course are: introduction to data communications; concepts of teleprocessing, relationships between information systems and telecommunications; concepts of communications network architecture; enhanced network services; standards for telecommunications and interconnected systems; industry applications of telecommunications systems; enhanced central office equipment and services; and communications trends. Recommended for upper to middle management and senior staff personnel who are responsible for planning and deciding on telecommunications equipment and services in support of data communications and information processing systems.

Participant Learning Objectives:

To be able to (1) Define, understand and discuss principles of data communications and teleprocessing and the complementary relationships between information systems and telecommunications; (2) Identify and evaluate the needs and limits of telecommunications services; and (3) Make informed judgments about the application and use of information processing systems, including related equipment and services.

Focus: Managerial and technical with managerial emphasis

Orientation: July 9 - 11, 1987

Training Dates: July 13 - 24, 1987

Part 1

Location: Washington, D.C.

Sponsor: Academy for Educational Development

Part 2

Location: Raleigh, North Carolina

Sponsor: IBM Corporation

87-204**Cellular Radiotelephone Systems for Mobile, Portable and Fixed Communications**

Course Description:

An overview of cellular radiotelephone concepts and characteristics will be presented with a focus on how cellular technology can be applied in developing countries. Cellular system geometry and the expansion of capacity through a variety of frequency re-use techniques will be examined. Radio propagation models will be reviewed with particular emphasis on "real world" information. The various cellular signaling systems (AMPS, TACS and NORDIC) will be explained. Interconnection of the cellular system to the landline network will be discussed using data from around the world as a basis.

System implementation considerations will be addressed, as well as data base management, call records and subscriber billing issues. Examples of system design methodology from operational systems around the world will be presented. Application of cellular system technologies to provide telephone service for fixed rural subscribers will be reviewed.

A full range of cellular switching (local and remote) and cell site equipment will be presented in detail. System control capabilities including handoff, networking, and automatic roaming will be discussed. Finally, course participants will experience the range of features and functions available with cellular radiotelephone systems by actual "hands-on" usage of mobile and portable telephones.

Participant Learning Objectives:

To become familiar with the system concepts, parameters, and capabilities of cellular radiotelephone systems. To allow technical

managers and system planners to gain the vital insight and analytical tools to help assess system requirements. Ample time will be provided for individual and collective questions on any facet of system design and implementation.

Focus: Technical and managerial

Orientation: July 23 - 25, 1987

Training Dates: July 27 - 31, 1987

Location: Chicago, Illinois

Sponsor: Motorola, Inc.

87-205**Ampex "C" Format Videotape Recorder System Theory and Maintenance**

Course Description:

This course is designed to provide maintenance engineers and technicians with detailed knowledge of the theory, maintenance techniques and correct operating procedures of "C" - format videotape recorders using the Ampex VPR-6/TBC-6 system as an example. Topics of discussion include magnetic recording theory, the unique FM signal system, electromechanical servo systems, control systems, digital timebase correction, video processing and audio recording techniques.

Participant Learning Objectives:

To be able to (1) Understand magnetic recording concepts, (2) Recognize system faults when and if they occur, (3) Demonstrate the ability to repair these faults, (4) Adjust and align both the mechanical and electronic systems in order to maintain peak performance specifications of the VTR, and (5) Operate the VPR-6/TBC-6 correctly in all modes.

Students (television maintenance engineers and senior technicians) must have a solid understanding of modern electronics circuitry and the television signal itself to derive maximum benefit from this course.

Please specify television standard (PAL, NTSC)

or SECAM) when applying, since course is limited to one standard only.

Focus: Technical

Orientation: July 23 - 25, 1987

Training Dates: July 27 - August 14, 1987

Location: Redwood City, California

Sponsor: Ampex Corporation

87-206 Management Skills Development

Course Description

This course is designed to enable managers to more effectively perform in a volatile, competitive telecommunications environment. Specific areas which are developed during the course include: taking charge, productive working relationships, values clarification, managing risk, implementing ideas (ready-fire-aim), project management, effective meetings, and group problem solving.

Participant Learning Objectives:

To be able to (1) Create opportunities and take personal responsibility for your career; (2) Develop smoother working relationships and avoid problem relationships; (3) Identify your personal values and understand how these values can help you to increase your job satisfaction; (4) Motivate yourself and others to innovate and perform to potential by understanding and encouraging effective risk taking behavior; (5) Develop an idea and prepare it for presentation to a supervisor or peer group; (6) Effectively management a project; and (7) Plan and facilitate effective meeting and group problem solving situations.

Focus: Managerial

Orientation: July 23 - 25, 1987

Training Dates: July 27 - August 7, 1987

Location: Denver, Colorado

Sponsor: US WEST

87-207 Digital and Optical Fiber Transmission

Course Description:

This course provides a comprehensive technical overview on all aspects of digital transmission and of fiber optic transmission. It includes the principles employed for modulation of signals from analog to digital and the subsequent multiplexing techniques used. Data interface requirements are discussed for both 64kbit/sec and 56kbit/sec data, while at much higher bit rates different digital hierarchies are investigated and compared. Performance parameters and objectives are stated based on the CCITT Recommendations. Principles and characteristics of optical fibers, sources and detectors are reviewed together with techniques employed in jointing, before the use of optical fiber as transmission medium is investigated, and an optical fiber system developed.

Participant Learning Objectives:

To be able to: (1) Obtain a detailed knowledge of the structure of digital hierarchies and techniques used in them; (2) Understand the principles of optical fiber as a transmission medium and be able to address the various component parts of an optical fiber system; and (3) Acquire some hands-on knowledge of performance maintenance.

Focus: Managerial and technical with technical emphasis

Orientation: July 30 - August 1, 1987

Training Dates: August 3 - 14, 1987

Location: Washington, D.C.

Sponsor: Cable and Wireless North America

87-208 Radio Broadcast Studio Design and Operations

Course Description:

An intensive series of workshops on the latest concepts, methods and trends in the design, con-

struction and operation of broadcast studios using appropriate technology. Among the segments: *Design and evaluation process*: acoustics, control boards, amplifiers, microphones, wiring and circuits. Tape machines (reel-to-reel, cassette and cartridge models). Audio and video monitors. *Recording techniques*: working with portable units in the field and fixed units in the studio. *Remote feeds*: taking program material from off-the-air, through satellites and by telephone/radio lines. *Communications traffic*: planning, scheduling and control. *Preventative maintenance*: service and repair to ensure long equipment life.

Participant Learning Objectives:

Upon successful completion of this course, the participants should be able to evaluate, advise and/or determine the studio designs, methods of operation and equipment relevant to the needs of their own countries.

Focus: Technical and managerial with technical emphasis

Orientation: July 30 - August 1, 1987

Training Dates: August 3 - 14, 1987

Location: Washington, D.C.

Sponsor: Voice of America

87-209

Telecommunications Planning and Economic Decision Making

Course Description:

This course will include discussions of the decision-making process and economic analysis. Emphasis will be placed on life cycle versus first cost techniques. Participants will practice these techniques in classroom exercises and group case activities. Among the topics to be covered are: introduction to the telecommunications network and network planning functions; deriving and comparing alternatives; economic analysis; time value of money-derivation of long and short-term economic indicators; plan documentation and monitoring. This course is recommended for

managers and senior engineers with responsibility for long-range planning studies (including economic studies) or for making decisions based on these studies. A four-year engineering degree is strongly recommended.

Participant Learning Objectives:

To be able to develop a basic long-range technical plan using the planning process and economic analysis techniques addressed in this course.

Focus: Managerial with technical background required

Orientation: August 13 - 15, 1987

Training: August 17 - 28, 1987

Location: Princeton, New Jersey

Sponsor: AT&T

87-210

Broadcast Systems Operation and Maintenance

Course Description:

The course will consist of classroom discussions and/or equipment demonstrations of new and recent developments in broadcasting equipment including: (1) Pulse Duration Modulation, Polyphase Pulse Duration Modulation and AM Stereo; (2) short-wave transmitter techniques; (3) FM transmission, including Digitally Synthesized Modulation; (4) half and quarter wave cavity applications in FM and TV; (5) television transmitter improvements, such as IF Modulation, low level sideband filters, incidental phase correction and tuning procedures for double tuned tube type amplifiers; (6) efficiency improvements for UHF Klystron amplifiers; (7) pattern testing and VSWR measurement of antennas for FM and TV; (8) tube life enhancement featuring air handling and vapor phase cooling requirements; (9) studio equipment application of audio consoles, program automation, and facilities control (a microprocessor based remote control); (10) satellite links and antenna controllers; (11) Service Parts Management; (12) Quality Circle Concepts; and (13) Personnel Management by Objectives.

Participant Learning Objectives:

(1) To increase working knowledge of the theory, operation and maintenance of broadcast systems as presented in this technical education program and (2) To enhance management skills and to improve operational efficiency by learning and practicing management by objective techniques.

This course has been structured primarily for radio and television engineers desiring to expand their knowledge of equipment theory and management techniques. Management level personnel who wish to enhance their overall technical understanding of systems are also encouraged to apply.

Focus: Technical and managerial with technical emphasis

Orientation: August 13 - 15, 1987

Training Dates: August 17 - 28, 1987

Location: Quincy, Illinois

Sponsor: Harris Corporation, Broadcast Group

87-211**Subscriber Loop Transmission and Fiber Optics**

Course Description:

This course will enable the participants to understand the terminology and concepts associated with the use of pair gain systems and fiber optics in the subscriber cable network. Practical application includes the opportunity to turn-up and test a typical subscriber loop carrier. Practice is also given in the splicing and testing of fiber optic cable.

Participant Learning Objectives:

After completing this course the participant will be able to: (1) Recognize the terms and concepts used in pair gain systems and fiber optic cables; (2) Recognize components and their functions; (3) Recognize characteristics of digital line design; (4) Recognize principles of multiplexing; (5) Turn-up and test a subscriber loop carrier; (6) Splice fiber optic cables using mechanical and fusion techniques; and (7) Perform loss measurements on fiber optic cable.

Focus: Technical

Orientation: August 13 - 15, 1987

Training Dates: August 17 - 28, 1987

Location: Silver Spring, Maryland

Sponsor: Bell Atlantic Corporation

87-301**Management and Supervisory Techniques**

Repeated course, see 87-101 for course description.

Focus: Managerial or those entering managerial field

Orientation: September 24 - 26, 1987

Training Dates: September 28 - October 16, 1987

Location: Atlanta, Georgia

Sponsor: Western Union

87-302**Store and Forward Switching Systems, Operation and Management**

Course Description:

Overview of local distribution networks and long-haul aggregates. Placement and use of direct subscriber modems and dialup modem interfaces, hubbing, frequency/time division multiplexing, concentrators, highspeed multi-port modems, and terrestrial and satellite links. Network distributed processing, numbering plans, and flow control. Network engineering for prescribed grades of services, its impact on network size and cost, and the interconnection with other networks. Emphasis on telex and telex-related services.

Participant Learning Objectives:

(1) Obtain a detailed working knowledge of the architecture, hardware and software employed in a modern digital message switching system and (2) Obtain comprehensive hands-on knowledge

of message processing and store and forward computer system operations.

Technical staff in telegraph/telex operations with good knowledge of the fundamentals of telegraph (F.31) and telex operations, whether manual or automatic.

Focus: Technical

Orientation: September 24 - 26, 1987

Training Dates: September 28 - October 9, 1987

Location: Fort Lauderdale, Florida

Sponsor: TRT Telecommunications Corporation

87-303

Electromechanical Switching: Step-by-Step in Today's Telephone Network

Course Description:

This course is designed to provide participants with an overview of analog electromechanical switching concepts, specifically Strowger Step-by-Step (S x S) Central Office Equipment (COE) and Private Automatic Branch Exchange (PABX).

Topics to be discussed and studied include basic electromechanical theory, S x S switching concepts, practical switchtrain applications, automatic number identification, traffic planning and power consumption, troubleshooting and repair, maintenance scheduling and procedures, and state of the art feature availability.

Participant Learning Objectives:

To provide all participants with: (1) Basic theoretical understanding of analog Step-by-Step and other electromechanical switching principles; (2) Basic working skills required for planning and maintaining Step-by-Step C.O.E.; (3) Hands-on experience in trouble analysis and repair techniques; (4) Examples of cost vs. revenue aspect of adding today's features (e.g. touch-tone, ANI, etc.) to existing electromechanical switchtrains.

Focus: Technical

Orientation: October 1 - 3, 1987

Training Dates: October 5 - 16, 1987

Location: Memphis, Tennessee

Sponsor: COM PRO, Inc.

87-304

Satellite Systems Applications For Rural Communications

Course Description:

Designed particularly for development and communications planners, the course will provide an examination of innovative uses of satellite technologies (and existing terrestrial systems) to meet national development needs, particularly the telecommunications needs of rural institutions and communities. It will include a review of experimental and operational applications in distance education, health, and agriculture, as well as rural telephone infrastructure. Addressed will be audio-conferencing, data networks, and rural telephony, with mention of rural broadcasting. Discussions will cover steps required to develop rural applications; the selection of appropriate telecommunications technologies, both for transmission and for the end-user; the interplay of institutional, programmatic, and technical factors in planning a system; as well as the issues surrounding training, evaluation, and financing. Examples will be given both for the developing world, and the U.S., and discussed in particular detail will be the results of projects associated with the AID Rural Satellite Program in Indonesia, Peru and the Caribbean. Discussion will also address technological adaptations for rural systems, such as small earth station design, solar power sources, and use of existing non-satellite, terrestrial networks.

Participant Learning Objectives:

To be able to address the multidisciplinary pro-

cesses of planning, designing, implementing and evaluating telecommunication services for rural users.

Focus: Managerial

Orientation: October 1 - 3, 1987

Training Dates: October 5 - 9, 1987

Location: Washington, D.C.

Sponsor: U.S. Agency for International Development; Academy for Educational Development

87-305 SCPC Satellite System Architecture for Rural Communications

Course Description:

The first part of the course serves as a review of the fundamental concepts and principles of satellite communications. Upon completion of this part of the course, participant should be familiar with the key concepts of satellite communications.

The second part of the course will review the state of the art in very small aperture terminal (VSAT) Satellite System Technology with an emphasis on their route traffic and rural communications for developing nations. Current trends in SCPC technology will be explored and discussed in the context of VSAT applications, including integration with existing terrestrial microwave systems.

The third part of the course will focus on the future trends in satellite communications and some potential impacts on VSAT technology.

The fourth part will address financial consideration and managerial trade-offs of SCPC/VSAT implementation.

Participant Learning Objectives:

To be able to identify and evaluate components of SCPC architecture with emphasis placed upon rural satellite system application.

The course is recommended for telecommunications executives and managers as well as engineers involved in the management, planning, design or operations of SCPC/VSAT satellite systems.

Focus: Technical

Orientation: October 8 - 10, 1987

Training Dates: October 12 - 16, 1987

Location: Germantown, Maryland

Sponsor: M/A-COM Telecommunications, Inc.

87-306 Satellite Communications Management

Course Description:

In any system, proper management and cost effective utilization will result in added efficiency and equipment reliability. As the demand for communications grows, the natural instinct is to build larger satellites and design tighter tolerances to maximize the utilization of each channel.

Correct use of transponder space, together with optimum operating parameters practiced by all users, will result in everyone reaping benefit from the system with little or no perceptible degradation.

This course will cover the various facets of operational system performance and address problems relating to satellite system and earth station operations.

Participant Learning Objectives:

Participants will be able to address the fundamental concepts of satellite telecommunications; obtain knowledge of the regulatory and operational requirements; develop a better understanding of the tradeoffs and solutions to a successful operation of earth stations.

Directors, managers and engineers who are responsible for the technical operation of satellite communications or the planning of future commitments in this field should attend this course.

Focus: Technical and managerial
Orientation: October 15 - 17, 1987
Training Dates: October 19 - 30, 1987
Location: Clarksburg, Maryland
Sponsor: COMSAT

87-307 **Digital Switching Concepts**

Course Description:

This course is designed to give participants a generic overview of digital switching concepts and basic digital theory as applied to both the central office and private branch exchange (PBX). Among topics to be discussed are Analog to Digital Conversion, Stored Program Control, Time Switching & Networks. The participants will also be exposed to generic digital switch hardware and peripheral functions. Some time will be given to an overview with common control switching systems. Finally, the student will be exposed to the elements of planning a digital network.

Participant Learning Objectives:

To be able to: (1) Explain in general terms the analog to digital conversion process; (2) Identify the hardware components of a digital switch; (3) Explain the major functions performed by distributed call processing equipment; (4) Name the various types of custom services available with SPC systems; (5) Identify factors important in planning for a digital network; (6) Explain in general terms the steps involved in processing a call through a digital switching system; (7) Identify the characteristics and explain the operation of a Private Branch Exchange; (8) Describe the software and hardware architecture of a PBX system; (9) Select various features available with a PBX system; (10) Identify various characteristics for comparison of PBX systems; (11) Describe the integration of voice and data into one central control point such as the PBX, including the advantages as well as technology; (12) Discuss characteristics of an Integrated Services Network including influences such as ISDN, X.400, Local Area Networks, etc.; and (13) Discuss various techniques useful in transferring course information to fellow professionals.

Focus: Managerial and technical
Orientation: October 15 - 17, 1987
Training Dates: October 19 - November 6, 1987
Location: Raleigh, North Carolina
Dallas, Texas
Sponsor: Northern Telecom Inc.

87-308 **Management/Supervisor** **Development**

Course Description:

This program is designed for the training/development as well as the personnel professional who is responsible for Human Resources Training and Administration. The first week of the course is devoted to how MCI International orients its employees on its products and services and how we develop our managers/supervisors.

During the second week of the course participants are required to make a presentation on a training related issue for review and discussion aimed at improving their managerial skills.

Topics will include (1) Orientation of New Employees: product/service training, use of visual aids, and workbooks and (2) Management Development: communications skills, goal setting, delegation and time management, and leadership styles.

Participant Learning Objectives:

To be able to: (1) Improve working relationships and solve people related problems; (2) Plan and manage the goal setting process and daily activities for increased productivity; (3) Demonstrate and evaluate personal leadership styles to fit the situation; and (4) Introduce participants to MCI International's employee orientation program on products and services.

Focus: Managerial
Orientation: October 15 - 17, 1987
Training Dates: October 19 - 30, 1987
Location: Washington, D.C.
Sponsor: MCI International, Inc.

87-309
The Network

Course Description:

This course provides a general overview of the telecommunications network as it exists today. Topics included in the course are: Transmission Theory - signal analysis, signal propagation, analog, modulation, transmission performance, digital formats, network standards; Transmission Media - microwave, satellite, lightwave (fiber optics), analog vs. digital, wire cable, coaxial cable, and T carrier; Special Purpose Networks - VAN, packet switching, LAN, ISDN, and stored program controlled networks. In addition, benefits and limitations of present day network offerings and future network possibilities are discussed.

Participant Learning Objectives:

Upon completion of this course, the participant will be able to: (1) Define circuit characteristics and parameters; (2) Describe analog vs. digital transmission; (3) Describe four types of transmission media; (4) Explain transmission performance impairments; (5) Describe the types of impairments encountered by various types of analog and digital services; and (6) Explain the differences between packet switching and message switching.

Focus: Managerial

Orientation: October 15 - 17, 1987

Training Dates: October 19 - 30, 1987

Location: Philadelphia, Pennsylvania

Sponsor: Bell Atlantic Corporation

87-310
Telecommunications
Transmission Systems

Course Description:

This course will address terrestrial transmission systems designed for analog microwave radio, digital microwave radio and digital lightwave applications. Included will be analog and digital multiplex hierarchies for voice, data and video

applications. In addition to equipment and technology issues for microwave path design, antenna systems and plant issues will be discussed as well as lightwave cable route design and cable installations.

Participant Learning Objectives:

To understand how to specify and design tandem terrestrial transmission systems using analog microwave, digital microwave and digital lightwave-from standard interface to standard interface.

Attendees should have completed requirements for Bachelor of Science in Electrical Engineering or have equivalent work experience in microwave radio and/or lightwave transmission.

Focus: Managerial and technical

Orientation: October 29 - 31, 1987

Training Dates: November 2 - 13, 1987

Location: Dallas, Texas

Sponsor: Rockwell International Corporation,
Telecommunications



Many USTTI training sponsors organize social and cultural events for their international visitors. The above group of engineers and technicians had an opportunity for an outing on this typical Mississippi riverboat.

RESPONSES TO USTTI TRAINING

The experience I had while in the U.S.—the new friends I made, the new ideas I learned, the sharing of time and effort—all these have made me a different person. "Seeing" the world on a wider scope has made me a more mature, tolerant and understanding individual—in the office and even at home. I have put to good use all the insight I gained.

Tbeima Balajadia
PHILIPPINES

My expectations of the course were more than fulfilled; the answers to many key questions in the telecommunications field were thoroughly discussed from different viewpoints and backgrounds and by first class professionals.

I think that the U.S. through the USTTI provides an opportunity for the less developed countries to attain the knowledge to help themselves in expanding and strengthening their communications capabilities. Only by cooperating and sharing know-how we can bridge the gap between the advanced and the less developed countries.

I am sure the experience gained during the course will be useful to me in my work in shaping the Ministry's policies and in evaluating new services and activities in the High-Tech telecom field. I intend sharing with my colleagues

Haim Habib
ISRAEL

Local training courses are planned in order to pass on the training received. Once again, thank you.

H.E. McAllister
GUYANA

I wish to express my deep thanks for the hospitality USTTI showed me. I am grateful also for the time and effort spent on making the entire training group comfortable during their stay in the U.S. My company looks forward to mutual cooperation with USTTI in the future.

Mamdoub Abd El Aziz
EGYPT



Participants enjoy a friendly and relaxing time at the end of a long training day. Telecom professionals from often politically hostile nations study together and leave the training with many new friends from all over the world.



Many of USTTI's corporate sponsors offer technical training and the opportunity for participants to become intimately familiar with the newest in U.S. technology and equipment. For example, the engineers pictured here are exposed to the latest television transmitter via "hands-on" training.

I have resumed my normal duties and you will be pleased to learn that some of the new methods I learned in the broadcasting field are becoming very effective. Where I lacked confidence before the course, it's now the other way around. I handle my equipment with confidence and pride.

Adoun H. Kaunda
MALAWI

The USTTI gave me an opportunity of new knowledge and expertise in telecommunications. I personally believe that this program is useful. It is one of the best instruments the United States has made for the interests of people in the developing countries. The direct beneficiaries are people and through them, governments. The program is innovative.

Bhanga Wiruzi
ZAIRE



The technical training has equipped me with sufficient knowledge to enable me to contribute meaningfully to the promotion and progress of telecommunications in my organization.

S.A. Mills-Robertson
GHANA

I think this course is very useful for me because in our developing countries, the most important thing is good management, based on economically efficient decisions that can allow the best use of the limited resources.

Jesus Antonio Castellanos M.
HONDURAS

No words can actually show the feelings that are coming to my mind of the wonderful times I had in the United States. I thank all of you--the lecturers, the people of the telecommunications industry, the government officials and all those involved in the training.

During these 40 days I was privileged not only to learn about spectrum management, but also to meet wonderful people from all over the world.

These seminars were a chance for international unity, which showed that people still care for each other without considering color or race.

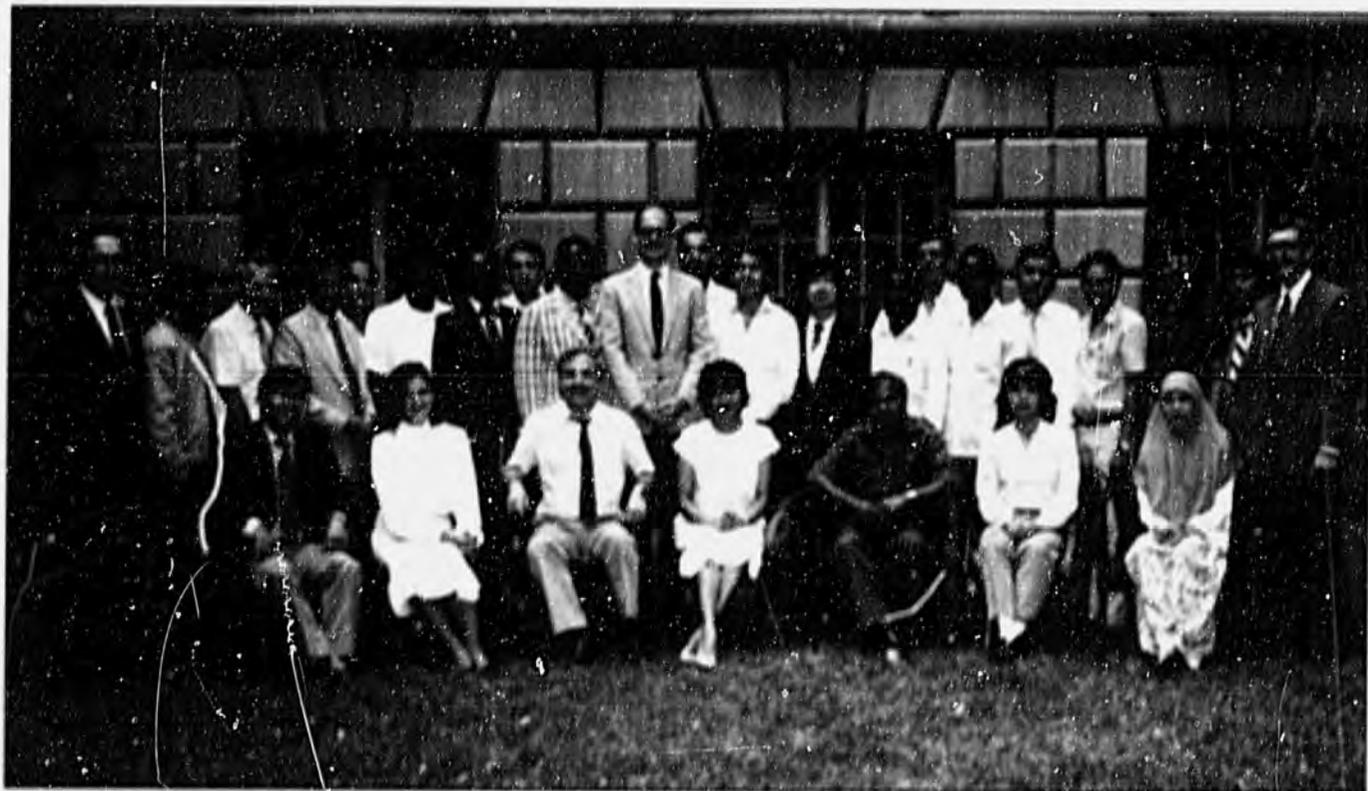
Andreas Demetriades
CYPRUS

The training program helped me in fulfilling my job requirements at a higher standard since it provided me with the most up-to-date information in the relevant field.

A.D.V.N. Kularatne
SRI LANKA

I have always considered myself an expert in radio spectrum management and amateur radio administration, but with the additional knowledge I have gained I have now become an EXPERT. And I hope I will have a long time to contribute to the development of telecommunications in my country.

Rudolph A. Rowe
JAMAICA



Qualified men and women telecom professionals from the developing world meet and work together during their USTTI training experience at both corporate and government facilities.

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88



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Pictured above is the entire four person USTTI staff: Joba Gwynn, Financial Officer; Judith Sparrow, Director; Anne Wilson, Deputy Director and Vickie Bumann, Secretary



**United States
Telecommunications
Training Institute**

USTTI Use Only: Year _____
 Region _____
 Country _____
 Course No. _____
 Part No. _____
 Funding _____

APPLICATION FOR TRAINING

Please type or print clearly. Answer the following questions **completely**. Use additional sheets if necessary.

First Name *Middle Name* *Family Name*

Organization/Employer

Organization Mailing Address

Telex or Cable Address *Business Telephone* *Home Telephone*

Home Address *Male or Female*

Date and Place of Birth *Citizenship* *(Circle)*

Are you a *New Applicant?* *Previous Applicant?* *Previous USTTI Participant?*

Current Position

Indicate job title and describe your current telecommunications/broadcast responsibilities and duties.

Title: _____

Formal Education

Please list formal education, beginning with secondary school.

<i>Secondary</i>	<i>Location</i>	<i>Subject</i>	<i>Degree</i>	<i>Year Earned</i>
<i>University</i>	<i>Location</i>	<i>Subject</i>	<i>Degree</i>	<i>Year Earned</i>
<i>Other</i>	<i>Location</i>	<i>Subject</i>	<i>Degree</i>	<i>Year Earned</i>

Professional Training

Please describe any specialized training in telecommunications/broadcasting you have received

Professional Experience

Briefly describe previous telecommunications/broadcast experience, identifying types of telecommunications/broadcast systems with which you have worked

91X

English Language Ability

Please check the appropriate space on the chart below.

	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>
Reading	_____	_____	_____	_____
Writing	_____	_____	_____	_____
Speaking	_____	_____	_____	_____
Comprehension	_____	_____	_____	_____

Photograph

Please attach two passport photos here.

Course Selection

Indicate below the number and name of the course(s) for which you are applying, in order of preference.

Funding

Please check and complete as appropriate.

1. My organization will pay for my travel and subsistence: Yes No
2. I have applied for funding from (name of agency) _____

Address of Agency _____

Telephone _____ Cable or Telex Address _____

Name of Agency Contact Person _____

Date by which I expect to know the results of my funding request _____

3. I am applying for USTTI support for: _____ Travel _____ Subsistence *Please note: USTTI financial support is limited*
4. Funding source undetermined _____

Qualifications

Please state the reason you desire to take this course(s) and how it relates to your current or future professional activities.

Send applications *via AIRMAIL* to

USTTI
 1255 23rd Street, NW
 Suite 400
 Washington, DC, 20057
 USA
 Telephone: (202) 862-3857
 Telex: 197821 USTTI UT
 Cable: USTTI Washington DC
 Fax: (202) 862-1947

_____ Date

Applicant Signature

This application has been approved. (We **must** have Supervisor's signature.)

_____ Date

Signature of Supervisor

_____ *Title of Supervisor*

Name of Supervisor (please print)

_____ *Telephone Number*

Organization

Telex or Cable Address of Organization