

PDKAG 643

<b>AGENCY FOR INTERNATIONAL DEVELOPMENT</b> <b>PROJECT DATA SHEET</b>		<b>1. TRANSACTION CODE</b> <input checked="" type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number 2	<b>DOCUMENT CODE</b> 3
<b>2. COUNTRY/ENTITY</b> LAC Regional		<b>3. PROJECT NUMBER</b> 598-0572		
<b>4. BUREAU/OFFICE</b> LAC		<b>5. PROJECT TITLE (maximum 40 characters)</b> Science & Technology Info Transfer		
<b>6. PROJECT ASSISTANCE COMPLETION DATE (PACD)</b> MM DD YY 09 30 88		<b>7. ESTIMATED DATE OF OBLIGATION</b> (Under 'B' below, enter 1, 2, 3, or 4) A. Initial FY 77 B. Quarter 3 C. Final FY 87		

8. COSTS (\$000 OR EQUIVALENT \$1 = )						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	250		250	5,473		5,473
(Grant)	( 250 )	( )	( 250 )	( 5,473 )	( )	( 5,473 )
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S.						
1.						
2.						
Host Country						
Other Donor(s)						
<b>TOTALS</b>	250		250	5,473		5,473

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ST	750	870		1,650		3,823		5,473	
(2)									
(3)									
(4)									
<b>TOTALS</b>				1,650		3,823		5,473	

<b>10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)</b>						<b>11. SECONDARY PURPOSE CODES</b>	
<b>12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)</b>							
A. Code							
B. Amount							

**13. PROJECT PURPOSE (maximum 480 characters)**

To improve Latin American and Caribbean access to scientific and technical information and patents resulting from U.S. Government (and other) investment in research and development

<b>14. SCHEDULED EVALUATIONS</b>				<b>15. SOURCE/ORIGIN OF GOODS AND SERVICES</b>			
Interim	MM YY	MM YY	Final	MM YY	<input type="checkbox"/> 000 <input type="checkbox"/> 941 <input type="checkbox"/> Local <input type="checkbox"/> Other (Specify)		
	0684	0686		1288			

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

RECORD COPY

<b>17. APPROVED BY</b>	Signature	<b>18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION</b>
	Title	
	Date Signed	
	MM DD YY	MM DD YY

AMENDED PROJECT PAPER

NATIONAL TECHNICAL INFORMATION SERVICE

LATIN AMERICA AND CARIBBEAN  
REGIONAL PROJECT

JULY 1982

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PART I: PROJECT SUMMARY AND RECOMMENDATIONS

A. Face Sheet

B. Recommendations

On the basis of the findings set forth in this Amended Project Paper, approval for the following is recommended [in (\$000) thousands]:

Additional Grant (PASA) of \$3,822.3 total. These cover the next five years as follows:

<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>Total</u>
\$659.0	\$722.3	\$804.4	\$801.7	\$843.4	\$3,822.3

This is an add-on to the \$1,650,000 of funding between FY 77-82. The Life of Project Funding is now increased to \$5,472.3.

C. Description of the Project and Reason for this Amendment

This Project has over the last six years successfully improved access by the LAC countries to scientific and technical information resulting from U.S. Government investment in research and development and to appropriate technology information resulting from worldwide research and development. The purpose of this amended Project Paper and Project Authorization is to give LAC Bureau approval to a five year (FY 83, 84, 85, 86, and 87) extension of the project. This extension continues the base support for the Dept. of Commerce PASA which manages and maintains the project. Also it funds several new activities designed to offer both service and increased coverage to the private sector in LAC.

D. Summary Findings

The LAC NTIS project has achieved its original objective of establishing a functioning mechanism through which scientific, technical and appropriate technology information can be channeled to LAC countries. Original project objectives have generally been surpassed. For example, the NTIS network has grown to encompass nineteen subsidized and unsubsidized agencies, compared to the original objective of fifteen agencies. In addition, there are bilateral agreements for agencies in Brazil, Venezuela and Mexico. Demand for technical documents has increased steadily within the region and the NTIS volume of technical documents supplied continues to grow, along with the distribution of the monthly publication AMTID (Application of Modern Technology to International Development). The last regular evaluation of this project (May 1980) stated that even after a cutback in planned project expansion in 1980, caused by lack of passage of an Operating Year Budget, the NTIS program was meeting its programmed outputs. This evaluation also pointed out that the simple availability of technical data is a necessary but not sufficient condition to ensure its use.

To answer the question of how much actual use is being made of the NTIS supplied technical information, LAC contracted the Inter-American Research Associates (IRA) to do an impact evaluation.

The evaluation's major conclusion is that the exceptionally high utilization rate (81%), and the specific uses to which NTIS information is applied, demonstrate a significant actual and potential contribution towards technological capacity building and, therefore, towards development in Latin America. The IRA evaluation says that the end-users value the availability of the NTIS information highly as well as the expansive, in-depth coverage of subject areas, and the breadth and scope of available information. IRA recommends that AID continue its support for the NTIS system and that streamlining and strengthening in two major areas will significantly improve service and expand coverage. The first of these areas is the ordering process and the second is the outreach process (see page 45-48 of IRA evaluation). The NTIS management staff finds these recommendations acceptable. Major activities under this revised project will work to ease burdensome administrative loads, do more promotion work and provide better coverage.

In addition to the evaluation, concepts on how best to use the NTIS network have been developed. Control Data Corporation (CDC) recently presented a proposal to NTIS to increase the scope of the project. The CDC proposal would expand the NTIS system's capability to serve the private sector. CDC proposes adding CDC's already developed system of technical information and business contacts to the existing NTIS network data base. Based on its experiences, NTIS itself has also proposed a series of new project activities to expand its scope and service capacity. These include license brokering, expanding the number of country locations where NTIS material can be obtained, bringing Peace Corp Volunteers in to manage sub-regional programs, providing office automation and on-line searching capabilities, updating AID Industry Profiles and several other similar proposals.

These three factors: the IRA evaluation, the CDC proposals and the NTIS' project management experience, have been blended together. The result is a five year, comprehensive, revised project that will use the NTIS network's proven technology transfer capacity to deliver and promote the use of quality private as well as public sector technology to LAC countries.

#### E. Project Issues and Points of Clarification

1. How long and at what levels should AID carry the NTIS project? Minimum NTIS base support is at the \$300,000 a year level. This buys a minimally funded but active project. Cutting out all AID support, i.e. the PASA contract with the Dept. of Commerce, would impact the program strongly but the network would probably continue working. We can't subsidize the project indefinitely. How do we get out of funding it without killing it?

2. PP amendment proposes a series of new activities to strengthen service especially to the private sector. Should we be adding on additional funding at this time? Are there other ways to fund some of these activities?

3. Does CDC have a comparative advantage for this type of work? Should that contract be competitive? Is this the best way to get private sector technical info into the NTIS system? Should this project be done on a pilot basis, first?

4. IRA recommendations - Is NTIS prepared to meet recommendations for improving its operation outlined in the IRA report? Certain steps and actions apparently are underway already to respond to some to the recommendations. Should anything further be required from NTIS in this regard?

5. 5 years - life of project: This amendment proposes a five year extension. Should such an extension be conditioned in any way?

## PART II: PROJECT BACKGROUND AND DETAILED DESCRIPTION

### A. Background

The complete Science and Technology Information Transfer Project Paper, written in 1977, documents at length what led up to the establishment of this activity. The project is an attempt to meet the demands of less developed countries for better access to modern technologies and to strengthen their technology transfer absorption capacities. The nucleus of project activities is the large and varied collection of technological information maintained by the National Technical Information Service (NTIS) of the Department of Commerce. This collection is largely based on information generated as a result of U.S. Government sponsored research and development activities. It also provides access to large bodies of private sector knowledge from the U.S. and abroad. Operating from the premises that technical information is a critical development tool and that competent LDC implementing institutions are essential to maintain a permanent flow of information, this project has worked over the last five years to both increase the quantity and quality of information available to the LAC countries and to expand the number and institutional capabilities of LAC cooperating institutions. In hindsight, the goal, purpose, end of project conditions, and outputs projected in 1977 for the project are being met. NTIS has successfully increased the quantity and quality of information available and the network of participating countries and their technical capabilities have grown steadily. Specifically the following accomplishments can be pointed to:

Objective: Improved quality and quantity of scientific and technical information available in LAC.

Results: In 1980, 11,991 general technical documents were distributed in LAC. This figure has grown steadily over the past several years and is expected to do so also in 1981. In 1980, 1,205 documents on appropriate technology were requested by and supplied to organizations working in this area in LAC. In 1980, 17,500 copies of the technical information newsletter, AMTID, were distributed in Spanish; 550 in English for the Caribbean and 100 in French to Haiti. Also NTIS has placed 230 appropriate technology Spanish language documents in its data base and developed and updates annually a bibliography highlighting 2,600 appropriate technology reports from the estimated 6,000 available in the NTIS Data Base.

Objective: Expand the number and institutional capabilities of LAC co-operating institutions.

Results: There are now nineteen (up from seven at beginning of project and more than the original maximum planned level of 15) agencies in the NTIS network of local cooperating organizations. This includes bilateral agreements with local agencies in Brazil, Venezuela and Mexico. Lines of access to U.S. technical information have been directly opened and all co-operating organizations have had at least one of their staff trained in Washington via the semiannual training workshops. This training, plus periodic regional conferences, have linked cooperating agency personnel to other information institutes in the Washington area, as well as worldwide.

Regular evaluations of this project were done in 1978 and 1980 and a special impact-focussed evaluation has just concluded. The regular evaluation done in late 1978 reported that the project was proceeding satisfactorily given delay in its start-up. Even though scheduled to begin in FY 1977, the PASA agreement was not signed until the last week of the FY 77 Fiscal Year. In the year after the signing, NTIS worked both to maintain and expand its conventional program in science and technology information transfer and to expand into provision of appropriate technology (AT) information. NTIS focussed the bulk of its efforts on establishing AT contacts, sources and distribution network. Training seminars, end-user seminars and case studies on end-use of information were carried out. Twenty-seven thousand copies of AMTID newsletter were distributed monthly, half of them in Spanish. In addition to giving NTIS good marks on project implementation, the evaluation review committee stressed the importance of seeing the results of NTIS efforts either through increased dissemination of publications or in documentation that AT material was being put to use to benefit the poor. The review committee concluded that the project needed more time to adequately develop the AT component. Because of this the committee recommended the project be extended through FY 80 and FY 81.

The second regular evaluation done in the spring of 1980 once again concluded that NTIS was adequately or better meeting the objectives laid out for it in the PP logical framework. Once again the project suffered because of delays and cutbacks in funding as the lack of passage of an OYB for AID in FY 80 forced cutbacks by NTIS in project activities especially in the area of appropriate technology. Nonetheless document sales grew; AT document collection, translation and distribution continued; and the directors of the network's cooperating agencies met in the Dominican Republic. Once again the review committee noted that availability of technical information is a necessary but not sufficient condition to ensure its effective use. Project experience has shown that local institutional capability is a key factor in effective information use and reinforced NTIS efforts to strengthen local institutions.

In September 1981, the LAC Bureau contracted the Inter-American Research Association, Inc. (IRA) to perform an in-depth evaluation of the actual utilization of the information provided through the NTIS project. This special evaluation was designed to assist LAC in determining what to do when

the current funding period expires at the end of FY 82. The rationale behind the evaluation centered on the fact that while previous project evaluations had focussed on the question of distribution of the technical information, more evidence was needed concerning the actual utilization of such information.

The IRA final report has just been completed. A summary of its major findings, conclusions and recommendations is quoted below. The full evaluation is attached as an annex.

## UTILIZATION OF SCIENTIFIC AND TECHNICAL INFORMATION IN LATIN AMERICA

### Summary of Major Findings, Conclusions and Recommendations

Inter-America Research Associates, Inc., was contracted by LAC/DR to evaluate the utilization of technical information provided by the NTIS network. This study revealed that 81% of end-users utilized the information acquired in an "applicative" mode, with 34% of the total actually using it in a "hands-on" degree of application. Fully 96% judged the information useful. This indicates that access to the information provokes a high degree of utilization even though the project does not program that amount of follow-through.

Another statistic of import to AID is the make-up of the clientele: 54% are private firms or industries, with the balance fairly evenly divided among autonomous organizations, universities and research institutes, government ministries, PVOs and consultants or students. The summary of IRA findings are presented below.

The study focused on five Latin American countries, Mexico, Costa Rica, Colombia, Peru and the Dominican Republic, and interviewed a total of ninety-nine end users. The major finding of the study was that NTIS information, when accessed, contributes significantly toward technological change. The end to which users could apply information accessed through NTIS was broken down into 6 major categories: 1) information not read, 2) information read and not utilized, 3) information read and circulated or incorporated in a reference center or library, 4) information utilized as didactic material or in studies and reports, 5) information used to determine national or technological policies or standards, 6) information assimilated and transformed in applied research, and 7) hands-on application of information such as manufacturing, building or creating something. Categories two and three were considered referential uses of information and categories four, five, six and seven were considered applicative uses. The information gathered in personal interviews and subsequently analyzed showed that 82% of the end users interviewed fell into the applicative category. Of significance is the fact that only one end user fell in category one, and that more than half of all users (54%) fell in categories six and seven, applied research (24%) and operational, hands-on manufacturing applications (30%).

The major conclusion which can be drawn from this exceptionally high utilization rate is that NTIS is not only a very important source of information for the transfer of technology in the region, but that the

uses to which the information is put and the frequency with which it is applied, demonstrate its significance, actual and potential contribution towards technological capacity building, and, therefore, towards development in Latin America. This conclusion is supported by the views expressed by end-users, who value the availability of the information highly.

The primary recommendation of the study is that the NTIS network should continue to receive the support it requires, and that strengthening and streamlining in two major areas would significantly improve the service and expand its coverage. The first of these areas is the ordering process and the second is the outreach activities.

From data gathered, both from end-users and staff of the distribution centers, it was found that:

Very little active promoting of NTIS publications or services takes place beyond the AMTID newsletters.

On the average, the recurrence is only about one full-time person in each distribution center devoted to NTIS related activities; including time devoted to processing orders as well as any outreach activities.

Users expressed frustration in not knowing what the universe from which they could draw looked like.

There was practically no awareness of the range of NTIS services.

Users expressed dissatisfaction with delays in receiving the documents and with other aspects of the ordering process, including the problem posed by floating exchange rates which in some instances have doubled the price of the document since it is paid in dollars at the rate of exchange at time of delivery, not ordering, and often several months intervene.

Specific recommendations stemming from the above are: a) that the staff of the distribution centers (whose time is currently spent processing orders), may be employed promoting NTIS services and documents, and that a system be designed which permits end-users to order the publications directly from NTIS. (This system could be patterned after the one successfully employed in Latin America by the British Lending Library. UNESCO coupons, which are already accepted by NTIS, could be used to effect payment); and b) that the NTIS-designed distribution centers be significantly increased in number to cover more cities in a given country and more locations within large cities.

#### NTIS Response to IRA Evaluation

The response to the principal suggestions presented by Inter-America Research Associates is provided below.

- 1) Lack of active promoting of NTIS products and services beyond AMTID.  
In the course of a full day's work, promoting someone else's business may not earn you too many points, and each agency seems to have a hundred competing priorities. Some agencies, nonetheless, do make some promotional efforts, only to find that they are unable to handle the additional workload.
- 2) One full time person per agency...  
Budget and personnel allocations in Latin America are no kinder than they are in the U.S. these days. Any organization which assigns more than one person to working on NTIS seems to feel justified in collecting prohibitively high surcharges, which in turn dampens demand and provokes ill will.
- 3) Users feel unfamiliar with the "information universe..."  
User education seminars are a regular feature of this project, and had the interviewer met some of the 1000 people in all project countries who had attended one, surely a slightly more positive recognition factor would have appeared. The fact remains that 1000 people is a small number of users over the span of five years, and the fact that few or none of them were among this group interviewed is not so surprising. Most users, in any case, are too busy to learn the "universe" of another profession.  
  
Nonetheless, improved promotional efforts should ameliorate this condition somewhat, and being more sensitive to this view should help the project's efforts along.
- 4) Users do not know the range of products available from NTIS.  
A similar problem to those outlined above.
- 5) Dissatisfaction over delays in receipt of reports and the cost.  
These issues have been addressed thusfar by two measures: priority handling at NTIS and subsidized airmail costs. In both instances problems may be aggravated by circumstances beyond the control of any of the project components. Nonetheless, the persistence of such a complaint indicates that two new efforts might be appropriate: 1) to reduce the number of requirements to ordering and delivery--a streamlining effort; and 2) increase the number of outlets to stimulate competition and assure some protection against price fluctuations.

#### RECOMMENDATIONS

- 1) That staff be employed promoting NTIS documents and services, not processing orders; and 2) that designated distribution centers be increased in number.

NTIS finds both these recommendations completely acceptable, and we are beginning work on their implementation. The project as presently designed allows for the former, but there remains many agencies wasting their professional resources by being order processing clerks. The second recommendation has been identified by NTIS and figures prominently in this proposed project amendment.

### Status of Parallel Projects

This project descended from a pilot activity initially managed by TAB/OST, after which LAC asserted a desire to take on the activity in a specific regional perspective. The rest of the world has received some of the same program treatment since 1977 through a parallel project managed by DSB/DIU. Several "core" elements of training and publication have been sponsored by that project, facilitating some elements in the LAC project, such as AMTID in Spanish.

NTIS' experience with DIU has pointed out the need to develop closer program relations with the other regional bureaus, without becoming a burden to them. This could range from program advice to fully functioning projects.

The Near East Bureau is drawing up a separate project for FY 82. Africa and Asia are not interested in separate projects at this time. S&T/DIU has apparently decided to spin the NTIS project off to the regional bureaus entirely. This may mean higher costs for the regional bureau projects as S&T/DIU support is withdrawn.

### B. Rationale and Strategy

AID View: Six years of work has produced an effective technology transfer system that can now be put to increased use. Most LAC countries are now active participants in the NTIS network. The local NTIS centers are reaching an important, if limited, audience, an audience that can be expanded to include most of AID's target groups, especially small and medium-sized business people. This amended project's rationale is to maintain and build out from the current NTIS system to reach a significantly greater audience. The strategy is to provide funding sufficient to maintain base NTIS activities and at the same time take a series of actions to upgrade the NTIS' information system and field management. From the perspective of the LAC Bureau and the LAC USAIDs, the continuation and upgrading of the NTIS network will provide a readily available tool with which to reach out to small and medium level entrepreneurs and businesses.

NTIS View: NTIS carries two overriding perspectives regarding this project: one is that it is an agency of the Department of Commerce, and it is under an implicit requirement to support U.S. foreign policy to the extent feasible. The second perspective is that NTIS is required by law to be a cost-recovery organization. This limits the contribution NTIS can make to activities which are not self-supporting.

NTIS derives two benefits, narrowly speaking, from administering these projects: 1) it is developing a market for its products and services which would be too costly to develop without AID's support, and 2) the increased workload generated by these projects contributes in some small degree to an economy of scale which rebounds in lower unit costs to American users.

As an agency of the Department of Commerce, NTIS' overriding responsibility is to clients in the United States, and the allocation of increasingly restricted manpower and budget (as well as travel ceiling) to LDCs is part of NTIS' commitment to the PASA with AID. If this PASA were not renewed, NTIS would be

obliged to re-evaluate its cooperation with LDCs in light of the above considerations. NTIS would probably have to withdraw special program support and other services and convert the terms of sales from the present discounts to the Foreign Price Schedule (double North American) without subsidies. Promotional efforts would probably be reduced to occasional initiatives by the local agencies who might choose to continue their affiliation despite withdrawal of subsidies and benefits.

Experience is that there exists a core market there, of people who will overcome any obstacle in order to obtain this information. The market in project countries would probably be reduced to this core.

### C. Detailed Description

The goal remains the same. The goal is still broadening and maximizing the use of all science and technology information in solving development problems in Latin America. The original project purpose remains: 1) improving Latin American and Caribbean access to scientific and technical information and patents resulting from U.S. Government investment in research and development; and 2) improving access to appropriate technology information resulting from worldwide investment in research and development. This amendment adds to these objectives increasing the scope of the NTIS program so that it can better service the private sector especially small and medium level industry.

The other project components, especially Outputs and Inputs, are changed to reflect the additional time and funds invested and increased levels of outputs. The revised Logical Framework (See Appendix) reflects these changes. In summary, they are as follows:

#### Outputs

1. Base NTIS Activity to service LAC network: The first output is a group of basic support and project management objectives. Essential objectives include trained participants, publication of AMTID/ACCESS and other reports, a functioning project management team from the Department of Commerce, project evaluation, a system to keep material acquisition costs moderate for lower income countries, and a functioning logistical support system which handles travel, telecommunications, commodities, etc. These elements have emerged over the Life of Project as essential for project maintenance and management. Training, for example, remains one of the keystones of the project. A regular training component is essential to project success. Given the number of participants already trained, training has been cutback to:
  - one introductory Information Systems Workshop each year at NTIS, Springfield (a reduction from the current level of two per year);
  - two days of technical training during annual meeting of directors of Network representatives;
  - two user education seminars for the public in each country;
  - personalized orientation for new organizations affiliating with the Network as intermediaries.

The project management team from the U.S. Department of Commerce will again consist of one full-time officer, one half-time officer and 10% of the Foreign Affairs Administrator's time together with secretarial and administrative support.

Project evaluation activities will be handled as both regular evaluation work by local NTIS reps and NTIS officers and special evaluation of the type performed by IRA provided that can be jointly funded with S&T/DIU and/or other regional bureaus.

Publication of AMTID, ACCESS and other articles is expected to grow steadily over the period as follows:

DISTRIBUTION OF PUBLICATIONS IN LAC

	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
<u>AMTID</u>					
Spanish	15,000	15,750	16,500	17,500	19,000
English	700	800	900	1,100	1,200
<u>ACCESS</u>	400	450	500	575	675
<u>Other</u>	2,000	2,000	2,500	3,000	

2. Upgrading NTIS Information System:

The following specific objectives are designed to improve sources and access to technical information.

a. CDC DEVELOP Search Service: Recognizing that NTIS is not the only source of technical information required by private entrepreneurs in the LDCs, the Network agencies have been encouraged and offered minimal assistance in broadening the range of their contacts in the U.S.

This new project element proposes special integration into the Network of the DEVELOP Search Service of Control Data Corporation, offering existing Network agencies and any new organization contacted, fifty searches per year per country of the DEVELOP database. This addition to the Project will offer the following new benefits to Network members:

- members will be able to access new sources of information, beyond NTIS and beyond those they may have used on their own initiative;
- they will be able to take advantage of someone doing the searches for them at first, and training will be provided gradually to allow them to develop their own capability;
- they will have access for the first time to names and addresses of U.S. entrepreneurs willing and able to do business in Latin America;

- for the first time ever they will be able to obtain hard copy of reports and articles other than NTIS.

Experience to date with the transfer of technical information and technologies through the AID/NTIS technical information network has shown that in the LDCs the end-users are usually individuals in a professional or managerial capacity in local enterprise or R&D or policy organizations. Entrepreneurs are often cited, for example, as the highest priority target group. The next level of end-users are the intermediaries: librarians, technical information service personnel, booksellers, consultants (including USAID's, FCS, USICA, Chamber of Commerce).

In its current USA network, NTIS has available for public use one million technical research reports, of which perhaps five percent are "probably useful" in AID project countries. But Control Data Corporation markets a wide range of computer-related products and services, including the DEVELOP Search Service and Database and WORLDTECH technology transfer consultancy, both of which can be offered to users and intermediaries (above) through the NTIS network now in place. Also ready to be accessed are private enterprises in the U.S. with expertise, sometimes patented, which they are willing to share with end-users and intermediaries (above).

The assumption of this new component of the project is that there are two sets of end-users, one set in each location. It is known that sometimes they locate each other and strike up commercial arrangements for the transfer of technology with no outside intervention. It is also known that with the assistance of some clearinghouse activities and use of external assistance, the flow of information may be increased qualitatively and quantitatively.. Depending on the capabilities of the users at each end, some intervention is required to facilitate the identification of needs and possible negotiaton as well as implementation. This new project component will effect this process as described below.

1. Origination of the Request: There exists already in all project countries a group of local end-users who have established a lively relationship with one or more of their available intermediaries. This relationship at least includes being "on the mail list" of the intermediary, and probably involves the latter having a profile of interests on the former. From regular distribution of promotional materials, including AMTID and the intermediary's periodic newsletter, the end-user learns of the availability of technical information relating to his productive activity. Spotting a subject of direct relevance to his business, the end-user communicates a request to the local intermediary for information on this subject. Essentially, this part of the process stays the same although the assumption is that as the NTIS network's capacity to supply information grows, so will demand.

1. Local Processing of the Request: The intermediary responds to this request in three steps: 1) searches their local collection of material and inquires of other local centers of information; 2) places the order for reports cited in the request, to NTIS; 3) requests NTIS and CDC to search their collections and contact U.S. businesses for additional help. This additional search service will be available initially only for inquiries in the priority fields of renewable energy, agriculture and food processing. (Later, additional priority fields may be added.) A packet of information is sent back to the client containing all information uncovered. Typically, this packet would contain the following:

- citations of technical literature available, and the cost of this literature;

- the names, addresses and phone numbers of U.S. businesses whom CDC has positively identified as interested in pursuing a relationship with the LDC end-user;

- a preliminary judgment by the CDC staff about whether this contact appears promising, and what information will be needed to facilitate this exchange. In this context, NTIS and CDC are acting on behalf of the LDC user.

It is worth noting at this point that the end-user has by this time been subjected to one or more user fees charged by the intermediary, in addition to the cost of purchasing any material discovered during the search. The intermediaries vary their user fees according to local circumstances and market conditions. This project will charge the intermediary a steadily increasing sliding scale of prices for searches performed in the U.S. Control Data is charging the project \$100 per search, some of which will be offset by user fees.

3. Pursuing the Inquiry: Most inquiries will not pass this point. Nonetheless, additional services will now be available to assist the LDC end-user in pursuing his search for more details. This fact will be made known by the intermediary to the end-user, especially in those cases where the NTIS/CDC search staff has identified potential for significant commercial or technological advances.

In many cases, the LDC end-user will pursue the inquiry on his own initiative, using the names and addresses which were passed to him by CDC. There will be very little feedback for evaluation purposes from these users, since they often wish to conduct these negotiations in privacy.

In some cases, the LDC end-user will ask for some assistance in contacting these or still additional manufacturers in the U.S. This assistance will be performed on a price scale to be determined by the intermediaries and NTIS/CDC. CDC is equipped to answer any such request on strictly market conditions, i.e. at the price of U.S. consultancy.

b. Licensing Brokerage and Assistance - WORLDTECH: Proposed in this project amendment is a special service which for most Latin American firms is prohibitively expensive to contract, and for that reason introductory services will be subsidized. Relating to the same priority fields identified above for the DEVELOP Search Service, food processing technology and renewable energy, these grants for WORLDTECH consultancies will be limited to the fifteen countries of the Caribbean Basin Initiative - one \$10,000 grant per country per year.

A priority will be assigned to local USAID projects which have taken advantage of the earlier (more elementary) search services offered by this project. In any case, where an LDC end-user has been identified as a likely candidate for brokerage consultancy, matching funds up to \$10,000 per country per year will be available to the LDC end-user.

The details of the case will be presented to CDC's WORLDTECH organization, where a technically competent specialist will be assigned to the project. His job will be to gather the needed data and counsel the LDC user through the negotiations, to the point of assuring implementation of the technology in question. Where this can be done so quickly as to not use up the grant allocation, the balance may be applied to another activity. Where the grant is insufficient, it will be up to the American and LDC end-users to pay the difference. Both will have to pay a nominal user fee in any case.

In addition to the fifteen cases of technology transfer, an end result of this element will be documented case studies of full-scale technology transfer. It is implied that the intermediaries on either side will promote these services to still other users who are more able to pay the cost of the service.

c. Office Automation and On-Line Searching Capabilities: Reflecting the key role the NTIS network plays in offering LDC organizations insight into technological advances pioneered in the U.S., one of the highest priority recommendations of the most recent meeting of Directors was to establish a task group to report on advances in office automation and the computerization of information services. This project element attempts to respond to this priority request in a manner that stimulates local commitment and dedication of resources, and assures a completed transfer of technology. At the end of the project, the following will be completed:

- At least one Network member will have inaugurated, operated for one year time period, and evaluated a publicly accessible on-line search service of bibliographic databases in the U.S.
- At least five micro- or mini-computers will be installed in Latin America performing on-line access to U.S. databases. The budget will allocate twenty (one per country), although each will be installed only when project managers are assured they will be utilized fully.

- NTIS will have developed five subject-specific bibliographic databases and distributed one each to those facilities with appropriate equipment. These databases are distinct from the complete NTIS Bibliographic Database, which will be accessed long-distance, among other U.S. databases.
- At least three local databases will be created in machine-readable form under joint sponsorship of this project and a local institution.
- This project will coordinate the specifications for hardware, software and database format, as well as evaluation procedures, with other organizations active in this field: UNESCO/UNISIST, IDRC and OAS.
- A telecommunications survey will have been completed, outlining the needs of an optimal on-line search network, as well as the state of affairs in each of the Network member countries

This project element represents a thrust into the future on behalf of all Project countries, and to that extent, it is of greatest significance to their participation in the Network. They have expressed this repeatedly.

It is suggested that most activities and commodities sponsored by this project element will be offered on a matching funds-basis, whether from a local institution, AID Missions, international agencies or other sources. Some activities by project management staff would be completely covered by this budget:

	(in thousands \$'000s)					TOTAL
	FY83	FY84	FY85	FY86	FY87	
Matched contribution to CONCYTEC Peru - contracts	20.0	22.0	16.0	10.0	--	68.0
Matched contribution to various countries - terminals	15.0	15.0	15.0	10.0	10.0	65.0
50% subsidy for usage fees, telcom	2.0	4.0	8.0	4.0	4.0	22.0
Training, contracts, travel/pd	12.0	19.0	8.0	8.0	8.0	55.0
	<u>49.0</u>	<u>60.0</u>	<u>47.0</u>	<u>32.0</u>	<u>22.0</u>	<u>201.0</u>

3. Upgrade NTIS Field Network Management:

a. Multiplication of Local Access Points: In evaluation of current project methodology, one apparent shortcoming has been the limited outreach achieved by local Network members, despite regularly programmed activities for this purpose. One observer estimated that

the agency in some countries reaches no more than ten percent of the potential market, while the agency responds that this is in the interest of doing the job well and not getting overextended.

In an effort to expand access within a country, NTIS has tried two cases of a "sub-agency" agreement, which has worked satisfactorily. Based on this experience, NTIS will begin to expand the Network members to include organizations dedicated to serving sectors not yet accommodated: agricultural centers where the current focal point is strictly industrial; information centers where development assistance projects depend on prompt service.

Some centers are high priority to target: AID Mission libraries to serve Mission personnel and current projects; Foreign Commercial Service libraries and posts to encourage private entrepreneurs dealing with the U.S.; local chambers of commerce; private consultancies; USICA centers. It is expected that this project will not appeal to every one of the above-named centers, but enlisting their participation should increase access to the market by more than 50% in each country within two years of operation.

This element is viewed as extremely important for the successful growth of this Project. Inter-organizational rivalries often prevent potential user organizations from being in communication with their peers. Existing agencies might wish to do more but feel constrained by budgets and time. To enlist more intermediaries, while encouraging greater outreach by them all will assure the increased dissemination of this kind of information.

Since it is based on the established methodology of the project, there is no doubt about feasibility. There are nonetheless, a myriad of potential problems in getting various agencies to cooperate and "share the pie" in a local marketplace in these countries. Project management staff will have to proceed with sensitivity.

b. Contract of Two Sub-Regional Program Officers: In order to introduce and manage the program elements, it is essential that this project have available one full-time program assistant, on-site, in each sub-region. The type of person who should be recruited for this job is a third or fourth year Peace Corps volunteer or recently released volunteer, with a sense of mission to facilitating information access and flow, while conveying and embodying an amount of technical expertise which will offer assurance to the user in Latin America while providing accurate communications to the U.S.

Taking advantage of residence near an existing Network organization, this employee, with the consent of that organization, would maintain an office there and render advice to this organization and others in the sub-region about the new products and services offered through the Network. Peace Corps Washington already has indicated favorable consideration for the proposal.

Assuming the collaboration of Peace Corps/Washington, a volunteer could be designated to this project as a regular assignment. Peace Corps would continue to cover the volunteer's stipend and cost of living, while NTIS would provide a budget for travel and training activities within the sub-region. Living allowances, repatriation, family support and the like would be specifically excluded from this position.

Should Peace Corps/Washington decline to participate in this activity, the project should assume responsibility for a salary of \$20-30,000 for this position, again without fringe benefits usually associated with the assignment of an officer overseas.

The addition of additional products and services to this project, whether offered by CDC, NTIS or other sources, places a new workload on project management staff, which would be difficult enough to manage. The more important element of expanding access to the local marketplace, including the training and orientation of new local intermediaries, requires a degree of on-site project management not really affordable under present staffing arrangements. Even if project staff were increased in Washington, the amount of field visits would become unmanageable. Proper management of an expanded project requires some staff in the field full-time.

NTIS has a similar program operating under a Congressionally mandated program for the acquisition of foreign technology (not using Peace Corps, however), and the feasibility is not in question.

### Inputs

1. AID Contribution
2. NTIS Contribution
3. Host Country Contribution

PART III: PROJECT ANALYSIS

A. Technical and Other Analyses

The technical, social, economic, environmental and other analyses remain unchanged and still valid. The project has proved during its first three years to have no special impediments to its success.

B. Financial Analysis and Plan

1. Return on Investment - The observations in the original PP about the direct target group being public and private organizations and individuals in LAC for whom access to U.S. and worldwide technology can result in their use of more efficient and appropriate technology remain valid. The secondary target group is a larger fraction of the population who are expected to benefit from social and economic improvements as a result of improved technology.
2. Financial Plan - Cost estimates and financial plans are based on recent years expenditures for FY 82 . Cost figures are shown in the tables on the next page.

CHART

LATIN AMERICAN TECHNICAL  
INFORMATION NETWORK BUDGET  
1983-1987

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>TOTAL</u>
<u>On-going Activities:</u>						
Preparation and Transfer of Information, Products and Services (includes NTIS staff costs)	148.3	162.8	178.5	195.8	215.0	900.4
Telecommunications	3.4	3.8	4.4	5.0	5.5	22.1
Airmail Subsidy	13.5	15.5	17.0	18.0	19.5	83.5
Travel/per diem	16.8	18.5	20.4	22.4	24.6	102.7
User Education (incl. Spanish AMTID)	72.4	85.6	102.3	122.3	139.9	522.5
AT Report Subsidy	8.0	9.0	10.0	10.0	11.0	48.0
Commodities (indexes, equipment, etc.)	13.0	6.0	14.5	6.5	16.0	56.0
AT Bibliography	11.0	—	13.0	—	15.0	39.0
Training (total component)	<u>70.0</u>	<u>73.0</u>	<u>80.0</u>	<u>85.0</u>	<u>90.0</u>	<u>400.0</u>
SUB-TOTAL	<u>356.4</u>	<u>376.2</u>	<u>440.1</u>	<u>465.0</u>	<u>536.5</u>	<u>2194.2</u>
<u>New Activities:</u>						
Access to new sources of technical assistance (incl CDC DEVELOP Data- base and others)	72.9	99.3	125.8	110.7	87.9	496.6
License Brokering for Caribbean Basin Countries	150.0	150.0	150.0	150.0	150.0	750.0
Multiply local focal points (expenditures on start-up commodities—fiche readers indexes)	10.0	14.0	17.0	17.0	19.0	77.0
Support for Peace Corps volunteers joining project	21.0	23.0	24.5	27.0	28.0	123.5
On-line services, data base information	<u>49.0</u>	<u>60.0</u>	<u>47.0</u>	<u>32.0</u>	<u>22.0</u>	<u>210.0</u>
SUB-TOTAL	<u>302.9</u>	<u>346.3</u>	<u>364.3</u>	<u>336.7</u>	<u>306.9</u>	<u>1656.1</u>
TOTAL	<u>659.0</u>	<u>722.5</u>	<u>804.4</u>	<u>801.7</u>	<u>843.4</u>	<u>3822.3</u>

CHART II

DETAILED STAFFING BREAKDOWN COSTS FOR NTIS  
Latin America Network FY 1983

<u>Title</u>	<u>Grade</u>	<u>Percent</u>	<u>Amount</u>
Foreign Affairs Administrator	15/4	10	\$ 5,776
Chief, Development Assistance Programs	14/2	50	21,829
Foreign Affairs Officer Latin America	13/1	100	34,929
Secretary	6/1	10	1,490
Secretary	5/1	50	6,684
Administrative Assistant	9/10	25	<u>6,647</u>
	Sub-total		\$ 77,355
	Benefits		7,736
	Total		<u>\$ 85,090</u>
	Overhead 70%		<u>59,563</u>
	<u>GRAND TOTAL</u>		<u>\$144,653</u>

It should be noted that these figures and workload divisions assume a fully funded project being managed at the same time on behalf of S&T/DIU. They do not assume any other regional projects. If the DIU project is not approved of fully funded, these (and other project element) figures are likely to increase. If another regional bureau authorizes a new project, these figures are likely to drop.

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#### PART IV: IMPLEMENTATION ARRANGEMENTS

The implementation arrangements are essentially the same as those laid out on pages 44-49 of the original PP. LAC/DR's NTIS project monitoring responsibility rests with the Multisector Activities Division. NTIS will follow the pattern of working directly with the cooperating agencies to strengthen their institutional capabilities and will support all such organizations whose countries are meeting the basic criteria for support to a cooperating agency. Attached are the Annual Calendars of activities to be carried out by NTIS.

Evaluation of progress and future plans for NTIS was performed in 1980. A special evaluation on utilization of the technical information was completed very recently. Overall, results and objectives of these evaluations are covered in Part II, A of this amendment. The full report of the most recent evaluation is attached as Annex B-3 of this amendment.

#### PART V: ANNEXES

- A. Revised Log Frame
- B. Project Evaluation Summaries
  - 1. PES for Period 10/77 to 10/78
  - 2. PES for Period 10/78 to 05/80
  - 3. IRA Evaluation Report
  - 4. CDC Proposal

9/27/79

CLASSIFICATION  
PROJECT EVALUATION SUMMARY (PES) - PART

Report Symbol U-447

1. PROJECT TITLE  Science and Technology Information Transfer	2. PROJECT NUMBER 598-0572	3. MISSION/AID/W OFFICE LAC/DR/HR
	4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>1</u>	

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING		7. PERIOD COVERED BY EVALUATION	
A. First PRO-AG or Equivalent FY <u>77</u>	B. Final Obligation Expected FY <u>79</u>	C. Final Input Delivery FY <u>80</u>	A. Total \$ <u>750,000</u>	B. U.S. \$ <u>750,000</u>	From (month/yr.) <u>10/77</u>	To (month/yr.) <u>10/78</u>
					Date of Evaluation Review <u>12/78</u>	

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Revision to be made of logical framework components: EOPS, Outputs, Magnitude of Outputs, and Important Assumptions. (Attachment A)	Ortiz (LAC/DR) Goldstein (LAC/DP) Post (NTIS)	Complete (Revised LOG-FRAME attached)
2. Project is proceeding satisfactorily given delay in start-up but results of appropriate technology activities must be documented at earliest possible date.	Project Review Committee	By June, 1979

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	
<input checked="" type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

A. <input checked="" type="checkbox"/> Continue Project Without Change
B. <input type="checkbox"/> Change Project Design and/or
<input type="checkbox"/> Change Implementation Plan
C. <input type="checkbox"/> Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Helen M. Ortiz, Project Manager (LAC/DR)

Terrance L. Lindemann, Foreign Affairs  
Administrator, National Technical Information Service (NTIS)

12. Mission/AID/W Office Director Approval

Signature 

Typed Name  
Kenneth L. Martin

Date  
9/16/79

PROJECT EVALUATION SUMMARY (PES) - Part II

13. Summary. Due to delay in start-up (the PASA was not signed until September 25, 1977), NTIS has had little more than a year to set up an entirely new program in appropriate technology in addition to maintaining its conventional program in science and technology information transfer. NTIS has been focussing the bulk of its efforts on AT activities, including establishing contacts with worldwide AT groups, compiling bibliographies and an AT reference guide, and establishment of a deposit account for each participating country to receive free AT documents. NTIS carried out two two-week training seminars for technical information managers to familiarize them with NTIS operations, other sources of U.S. technical information, and modern information handling techniques. End-user seminars were held in participating countries, and the first case studies on end use of information were completed. Twenty thousand copies of the AMTID newsletter were distributed monthly. The review committee stressed the importance of seeing the results of these efforts either in terms of increased dissemination of publications or in documentation that the AT material was being put to use to benefit the poor. (See Attachment B for full review.)

14. Evaluation Methodology. The annual evaluation was carried out according to the Evaluation Plan of the project paper. NTIS presented considerable documentation as to activities and, in turn, was questioned by the Review Committee which was composed of the project manager, senior representatives from LAC/DR, the evaluation officer (LAC/DP), and representatives from the Program Office (LAC/DP), and DS/DIU.

15. External Factors. Not pertinent at this time.

16. Inputs. No problems identified.

17. Outputs. See revised logframe (Attachment A). Delay in start-up time, as stated in Summary, has slowed progress in terms of distribution of documents.

18. Purpose. 1) To improve Latin American access to scientific and technical information and patents resulting from U.S. government investment; and 2) to improve Latin American access to appropriate technology information resulting from worldwide research and development.

See revised logframe. Progress is considered good and on time as EOPS is revised.

19. Goal. "To broaden and maximize the use of scientific and technical information in solving development problems in Latin America with special emphasis on appropriate technology." Early case studies show that scientific and technical information provided by NTIS has been applied directly to development problems. It is too early in the project to judge the success of the AT component due to above-cited delay in start-up.

20. Beneficiaries. Information not available at this time.

21. Unplanned Effects. Not pertinent at this time.

22. Lessons Learned. This project needs more time to develop the appropriate technology component as it should be developed. By the end of FY 79 project activities in this area should just be beginning to show results. Another two years will be needed for a functioning regional AT network to be in place.

23. This project should be extended through FY 80 and FY 81.

Revision of Logical Framework for LAC Regional Project  
"Science and Technology Information Transfer" (598-0572)

Pursuant to the recommendations of the annual review board of the above-named project, a sub-committee was named to make revisions in the logical framework of the project paper in light of experience gained in the course of the project. The sub-committee, which met in early January, was composed of Ms. Bernice Goldstein, Evaluation Officer (LAC/DP), Mr. Frank Post, Latin American Affairs Specialist (National Technical Information Service - NTIS), and Ms. Helen Ortiz, Project Manager (LAC/DR).

The goal and purpose remain the same; changes are made in the End of Project Status, Outputs, Magnitude of Outputs, and Important Assumptions. These sections now should read as follows:

End of Project Status

Point 1 remains the same.

Pt. 2 should read "information network established through bilateral agreements with NTIS as the switching node in the Western Hemisphere"

Pts. 3 through 5 remain the same.

Pts. 6 and 7 are deleted.

Pt. 8 becomes pt. 6

Outputs

Points 1 through 6 remain the same.

Pt. 7 should read "Translation and dissemination of appropriate technology information to the rural and urban poor, primarily through the public and private institutions which serve them."

Pt. 8 delete "\$6,000".

Pt. 9 remains the same.

Magnitude of Outputs

Point 1 should read "A network providing improved accessibility to science and technology, resulting in greater use in the region."

Pts. 2 and 3 remain the same.

Pt. 4 should read "Training of approximately 100 individuals by 1979."

Pt. 5 remains the same.

Pt. 6 should read "Training of approximately 25 individuals by 1979."

Pt. 7 should read "Approximately 3,500 documents."

Pt. 8 should read "Existing accounts for all qualifying A.I.D. countries."

Pt. 9 should read "Approximately 2,000 questionnaires distributed and results analyzed."

Important Assumptions

Points 1 through 3 remain the same.

Add Pt. 4 "External factors such as mails and customs will not unduly delay delivery of materials once orders are filled by NTIS/ Washington."

Add Pt. 5 "Local sources of appropriate technology information will be willing to contribute documents to the network."

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Project Title & Number: Science & Technology Information Transfer 598-0572

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project:  
From FY 77 to FY 79  
Total U.S. Funding: 750  
Date Prepared: 15 AUGUST 77

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes: (A-1)</p> <p>To broaden and maximize the use of scientific and technical information in solving development problems in Latin America and the Caribbean with special emphasis on appropriate technology.</p>	<p>Measures of Goal Achievement: (A-2)</p> <p>Increased utilization of science and technology in solving development problems relating to country-specific activities in (1) agriculture (2) industry and (3) human resources development.</p>	<p>(A-3)</p> <p>1. Reports by institutions and governments on use of scientific and technical information to increase output.</p> <p>2. Latin America governments' statements on the extent to which progress is being achieved in the selection and transfer of technology attributable to "freest and fullest possible access" to technologies not in private hands.</p>	<p>Assumptions for achieving goal targets: (A-4)</p> <p>1. Distribution, dissemination and implementation of scientific and technical information -- with particular emphasis on appropriate technology-- is an effective way to increase productivity, efficiency and the level of life in developing countries.</p> <p>2. L.A. governments will continue to support the transfer of science and technology information from NTIS.</p>

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

AID 1920-20 (1-72)  
SUPPLEMENT 1

Life of Project: \_\_\_\_\_  
From FY \_\_\_\_\_ to FY \_\_\_\_\_  
Total U.S. Funding \_\_\_\_\_  
Date Prepared: \_\_\_\_\_

Project Title & Number: **Science & Technology Information Transfer 598-0572**

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose: (B-1)</p> <ol style="list-style-type: none"> <li>To improve L.A. access to scientific and technical information and patents resulting from U.S. government investments in research and development; and</li> <li>To improve L.A. access to appropriate technological information resulting from worldwide research and development.</li> </ol>	<p>Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)</p> <ol style="list-style-type: none"> <li>Local cooperating agencies in 15 countries capable of serving as a national focal point to provide and promote access to U.S. technical and technological information.</li> <li>Information network established through bilateral agreements with NTIS as the switching node in the Western Hemisphere.</li> <li>Easy and quick access to U.S. technical and appropriate technology information (each local cooperating agency will have 1 or more information scientists who have been trained in the U.S. and are knowledgeable of U.S. and worldwide information sources both public and private).</li> <li>Useful local R&amp;D knowledge collection by local organizations in Latin America.</li> <li>Cooperating LDC agencies' commitment to education of potential users of US technical information.</li> <li>Increased responsiveness by LA countries to acquiring U.S.-sponsored research and development.</li> </ol>	<p>(B-3)</p> <ol style="list-style-type: none"> <li>Examination of plans submitted by cooperating agencies.</li> <li>NTIS records. Examination of plans submitted by network.</li> <li>NTIS records.</li> <li>NTIS records. Agent representatives records.</li> <li>Agent representatives records.</li> <li>NTIS records. Ministry records. Agent representative records.</li> </ol>	<p>PAGE 2</p> <p>Assumptions for achieving purpose: (B-4)</p> <ol style="list-style-type: none"> <li>Significant and increasing research and development activities in the US and worldwide generate publicly available information of value to problem solving in developing countries.</li> <li>Countries will acquire and utilize technological information nationally if a system exists to foster its transfer and use.</li> <li>NTIS information can be disseminated to countries where demand for information exists.</li> <li>External factors such as mails and customs will not unduly delay delivery of materials once orders are filled by NTIS/Washington</li> <li>Local sources of appropriate technology information will be willing to contribute documents to the network.</li> </ol>

PROJECT STAFF

AID 1020-20 (11-73)  
SUPPLEMENT 1PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORKLife of Project: \_\_\_\_\_  
From FY \_\_\_\_\_ to FY \_\_\_\_\_  
Total U.S. Funding \_\_\_\_\_  
Date Prepared: \_\_\_\_\_Project Title & Number: Science and Technology Information Transfer 598-0572

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1)</p> <ol style="list-style-type: none"> <li>1. Establishment of bilateral computerized technical information network.</li> <li>2. Publication and greater dissemination of AMTID.</li> <li>3. NTIS quarterly newsletter.</li> <li>4. Participants trained in methods and techniques of information transfer.</li> <li>5. Participants trained on appropriate technology information and dissemination.</li> <li>6. Trained agents in methods and techniques on information transfer.</li> <li>7. Translation and dissemination of appropriate technology information to the rural and urban poor, primarily through the public and private institutions which serve them.</li> <li>8. Establishment of deposit accounts for participating agencies (exc. graduate countries) for transfer of information on appropriate technology.</li> <li>9. Questionnaires in Spanish to measure impact, utilization and expected utilization of appropriate technology information.</li> </ol>	<p>Magnitude of Outputs: (C-2)</p> <ol style="list-style-type: none"> <li>1. A network providing improved accessibility to science and technology, resulting in greater use in the region.</li> <li>2. Circulation of approximately 10,000 AMTID monthly.</li> <li>3. NTIS letter published quarterly.</li> <li>4. Training of approximately 100 individuals by 1979.</li> <li>5. 9 seminars conducted by 1979.</li> <li>6. Training of approximately 25 individuals by 1979.</li> <li>7. Approximately 3000 documents.</li> <li>8. Existing accounts for all qualifying A.I.D. countries.</li> <li>9. Approximately 2000 questionnaires distributed and results analyzed.</li> </ol>	<p>(C-3)</p> <ol style="list-style-type: none"> <li>1. NTIS records.</li> <li>2. NTIS records.</li> <li>3. NTIS records.</li> <li>4. NTIS records.</li> <li>5. NTIS records.</li> <li>6. NTIS records.</li> <li>7. NTIS records.</li> <li>8. NTIS records.</li> <li>9. NTIS records.</li> </ol>	<p>Assumptions for achieving outputs: (C-4)</p> <p>No important impediment will arise in broadening the NTIS information transfer network through bilateral agreements with cooperating agencies in additional Latin American countries.</p>

PAGE 5

AID 1020-20 (1-79)  
SUPPLEMENT 1

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Project Title & Number: Science & Technology Information Transfer 598-0572

Life of Project:  
From FY 77 to FY 79  
Total U.S. Funding 750  
Date Prepared: 15 August 77

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																														
Project Inputs: (D-1)	Implementation Target (Type and Quantity) (D-2)	(D-3)	Assumptions for providing inputs: (D-4)																														
1. US technical and translation services.	<table border="1"> <thead> <tr> <th>US</th> <th>1977</th> <th>1978</th> <th>1979</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>TA</td> <td>77.6</td> <td>115.0</td> <td>114.2</td> <td>306.8</td> </tr> <tr> <td>Commod.</td> <td>5.4</td> <td>6.9</td> <td>8.4</td> <td>20.7</td> </tr> <tr> <td>Training</td> <td>95.0</td> <td>121.5</td> <td>134.0</td> <td>350.5</td> </tr> <tr> <td>Other</td> <td>72.0</td> <td>-</td> <td>-</td> <td>72.0</td> </tr> <tr> <td><b>Total</b></td> <td><b>250.0</b></td> <td><b>243.4</b></td> <td><b>256.6</b></td> <td><b>750.0</b></td> </tr> </tbody> </table>	US	1977	1978	1979	Total	TA	77.6	115.0	114.2	306.8	Commod.	5.4	6.9	8.4	20.7	Training	95.0	121.5	134.0	350.5	Other	72.0	-	-	72.0	<b>Total</b>	<b>250.0</b>	<b>243.4</b>	<b>256.6</b>	<b>750.0</b>	NTIS records. Agent representative records.	
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3. Equipment and materials disbursement.																																	
4. Preparation and transfer of US original information products and services.																																	
5. Short-term funded training: (a) seminars and (b) workshops.																																	

Second Annual Review of LAC Regional Project

"Science and Technology Information Transfer"

December 13 and December 20, 1978

Participants of Meetings: Helen M. Ortiz, LAC/DR/HR, Kenneth L. Martin, LAC/DR/HR, James D. Singletary, LAC/DR/HR, Howard D. Lusk, LAC/DR, Terrance Lindemann, NTIS, Paul Bundick, NTIS, Frank Post, NTIS, Rita M. Cunningham, NTIS, Vietta Dowd, NTIS, Paco Pardo de Zela, NTIS, Richard Martin, LAC/DR/HR, Erick Irizarry, LAC/DR/HR, Nena Vreeland, DS/DIU, Thomas R. DeGregory, DSP/OPT, Jack Francis, LAC/DP and Peter Theil, LAC/DP.

At the first of the two review meetings held on the project, Terrance Lindemann, NTIS Foreign Affairs Administrator, and his staff presented a detailed description of their activities over the past year. A draft paper was submitted and discussed and a second meeting was called so that NTIS could respond to an issues paper which sought to focus on a number of elements in the Evaluation Plan which were inadequately dealt with in the draft document.

Most project activities, as carried out by NTIS/Washington, appear to be progressing at or above the anticipated level. A conference held in April in Salinas, Ecuador successfully brought together the directors of the Latin American cooperating agencies (including some representatives from AID graduate countries), NTIS/Washington staff and AID/Washington staff for a frank interchange on the "new directions" in appropriate technology which the project has taken. Two two-week intensive seminars were held for technical information managers to familiarize them with NTIS products and services, to acquaint them with other sources of U.S. technical information (such as NAS, NSF, Library of Congress, etc.), and to introduce them to modern information handling techniques. NTIS was distributing more than 20,000 copies of AMTID, its monthly announcement of selected development-oriented materials; in FY 78, it was published for the first time in Spanish and French for the developing world. End-user seminars were held in participating countries, organized by the local agents in order to introduce clients and potential clients to the full range of services available through NTIS and to create a general awareness of the value of information in various development endeavors.

A major important activity of NTIS has been the development of an Appropriate Technology Clearinghouse. The general orientation of NTIS since its inception in the World War II period has been the provision of highly sophisticated scientific and technological information to the U.S. and other industrialized nation end-users. Under the LAC project, the switch in orientation to low-capital, high labor intensity, "intermediate" technology has necessitated not only a change in approach but also the active acquisition of such appropriate technology materials. In FY 78, an intensive effort was

made to acquire information in such areas as agriculture, rural development, small business administration, health, construction engineering, and energy. Close contact was established with a number of international appropriate technology groups such as Appropriate Technology International (ATI), Volunteers in Technical Assistance (VITA), the Intermediate Technology Development Group (ITDG - England), GRET (France), TOOL (Germany) and Brace Research Institute (Canada). Arrangements were made for the exchange of documents and their translation into Spanish and French were deemed useful.

NTIS is also encouraging its cooperating agencies to input AT documents from their own countries into the system, though by the end of FY 78 only thirty-four had been received. To date, there has been a hesitancy on the part of Latin Americans to contribute their information gratuitously but NTIS hopes to overcome this by an exchange of free documents of their choice up to an equal approximate word count.

Other purely AT activities include: (1) publication of a document entitled Selected AT from the NTIS Data File which includes some one hundred titles selected for their special relevance for development programs in LDC's; a more comprehensive volume is soon to follow; (2) preparation of an "Appropriate Technology Reference Guide" which is a training tool that defines the concepts and identifies other sources of information outside the network such as VITA, ITDG, GRET, TOOL and Brace; (3) negotiations with the Peace Corps to place third-year volunteers to assist in cooperating agencies; and (4) establishment of a \$75,000 account to provide for free dissemination of documents for AT activities benefiting the poorer sectors of AID countries.

While this presentation was promising in terms of what NTIS/Washington has done in FY 78, the Review Committee felt that a number of important issues remained to be raised. Principal among the concerns of the group was whether or not all of these efforts were, in fact, impacting on the poor of the region. Although this is an extremely difficult item to measure, it was felt that information on the volume and nature of documents and the kind of recipient, combined with individual case studies on end use of information received, would serve as at least indirect indicators of success. The December 20 meeting addressed itself more directly to this point.

NTIS feels that, owing to the delay in start-up of the project in FY 77, it has had only one full year to set up an entirely new program. The first steps had to be the acquisition or at least location of pertinent AT material, to be followed by training activities for agents and end-users to make them aware of the existence of such information and how to obtain it. These efforts are outlined above. While these two activities will continue, the major emphasis in FY 79 will be on dissemination -- getting the information to the poor. It should be understood here that while the ultimate goal of the project is improvement of the lives of the poor, it is designed to put information into the hands of their representatives, be they government agencies, private voluntary organizations or cooperative groups, which are in a better position to translate information into action.

NTIS/Washington has compiled a list of more than 300 organizations in nine AID countries\* which it identifies as potential users of NTIS information. This information is to be passed on to the country agent representatives so that they may be approached directly with an offer of services. In two countries, El Salvador and Panama, AID Missions are aiding NTIS in carrying out an in-depth survey of groups involved in development activities and it is hoped that by year's end this will be completed in all AID countries.

Current information on buyers of NTIS information is too incomplete to judge adequately the impact of the program on the poor. However, what little information is available would indicate that the preponderance of NTIS material continues to be of a more sophisticated nature, going primarily to commerce and industry. NTIS feels confident that in FY 79 dissemination of AT materials will increase markedly. A new survey instrument designed to identify clients and their information needs more clearly is to be required by cooperating agencies for FY 79 although NTIS expects some resistance from agents, who are understaffed and are not reimbursed for such additional responsibilities.

Although the volume of AT document sales for FY 78 was not impressive, a cross section of information solicited serves to show a wide range of interests being served. Among the titles requested were included: Fuel and Energy Production by Bioconversion of Waste Materials, Teaching Manual: School Gardens and Nutrition, Accounting for the Small Business: Teaching Manual, Barefoot Doctors Manual, The Challenge of Meeting Shelter and Fish Culture Survey -- Panama.

Of some concern to the Review Committee was the fact that under the project no apparent increase has occurred in the volume of distribution of documents to Latin America and the Caribbean. In fact, the value of sales for eleven AID countries\*\* rose only 7% between FY 77 and FY 78 -- all of which appears to be absorbed by price increases -- and the number of documents actually fell by 27%. Lindemann attributed the decline to factors external to the NTIS program: the severe economic problems of Peru (which represents virtually all of the decrease), political unrest in Nicaragua, and the extreme unreliability of the mails in Bolivia. (recently resolved by sending documents through AID Mission ). This may or may not be the case, but the crucial test should come in early calendar year 1979 when publicity for free appropriate technology documents enters into full swing and a marked rise should occur if the project is functioning as anticipated.

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\* Bolivia (34), Colombia (48), Costa Rica (30), Dominican Republic (21), El Salvador (21), Guatemala (67), Panama (21), Paraguay (16) and Peru (53).

\*\*Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama and Peru.

A last issue discussed was that of the schedule of disbursements which shows, as of the start of FY 79, a pipeline of \$156,800. It was explained that the reason for this sizeable figure was the delay in commencement of the project in FY 77. As the PASA was not signed until late September, 1977, NTIS had funded the project provisionally out of other funds which were to be repaid out of the \$250,000 allotment for FY 77. While NTIS did this willingly in order to keep the project (inherited from TAB) functioning during the interim period, it judiciously spent at a lower level than that outlined in the project paper for that year. The bulk of remaining activities and corresponding funds will be accounted for in FY 79 with just a small possible carryover into first quarter FY 80.

The last order of business was a discussion in NTIS country representatives. Sub-agencies to deal specifically with appropriate technology now have been established in Ecuador and Costa Rica and negotiations are underway for similar arrangements in other countries in an effort to ensure that AT information is effectively reaching our target group. A country-by-country review of the representatives revealed that in general the groups were functioning effectively and that cooperation between them and their respective USAID's was good. The single serious exception to the latter point was Honduras where the Mission was dissatisfied with the current agent representative arrangement and wished to see three others named. NTIS/Washington and LAC/DR are working to resolve the problem.

#### General Conclusion

The regional "Science and Technology Information Transfer" project is making satisfactory progress, given the delay in start-up date and the amount of work involved in setting up an appropriate technology competency within NTIS. The Committee stressed the importance of seeing the results of these efforts as early as possible in FY 79.

Submitted by: LAC/DR/HR, Helen M. Ortiz, Project Manager  
Science and Technology Information Transfer Project

Date: January 4, 1979

TO THE FILES

cc: Participants of Meetings  
DS/ST, William Feldman

UNCLASSIFIED  
CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) - PART I

7-7-80

Report Symbol U-44:

1. PROJECT TITLE <b>Science and Technology Information Transfer</b>			2. PROJECT NUMBER <b>598-0572</b>	3. MISSION/AID/W OFFICE <b>AID/W</b>
5. KEY PROJECT IMPLEMENTATION DATES			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)	
A. First PRO-AG or Equivalent FY <u>77</u>	B. Final Obligation Expected FY <u>82</u>	C. Final Input Delivery FY <u>83</u>	<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION 7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>10/1/78</u> To (month/yr.) <u>5/1/80</u> Date of Evaluation Review <u>5/2/80</u>	
6. ESTIMATED PROJECT FUNDING				
A. Total \$ <u>1.816</u>				
B. U.S. \$ <u>1.816</u>				

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Additional emphasis should be given by NTIS/W to obtaining timely, accurate data on document sales and end-users from national cooperating agencies.	T. Lindemann NTIS/W	Continuing basis
2. More effort should be given to the translation into Spanish of appropriate technology documents.	"	"

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT	
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)	A. <input checked="" type="checkbox"/> Continue Project Without Change	
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	<u>None</u>	B. <input type="checkbox"/> Change Project Design and/or	
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Change Implementation Plan	
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project	

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)			12. Mission/AID/W Office Director Approval	
Helen M. Ortiz Education Specialist LAC/DR/HR	Richard R. Martin Acting Chief LAC/DR/HR	Terrance Lindemann Foreign Affairs Administrator NTIS	Signature <i>Marshall D. Brown</i>	
			Typed Name Marshall D. Brown	
			Date 6/30/80	

## Project Evaluation Summary - Part II

### 13. Summary

The National Technical Information Service of the Department of Commerce and AID have worked closely together since late 1971. It was then that the Office of Science and Technology (TAB) first funded activities to broaden developing country access to scientific and technical information. While the program was worldwide in its inception, in late FY 77 that part dealing with Latin America and the Caribbean was transferred to the regional bureau. Under bureau management, the program took on a second focus, that of fostering the availability of information on "appropriate technologies" (including agricultural techniques, environmental sanitation, low-cost energy sources, small-scale industry, construction, and the like) for the rural and urban poor. Since that time, the NTIS network has been expanded to include working relationships with information centers in nineteen countries.<sup>1/</sup>

Under the program, NTIS offers to AID recipient countries a 25% discount on documents for local agencies, free airmail postage, training courses for agency personnel as well as end-users of information, and marketing materials. Under the appropriate technology component, NTIS has gathered an extensive bibliography of documents from available sources which are available at no cost to groups working with the poor in all countries of the region. In the period of FY 79 and the first two quarters of FY 80, this latter component has received primary emphasis.

### 14. Evaluation Methodology

This is a regular project evaluation. For the evaluation, NTIS prepared two documents (attached): (1) FY 79 Annual Review and (2) FY 1980 First and Second Quarter Review. These documents were evaluated at a meeting which included the NTIS Foreign Affairs Administrator, the NTIS Foreign Affairs Specialist, the NTIS Central America Desk Officer, the AID project manager, the chief (acting) of LAC/DR/HR, and the DS/DIU project manager for the NTIS worldwide project (excluding LAC).

### 15. External Factors

The lack of passage of an OYB for AID for FY 80 caused a severe cutback in project activities, which were programmed to expand

<sup>1/</sup> National agencies receive varying benefits according to their status as LDCs, MDCs or AID graduate countries.

significantly in the area of appropriate technology. From a CP level of \$576,000, the annual budget was restricted to only \$200,000 (that figure being raised to \$300,000 in the third quarter). This meant a severe cutback in such activities as travel (for training and promotional purposes), document translation, and publication of the monthly AMTID marketing tool in Spanish. Moreover, personnel assigned specifically to the LAC program had to be moved to other positions.

16. Inputs

Due to the lack of an OYB (as stated above), the expected financial inputs from AID were not available in FY 80. This led to a decrease in travel, personnel and other costs for NTIS.

17. Outputs

For the reason stated in the parts 15 and 16, the expansionary program planned for FY 80, especially in the area of appropriate technology, was slowed in the first two quarters of that fiscal year. Nonetheless, the sale of documents continued to grow, twenty-five AT documents were translated, 125 AT documents were received from cooperating agencies, an expanded AT bibliography was published, and a successful meeting of directors of the network's cooperating agencies was held in the Dominican Republic in February of 1980.

18. Purpose

"To (1) improve LAC access to scientific and technical information and patents resulting from U.S. Government investment in research and development; and (2) improve LAC access to appropriate technology information resulting from worldwide research and development".

All conditions stated in EOPS are being adequately or better fulfilled.

19. Goal

"To broaden and maximize the use of scientific and technical information in solving development problems in Latin America and the Caribbean and the Caribbean, with special emphasis upon appropriate technology".

The sale of NTIS documents has shown a progressive increase annual since FY 77. The newsletter AMTID (Applications of Modern Technology t International Development), the principal marketing tool of NTIS, is currently being received by more than twenty-thousand individuals and institutions. A case studies handbook (attached) was prepared and circulated as an aid in evaluating the utilization of scientific and technical information within developing countries.

20. Beneficiaries

Beneficiaries of the project fall into two groups: (1) industrialists, businessmen, scientists, universities, libraries, and others with a capability, to utilize sophisticated scientific and technical data; and (2) the rural and urban poor who, generally through intermediaries (government programs, private voluntary organizations, etc.), receive appropriate technology information.

21. Unplanned Effects

Not pertinent at this time.

22. Lessons Learned

In the course of development and execution of the project, it has become apparent that the simple availability of technical data, particularly appropriate technology information, is a necessary but not sufficient condition to ensure its effective use. In order to be effective, such programs must go one step beyond supply to the identification and utilization of local institutions with the capability to translate such information into the native language of the country or region and to present it in a form readily understandable both by the intermediaries (such as agriculture extensionists and health workers) and by the ultimate beneficiaries (the rural and urban poor).

23. Special Comments or Remarks

The following documents prepared by NTIS are attached:

- (a) FY 79 Annual Review (88 pp.);
- (b) FY 1980 First and Second Quarter Review (24 pp.); and
- (c) Case Studies Handbook (81 pp.).

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
BUREAU FOR LATIN AMERICA AND THE CARIBBEA  
WASHINGTON, D.C. 20523

AN EVALUATION OF SCIENTIFIC AND TECHNICAL  
INFORMATION DISTRIBUTION AND USE IN LATIN AMERICA  
THE NTIS PROGRAM IN FIVE SELECTED COUNTRIES

by

MARINA FANNING-FIRFER

Prepared by InterAmerica Research Associates.,  
Contract No. LAC-0044-C-00-1048-00.

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42,

Utilization Hierarchy

In an attempt to describe the range of uses to which information can

This report was prepared under Contract No. LAC-0044-C-00-1048-00, for the United States Agency for International Development. The opinions expressed in the report are solely the responsibility of the author and do not necessarily represent the views of the organizations studied or the sponsoring institutions.

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UTILIZATION OF SCIENTIFIC AND TECHNICAL  
INFORMATION IN LATIN AMERICA

Summary of Major Findings, Conclusions and Recommendations

This is the Final Report of a study to document and assess the operations of the National Technical Information Service (NTIS) document distribution program in Latin America. The study focused on five Latin American countries, Mexico, Costa Rica, Colombia, Peru and the Dominican Republic, and interviewed a total of ninety-nine end users. The major finding of the study was that NTIS information, when accessed, contributes significantly towards technological change. The ends to which users could apply information accessed through NTIS were broken down into seven major categories:

- 1) information not read, nor discarded
- 2) information read and not utilized,
- 3) information read and circulated or incorporated in a reference center or library,
- 4) information transferred through courses; as part of didactic material or through papers, reports, or speeches,
- 5) information used to determine national or technological policies or standards,
- 6) information assimilated and transformed in applied research, and
- 7) hands-on application of information such as manufacturing, building or creating something.

Categories one, two and three were considered referential uses of information and categories four, five, six and seven were considered

applicative uses. The information gathered in personal interviews and subsequently analyzed showed that 81 percent of the end users interviewed fell into the applicative category. Of significance is the fact that only 2 percent of the end users fell in the category one, and that more than half of all users (56 percent) fell in categories six and seven, applied research (22 percent) and operational, hands-on manufacturing applications (34 percent).

The application profiles of the utilization of the information indicate a strong trend towards adaptive transfers of technology, and underscore an ability to make technological choices, to adapt and improve upon chosen techniques and products, and to generate new technologies, all essential aspects of the development process.

The major conclusion which can be drawn from the exceptionally high utilization rate is that NTIS is not only a very important source of information for the transfer of technology in the region, but that the uses to which the information is put, and the frequency with which it is applied, demonstrate its significant actual and potential contribution towards technological capacity building, and, therefore, towards development in Latin America. This conclusion is supported by the views expressed by end users, who value the availability of the information highly, as well as the expansive, in-depth coverage of subject areas, and the breadth and scope of information that can be accessed. It is further corroborated by the fact that the majority of end users whose applications fell into categories six and seven (applied research and hands-on applications), considered the NTIS

information to have been of primary importance in their applications.

The principal recommendation of the study is that the NTIS network should continue to receive the support it requires, and that streamlining and strengthening in two major areas would significantly improve the service and expand its coverage. The first of these areas is the ordering process and the second is the outreach activities.

From data gathered, both from end-users and staff of the distribution centers, it was found that very little active promoting of NTIS publications or services takes place beyond the AMTID bulletins. On the average, there is only about one full time person in each distribution center devoted to NTIS related activities, including time devoted to processing orders as well as outreach. Users expressed frustration in not knowing what the universe from which they could draw included, and there was practically no awareness of the range of NTIS services. Users expressed dissatisfaction with delays in receiving the documents, and with other aspects of the ordering process.

Specific recommendations are: (1) That the staff of the distribution centers (whose time is currently spent processing orders) be employed promoting NTIS services and documents, and that a system be designed which permits end users to order the publications directly from NTIS. (This system could be patterned after the one successfully employed in Latin America by the British Lending Library. UNESCO coupons, which are already accepted by NTIS, could be used to effect

payment.) And, (2) That the NTIS-designated distribution centers be significantly increased in number to cover more cities in a given country and more locations within large cities.

## A. INTRODUCTION

This report on the evaluation of the utilization of scientific and technical information in Latin America is prepared for the Agency for International Development. The key aspect of this evaluation was to determine, as far as possible, to what extent information supplied by the National Technical Information Service (NTIS) contributes towards technological change. In other words, the evaluation was intended to focus on whether in fact the recipients of the information were utilizing it and what impact, if any, this was having on the accumulation of technological capacity, and thus, on the development process itself.

This evaluation of the NTIS regional science and technology information transfer project No. 598-0572, implemented by the Department of Commerce under a PASA arrangement, was contracted to InterAmerica Research Associates, Inc., under AID Contract No. LAC-0044-C-00-1048-00.

## B. SCOPE OF WORK

The scope of work called for InterAmerica to develop a methodology based on a minimum sample of five NTIS distributors to determine how information obtained from the NTIS mechanism was being utilized. This methodology was to be applied through a series of data-gathering field trips. This report is an analysis of the data gathered and details the utilization of the technical information in the countries visited.

It also includes recommendations on improvements and changes to enhance and expand the utilization of the information distributed.

### C. STUDY DESIGN

#### Orientation

The first activity undertaken by the evaluation team was to become thoroughly familiar with NTIS operations and procedures and with the project to be evaluated. Visits were made to the NTIS facilities in Springfield, Virginia, and numerous formal and informal meetings were held with key NTIS staff members and AID officials. Pertinent documents on utilization reports and evaluation activities, as well as annual reports and other project-related documentation, were reviewed.

#### Selection of Countries

The second activity undertaken was the selection of the countries to be visited for field data gathering. This activity was undertaken jointly with principal NTIS staff members and with AID project officers. From the total number of Latin America countries served under the NTIS/AID program, a sample of countries was selected using criteria which included proportional representation and geographic setting

Countries were broken down by volume into three use groups. The first group was comprised of the two largest users, (which are also the largest countries in the region, from the standpoint of population,) together accounting for 53 percent of NTIS volume in 1980: Brazil (28%) and Mexico (25%). The second use group accounted for the next 27 percent of the volume and was comprised of countries which can be termed middle size: Chile (7%), Argentina (6%), Colombia (5%), Venezuela (5%), and Peru (4%). The third use group accounted for the remaining 20 percent volume and was comprised of the smaller countries in Latin America: Barbados, Bolivia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama and Paraguay.

The geographic groups defined were: the Caribbean, North America, Central America, and South America.

Due to the small number of countries to be visited, sample selection was purposive rather than random. Mexico was chosen as the representative of the first use group, since it was felt its diversity and size would offer the most insight for the project purposes from this group. Since it is also the only Latin American country in North America, it also is the representative from that geographic group.

Two countries were chosen from the second use group, Colombia, which is largely perceived to be the most assiduous and best organized user of NTIS materials in Latin America, and Peru, which was the only

country in the region where the distribution was being handled by a private firm. From the third use group, two additional countries were chosen, each from a different geographic area not yet represented: Costa Rica from Central America, and the Dominican Republic from the Caribbean.

### Instrument Preparation

The third activity undertaken was the development of an interview schedule to be used in a field test. This schedule was initially composed of open-ended questions and was intended to be exploratory in its application. From the review of previous NTIS evaluation activities, it appeared that questions that were too technically specific raised skepticism and hostility since there seemed to be a general reluctance on the part of NTIS end users to discuss application of information in any great detail. It was inferred from this reluctance that information which had been evaluated and applied, acquired greater value and become new original information. It was therefore felt that efforts to elicit information viewed as proprietary had not met with much success.

Thus it was decided, with AID and NTIS concurrence, to base the methodology for data collection on executive interviewing techniques, which rely primarily on the skill of the interviewer to guide the respondent through a loosely structured discussion. An integral part of this methodology is the scheduling of the interview with the end user him/herself. Therefore, an equally important task for the

interviewer, in addition to conducting the interview, is to ascertain that it is scheduled with the appropriate person. A sample of the test interview guide is appended.

### Field Test

The fourth activity undertaken was to conduct a field test of the methodology and interview schedule. The Dominican Republic was chosen to conduct data gathering interviews on a field-test basis with the understanding that these findings would be incorporated into the final report. Principal investigator for the study, Marina Fanning-Firfer and Wilbur Knerr, spent one week in the Dominican Republic in November 1981, and interviewed a total of eighteen (18) end users of NTIS-supplied scientific and technical information. In addition, interviews were conducted with personnel involved in the information distribution process at the Instituto Dominicano de Tecnologia Industrial (INDOTEC), the local NTIS distributor, and with USAID/DR Program Office. A report on the preliminary findings of this pre-test was prepared and submitted to AID and NTIS in December, 1981.

Based on this field visit, a framework for the analysis of NTIS information utilization was developed following the proposed analytic design, and the data collection methodology was revised in light of this experience. Specifically, a more detailed and comprehensive interview schedule was developed since the field test both, corroborated the appropriateness of relying on executive interviewing techniques, and provided a better gauge on how much technical specificity could be elicited, before skepticism or hostility was

raised. Both the test and the final interview guides are appended to this report.

### Data Collection

Information was collected in the four other countries in the sample from January through May, 1982.

In Costa Rica, Marina Fanning-Firfer conducted interviews with twenty (20) NTIS end users for two weeks in January and February, 1982. In addition to interviews with personnel of the Centro de Informacion Tecnologica (CIT), of the Instituto Tecnologico de Costa Rica, the NTIS distribution center, interviews were conducted for information gathering purposes with the USAID/Costa Rica program office.

Together with Paul Bundick, Ms. Fanning-Firfer interviewed twenty-two (22) persons in Mexico for two weeks during February, 1982. Key personnel at INFOTEC, the NTIS distribution center were also interviewed. Additional interviews were also conducted with officials of NTIS distribution centers in the Latin America region. The latter were in Mexico attending the Annual Conference of the Director's of the NTIS Latin American Cooperating Organizations during the month of February, 1982.

During two weeks in April, 1982, Jorge M. Perez Ponce interviewed fifteen (15) NTIS end users in Peru. Cognizant persons at NOVOA

Ingenieros, the NTIS distribution center, were interviewed, as well as USAID/Peru personnel.

The data on NTIS end use in Colombia (24 interviews) was collected by Ms. Fanning-Firfer in May, 1982, during two weeks of field interviews.

Personnel at Colciencias, the NTIS distribution center, were included in the sample, and U.S. Embassy personnel were briefed on the data collection activities and provided additional information.

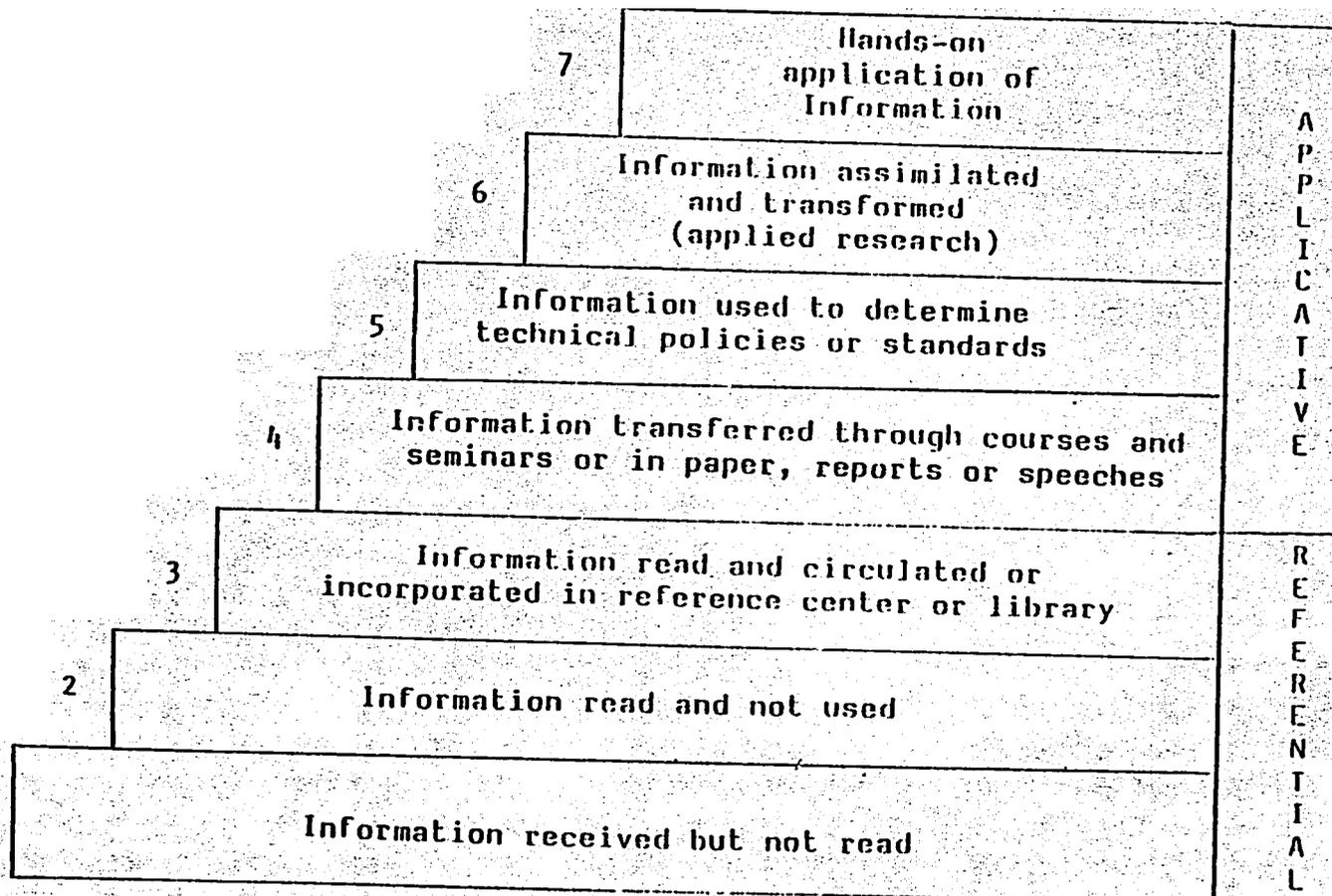
Altogether, ninety-nine (99) end users were interviewed in the five countries included in the sample during the four and one-half month data collection period. Interviews were conducted over as short a time frame as possible in the countries selected to insure maximum comparability and to exclude time as an intervening variable.

## Utilization Hierarchy

In an attempt to describe the range of uses to which information can be put, a Utilization Hierarchy composed of seven levels was developed and is depicted in the accompanying chart. At the first level, the information is received but not read. At the second level, it is read but with no specific use or purpose in mind. At the third level, the information is read with a use or purpose in mind and is stored or circulated to interested parties, often, though not necessarily, forming part of a reference center or library. At both levels two and three, the information can be considered referential, in that it serves to broaden one or several peoples' knowledge, but does not serve an operational purpose beyond serving as reference material. At the fourth, fifth, sixth, and seventh levels, the information is acted upon and is either purposively transferred or serves as a basis for the development or implementation of a specific purpose, plan or project. At these levels, the information becomes applicative.

These four levels on the Utilization Hierarchy are intended to describe and distinguish between the different uses of applied information. At the fourth level, the information is read and transferred to other people through courses, as part of didactic material, or through papers, reports, talks or speeches. Level five is for information that is used in the determination of technical policies or standards at the national, industrial or company level. Level six is intended to include applied information uses such as the development of a research project or the conduct of a research

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experiment. Level seven is to include operational, hands-on applications of any sort, such as when someone uses the information to manufacture, build or create something.

The Utilization Hierarchy was applied to all respondents in each of the five countries. It was initially supposed that some would have received and discarded the information without reading, which proved not be the case, and it was anticipated that the majority of respondents would utilize the information for reference purposes, Levels 2 and 3. Thus, an attempt was made to distinguish between the unstructured information seeker, who was merely seeking information to keep abreast or broaden his knowledge base (Level 2), and the more systematic information gatherer, who would seek information with a purpose in mind (Level 3), the latter was intended to include information gathered to form part of a reference center or library. Specific utilization analysis of the information gathered in the five countries is detailed in Section D.

#### Sampling of End Users to be Interviewed

The selection of end users to be interviewed was arrived at using a stratified sample based on the following procedures and criteria. First, the distribution center in each participating country was asked to list all end users over the last two years. Users were considered for inclusion if they were known to have received a publication at least six months prior to the interview, the minimum time deemed appropriate to determine if the information solicited had been

utilized in some way. Users further than one hour away from the city limits were eliminated on grounds of relative inaccessibility. Phone calls were then made to this list of potential interviewees. Due to limited resources, only in Colombia was more than one city visited (Bogota and Medellin.)

When phone contact was made, receipt of an NTIS publication was confirmed, and the identity of the actual recipient established. (Frequently orders are placed by intermediaries, librarians, or secretaries.) Telephone contact was then attempted with the actual recipient of an NTIS publication. If it was not possible to establish contact for any reason (limited telephone service, people unavailable or out of town, etc.), the user was dropped from the list. Over 200 persons were contacted and 122 interviews were scheduled to yield the 99 interviews completed. Since actually reaching a known recipient was difficult, every effort was made to interview any that were contacted.

While this cannot be considered in the strictest sense a representative sample of all the end users of NTIS-supplied scientific and technical information, Table 1 reveals coverage of every category in which publications were ordered during 1981 by all NTIS end users in the countries studied.

Table 1

FIELDS OF INTEREST AND ACTIVITY OF END USERS INTERVIEWED

	<u>Principal Activity</u>	<u>Publications Ordered</u>
Agriculture and Rural Development	11%	19%
Construction Industry	12%	14%
Education	12%	2%
Energy	9%	18%
Environment	3%	4%
Health	3%	7%
Industry	33%	17%
Telecommunication	3%	2%
Transportation	4%	4%
Urban Development	1%	4%
Water Supply and Sanitation	6%	9%
Other	3%	

Original data compiled by InterAmerica Research Associates, Inc.,  
November, 1981 through May, 1982

## D. FINDINGS

### Characteristics of Respondents

The majority of all respondents were individuals working in private firms or industries (54%), with the balance representing decentralized or autonomous government organizations, government ministries, universities and research institutes, and free-lance consultants and students. Table 2 gives percentages for each category. The principal activities for these organizations which has already been outlined in Table 1, encompassed Industry (33%), Construction Industry (12%), Education (12%), Agriculture and Rural Development (11%), Energy (9%), Water Supply and Sanitation (6%), Transportation (4%), Environment (3%), Health (3%) and Telecommunications (3%). The size of each organization broke down into three more or less evenly divided groups: 38% of the organizations contained less than 50 employees, 32% contained between 51 and 500 employees, and 30% contained more than 500 employees.

Only 7% of the respondents indicated they had ordered the publications for their personal use. Fifty six percent indicated they had ordered the publications in the course of their work, and 37% indicated they had ordered the publications both for their work as well as for their personal use. In the course of the interviews it became apparent that there was hesitation to classify solely as "professional use" information that had been incorporated into their personal reservoir of knowledge, and hence, was now available to them for "personal use."

This explains the 37% who felt more comfortable classifying the use of information as both professional and personal.

Table 2

TYPE OF ORGANIZATION  
REPRESENTED BY RESPONDENTS

Private Firms/Industries	54%
Decentralized and Autonomous Organizations	14%
Universities and Research Institutes	13%
Government Ministries	11%
Non Profit Organizations	5%
Consultants/Students	3%

Access and Frequency of Use

More than one-third of the users became aware of the publications ordered through the AMTID Newsletter, (Applications of Modern Technology to International Development, a bi-monthly AID-sponsored NTIS publication containing abstracts of documents felt to be useful to international development activities. Another 27% learned of the existence of the documents through contacts with the local information center, and 22% became aware through friends or colleagues.

Access

Through AMTID	35%
Through Information Center	27%
Through friends/colleagues	22%
Library/Bibliographic lists Databases	14%
Ads in journals/professional publications	2%

Almost half of the users (48%) ordered publications between 2 and 4 times in the last year and the average turnaround time between ordering and receiving a publication was a little over two months (9.25 weeks). Almost half (43%) of the respondents indicated their willingness to pay an extra \$10 dollars per publication in order to insure delivery in less than three weeks. Many, however, indicated that they had in fact paid the extra \$10 only to have the publications delivered in longer than the promised time. Of those 25% who stated they would be willing to pay the extra \$10 on occasion, 65% indicated they would do so when urgent and 35% when affordable.

Frequency of Use in Last year

Once	16%
2-4 times	48%
5-9 times	19%
More than 10	17%

Turnaround time for last order

Less than 3 weeks	10%
3-6 weeks	25%
6-8 weeks	20%
3 months	21%
4-6 months	17%
More than six months	1%
Never received pu- blications ordered	6%

Willigness to pay \$10 extra for 3 week delivery

Yes	43%
No	32%
Sometimes	25%

## Usefulness of the information

There was a clear concensus on the part of the respondents on the usefulness of the information received through NTIS. The overwhelming majority (96%) felt the information had expanded their knowledge and almost three-fourths (74%) felt the documents had covered the range of information requested and the type of resources needed. Sixty-five percent felt their need had been filled by the information received. When asked whether the information had been furnished in a timely manner, 64% agreed that it had been, and 81% felt the cost was reasonable. There was less concensus (54%) on whether the respondents felt NTIS had technical information available in all fields that would be useful to them. Some respondents indicated their frustration at their lack of knowledge of the universe available from which they could draw. A typical response was: "I don't really know what they have, I imagine they might have anything I might need... but, I don't know." Sixty-one percent felt there was enough or sufficient technical specificity in the content of the materials.

<u>User Opinions on Usefulness of Information</u>	<u>Yes</u>	<u>No</u>
Information expanded your knowledge	96%	4%
Information covered the range of subjects or types of resources about which you requested information	74%	26%
The information met the need for which you ordered it	65%	35%
Information was provided in an efficient and timely manner	64%	36%
The cost of the publications is reasonable	81%	19%
Material is generally available on all of the topics which would be helpful to you	54%	46%

Technical specificity

More than desired	27%
Sufficient	61%
Less than desired	12%

The areas in which the respondents were currently ordering information coincided with the areas in which they would like to receive more information. See Table 3.

Table 3

Areas of Concentration and Need

	Currently Ordering	Need Additional Information
Agriculture and Rural Development	19%	12%
Construction Industry	14%	9%
Education	2%	3%
Energy	18%	12%
Environment	4%	9%
Health	7%	2%
Industry	17%	28%
Telecommunications	2%	2%
Transportation	4%	4%
Urban Development	4%	6%
Water Supply and Sanitation	9%	9%
Other		4%

Aspects Most/Least Liked

The NTIS aspect most liked by 34% of the respondents was the very availability of the service. The fact that the users felt the service could be counted on to provide up-to-date, applicable information on a wide range of technical areas, which could not otherwise be accessed, was valued highly. The next aspect most liked by 27% of the respondents was the content of the information, that is, the way the information was developed and presented, its specificity and in-depth coverage of the subject matter, and its exposition, precision, and clarity. The fact that the information was often viewed as state-of-the-art applications which were objective, practical and relevant was also mentioned as reasons for liking the content. The next aspect most often liked by 24% of the respondents was the variety, the breadth and the scope of the information encompassed by NTIS. Only 7% mentioned searches and bibliographic materials as valued aspects, indicating a lack of awareness on the part of the end-users of the range of services offered by NTIS beyond document retrieval and AMTID distribution.

NTIS aspects most liked

Availability	34%
Content	27%
Variety	24%
Reliability	8%
Searches	7%

The NTIS aspect least liked mentioned in 27% of the responses was the delay in receiving the documents as well as the ordering process itself. Many attributed the delays, not to NTIS, but to the local information center, citing numerous examples of excessive complications, paperwork, and instances where friends or colleagues in the States had been enlisted to act as intermediaries, thereby obviating the need for the distribution center's services. Since the latter procedure was generally felt to shorten the delivery time, it was cited as proof of cumbersomeness at the information center. A further complication was the practice of some information centers to request payment in advance, which in some instances conflicted with the rules and regulations of the organizations some respondents worked for. Where advance payment was not required, the problem with delays was further compounded by floating exchange rates which in two countries recently had doubled the delivery price of the documents ordered. While the data collected from the distribution centers did in fact corroborate in some instances excessively complex ordering procedures, it also appears that there is a reluctance on the part of end users to find fault directly with NTIS, since the service is highly valued.

One respondent expressed the sentiment of many: "We are now able to access bibliographic references almost instantaneously. We have databases. We have computers. There must be a way to access the documents themselves in less than two months..."

Another aspect least liked mentioned in 26% of the responses was the lack of access to tools, indexes, listings, catalogues, etc., that would enable the users to become familiar with the full range of NTIS documents and services. Many collected the AMTID Bulletins and referred to them as if they were the compendium of NTIS documents. Comments ranged from "One does not look into certain aspects because one does not know of their existence," to "I know I can obtain much more information, but I don't have the tools to know what there is."

The next least liked aspect mentioned in 19% of the responses referred to the content of the information. Respondents expressed a desire for more information, which included specific content on Latin America, or that was of specific applicability to Latin America. One respondent stated that, while the content expanded one's knowledge, it was hard to apply because of the difference in context from developed to less developed countries. However, one respondent cited an NTIS document from Costa Rica which went into great detail on local lore and history, which was irrelevant to the information presented. Many stated that the titles were deceptive, leading one to believe the document contained information it did not. Others stated that there was not enough critical thought contained in the documents, leaving gaps on the technology reported. In some instances, the information was felt to be too basic or superficial.

However, by far the most glaring discontent in this group was voiced over what was considered the obsolescence of many documents. Particularly many publicized in the AMTID bulletin. While only 5% of the responses on least liked aspects referred to the AMTID, these comments were succinct and to the point: "There is too little information in the indexes and abstracts to know what the document contains. Some documents are too specific and others are not specific enough to be useful." Another pertinent comment was: "The abstracts do not contain enough specific information. I ordered several documents on computer programming thinking they contained specific programs. When they arrived, I was disappointed," and "I ordered a document thinking it was underwater nets for fishing and found out it was on underwater nets to capture torpedos." Yet another comment stated: "I need a lot of information for my courses, but I can't afford to take a chance on NTIS documents because the abstracts are inadequate. I need to know for sure what I'll be getting."

Ten percent of the responses on least liked aspects referred to the legibility of the content. The most frequent complaint was of blurred or otherwise illegible pages. In many instances, respondents felt the reproduction of photographs was so poor it was impossible to perceive the significance of the phenomenon they were meant to depict. Also often mentioned as illegible were charts, graphs, and formulas. One respondent cited that the reproduction process had reduced a graph in unequal proportions lengthwise and crosswise, thereby destroying its usefulness. Another mentioned the inadequacy of the binding staples

to hold the publications together through the delivery process.

And finally, 9% of the responses on the least like aspect referred to the fact that the publications were not in Spanish, and 4% felt that the price was too high.

NTIS least liked aspects

Delay and ordering process	27%
Insufficient access tools	26%
Content	19%
Illegibility	10%
Language (not in Spanish)	9%
AMTID bulletin	5%
Price	4%

Utilization of the Information

Sixty-six percent of those interviewed stated that the material received had been read not only by them, but by others in their organization, and 65% indicated that the information had been deposited in a central file or library where various people could have access to them.

Who reads information received

No one	2%
Respondent	32%
Respondent and other people	66%

Disposition of information

Personal files	35%
Central files/library	65%

While it had been anticipated that a majority of end users would fall into the first three levels of the Utilization Hierarchy described in Section C, this did not prove to be the case. Respondents interviewed fell overwhelmingly into the applicative category (Levels 4, 5, 6 and 7) with 81% of all respondents actually putting the information received to a specific use. Table 4 gives a detailed breakdown of the

**Table 4**  
**UTILIZATION BREAKDOWN OF NTIS-SUPPLIED INFORMATION**  
**IN THE DOMINICAN REPUBLIC, MEXICO, COSTA RICA, COLOMBIA AND PERU**  
**(99 Respondents)**

7	Hands-on application of information	34%	A P P L I C A T I V E	81%
6	Information assimilated and transformed (applied research)	22%		
5	Information used to determine technical policies or standards	5%		
4	Information transferred through courses, as part of didactic material, or through papers, reports or speeches	20%		
3	Information read and circulated or incorporated in reference center or library	12%	R E F E R E N C I A L	19%
2	Information read and not used	5%		
1	Information received but not read	2%		

source: Original data collected by InterAmerica Research Associates, Inc., November, 1981 through May, 1982.

utilization of the information in the countries studied, indicating percentages by levels.

More than one-third of all respondents (34%) fell in Level 7, hands-on application of information, by far the largest group. This group comprised a wide range of operational applications in manufacturing and production. An analysis of the development implications of these applications is contained in Section E of this report. The Application Profiles Table (Table 10), gives a description of each utilization classified on this level. Twenty-two percent of all respondents fell into the next level (6), the applied research applications. This group of experimental and innovative applications is also detailed in the Application Profiles Table, and conclusions on development impact are contained in Section E. The next level (5) comprised 5% of all respondents and represented the utilizations which addressed the setting of technical policies or standards at the national, industrial, or company level. A listing of those applications which fell in this level is also outlined in Table 10. Level 4, which comprised 20% of all respondents, included all those applications in which information was transferred, without necessarily being either assimilated or transformed into new knowledge or technologies, through classes, courses or seminars; or through papers, reports, documents or in speeches. These four levels comprise the applicative utilizations of information, and collectively represent 81% of all respondents.

Levels 1 to 3 on the Utilization Hierarchy comprise the referential uses of information and collectively represent 19% of all respondents.

Twelve percent fell in Level 3, where the information received is read and circulated or incorporated in reference centers or libraries. While this information had not yet been acted upon, it was gathered by the respondent with a specific use or purpose in mind. Level 2 comprised 5% of all respondents and represented those end users which had received and read the information, but did not have a specific use or purpose in mind for accessing it. And finally, Level 1, represents those end users which had received the information but had not read it nor put it to use. Interestingly, in no case was the information received and discarded. Those users which had not read the information (only 2%), fully intended to read it as soon as they were able to. For this reason (the fact that the information had not been discarded), Level 1 was included in the referential category, since the information received was, in fact, available for reference to the respondent at a minimum.

In nine instances the respondents interviewed described more than one application. In these instances, each application was graded according to the levels described, and the highest level reached was used for coding each interview in the Utilization Hierarchy, as well as for depicting the applications.

There were no significant variations from country to country in the overall applicative and referential categories. On the lower end of the scale, Colombia had 75% of the responses in the applicative category, and Peru had 86% on the higher end of the scale, followed by

Table 5  
 UTILIZATION BREAKDOWN OF NTIS-SUPPLIED INFORMATION  
 IN THE DOMINICAN REPUBLIC  
 (18 Respondents)

7	Hands-on application of information	50%	A P P L I C A T I V E	84%
	Information assimilated and transformed (applied research)	17%		
5	Information used to determine technical policies or standards	17%		
4	Information transferred through courses, as part of didactic material, or through papers, reports or speeches	None		
3	Information read and circulated or incorporated in reference center or library	5%	R E F E R E N C I A L	16%
2	Information read and not used	11%		
	Information received but not read	None		

Source: Original data collected by InterAmerica Research Associates, Inc., November, 1981.

Table 6  
 UTILIZATION BREAKDOWN OF NTIS-SUPPLIED INFORMATION  
 IN COSTA RICA  
 (20 Respondents)

7	Hands-on application of information	40%	A P P L I C A T I V E	80%
6	Information assimilated and transformed (applied research)	15%		
5	Information used to determine technical policies or standards	5%		
4	Information transferred through courses, as part of didactic material, or through papers, reports or speeches	20%		
3	Information read and circulated or incorporated in reference center or library	20%	R E F E R E N T I A L	20%
2	Information read and not used	None		
1	Information received but not read	None		

Source: Original data collected by InterAmerica Research Associates, Inc., January - February, 1982.

Table 7  
 UTILIZATION BREAKDOWN OF NTIS-SUPPLIED INFORMATION  
 IN MEXICO

(22 Respondents)

7	Hands-on application of information	22%	A P P L I C A T I V E	81%
6	Information assimilated and transformed (applied research)	18%		
5	Information used to determine technical policies or standards	5%		
4	Information transferred through courses, as part of didactic material, or through papers, reports or speeches	36%		
3	Information read and circulated or incorporated in reference center or library	14%	R E F E R E N C I A L	19%
2	Information read and not used	5%		
	Information received but not read	None		

Source: Original data collected by InterAmerica Research Associates, Inc., February, 1982.

Table 8  
 UTILIZATION BREAKDOWN OF NTIS-SUPPLIED INFORMATION  
 IN PERU  
 (15 Respondents)

7	Hands-on application of information	20%	A P P L I C A T I V E	86%
6	Information assimilated and transformed (applied research)	33%		
5	Information used to determine technical policies or standards	None		
4	Information transferred through courses, as part of didactic material, or through papers, reports or speeches	33%		
3	Information read and circulated or incorporated in reference center or library	7%	R E F E R E N C I A L	14%
2	Information read and not used	None		
	Information received but not read	7%		

Source: Original data collected by InterAmerica Research Associates, Inc., April, 1982.

Table 9

UTILIZATION BREAKDOWN OF NTIS-SUPPLIED INFORMATION  
IN COLOMBIA

(24 Respondents)

7	Hands-on application of information	33%	A P P L I C A T I V E	75%
6	Information assimilated and transformed (applied research)	29%		
5	Information used to determine technical policies or standards	None		
4	Information transferred through courses, as part of didactic material, or through papers, reports or speeches	13%		
3	Information read and circulated or incorporated in reference center or library	13%	R E F E R E N C I A L	25%
2	Information read and not used	8%		
	Information received but not read	4%		

Source: Original data collected by InterAmerica Research Associates, Inc., May, 1982.

the Dominican Republic with 84%, Mexico with 81%, and Costa Rica with 80%. However, there were wider variations from country to country on individual levels. The Dominican Republic had the highest percentage in Level 7 (50%), followed by Costa Rica with 40%, Colombia with 33%, Mexico with 22%, and Peru with 20%. On Level 6, Peru had the highest percentage (33%), followed by Colombia with 29%, Mexico with 18%, the Dominican Republic with 17%, and Costa Rica with 15%. On Level 5, the Dominican Republic was on the higher end of the scale with 17%, Costa Rica and Mexico both with 5% each, and Peru and Colombia having no respondents in this category. On Level 3, Costa Rica had the highest responses (20%), followed by Mexico with 14%, Colombia with 13%, Peru with 7%, and the Dominican Republic with 5%. On Level 2, the Dominican Republic had the highest respondents (11%), followed by Colombia with 8%, Mexico with 5%, and Peru and Costa Rica with none. And lastly, on Level 1, Peru and Colombia accounted for the total number of responses, the former at 7% and the latter at 4%.

Of the nine applications which were "bumped" or superceded by applications in higher levels, seven represented applications on Level 5, information used to determine technical policies or standards, and the other two represented applications on Level 6, applied research. This explains in part the low overall responses on Level 5 (5%). If we were to take utilizations as a percentage of total applications identified, instead of as a percentage of total end users interviewed, Level 5 would represent 11% of all applications. However, the overall applicative category would not fluctuate much since this rate would then come out at 82%, instead of 81%.

Of those end users who reported applications classified on Level 4, 40% felt the NTIS information had been of primary importance in their activities, and 60% felt the NTIS information had been of secondary importance. Of those users whose applications fell on Level 5, only 20% felt the NTIS information had been of primary importance. However, a majority of the respondents on Level 6 (55%) and 7 (67%) felt the information had been of primary importance.

Importance of NTIS Information

	<u>Primary Importance</u>	<u>Secondary Importance</u>
Level 4 Information transferred in reports, courses, talks, etc.	40%	60%
Level 5 Information used to set technical policies or standards	20%	80%
Level 6 Information used in applied research	55%	45%
Level 7 Hands-on applications	67%	33%

Specific recommendations which have been formulated and reviewed together with appropriate AID and NTIS officials are: (1) That the

## Application Profiles

Although Level 4 is part of the applicative category, application profiles were not developed for each individual utilization in this group since in all instances they represented information which had been transferred in the course of seminars, reports or talks, and it would have been necessary to interview those who had attended the seminars, read the reports, or heard the talks, in order to establish a casual link to specific applications beyond the transference itself. Table 10 indicates the specific applications each respondent detailed for Levels 5, 6 and 7. In each instance, an attempt was made to gather enough information about each specific application to develop case study application profiles. While considerable information was gathered on each application in order to classify it, the application profiles can only be considered just that, profiles and not detailed descriptions of technical processes.

The five cases in Level 5 (information used to determine technical policies or standards) have three applications relating to water quality control reflecting the strong emphasis shown throughout the upper levels of the Utilization Hierarchy for environmental issues. At the next level (information assimilated and transformed, Level 6), all but seven of the applications deal with resource utilization (water, solar energy, food production, and natural building materials). Energy applications are especially prevalent (six) in this resource area, followed by food production applications (four).

Table 10

APPLICATION PROFILES BY LEVELS IN THE INFORMATION UTILIZATION HIERARCHY

<u>Level 5</u> Determining technical possibilities or standards	 <ul style="list-style-type: none"><li>Instrument specification for petroleum refining</li><li>Subject classification/accounting standards</li><li>National policies on water pollution</li><li>Water quality standards for distilling</li><li>National policies on agricultural irrigation</li></ul>
<u>Level 6</u> Assimilated and transformed (applied research)	<ul style="list-style-type: none"><li>Alcohol distillation from wood</li><li>Aquaculture project development</li><li>Harnessing solar energy to pre-heat concrete</li><li>Manufacture of stainless steel flatware</li><li>Software implementation system</li><li>Building pre-fabricated homes</li><li>Building solar homes</li><li>Effect of sediment on turbine wear</li><li>Use of bamboo in small scale construction</li><li>Growth and reproduction of ocean crayfish</li><li>Industry development of glass wool</li><li>Design and development of fishing nets</li><li>Hydroelectric generation from waves</li><li>Microwave oven use for biomass transformation</li><li>Water deflection in river control programs</li><li>Home construction with earth building materials</li><li>Development of training programs for small entrepreneurs</li><li>Manufacture of methane gas using anaerobic filtration</li><li>Solar energy collector design</li><li>Experimental application of wind/solar energy design</li><li>Design new products for electrical company</li><li>Manufacturing process to produce glucose from starch</li></ul>

APPLICATION PROFILES BY LEVELS IN THE INFORMATION UTILIZATION HIERARCHY

(Cont')

Level 7

Hands-on  
application of  
information

Time/motion application in clothing industry  
Plant lay-out and design  
Electrostatic painting process  
Marketing agro-industrial products  
Photo interpretation of remote sensing data  
Boiler operation for treatment of concrete  
Ground stabilization for asphaltting  
Prevention of metal corrosion  
Satellite telecommunications for radio broadcasting  
Port utilization for loading and unloading freight  
Food production and distribution systems  
Strategic planning for commercial development/technology control  
Climatological applications to housing construction  
Fuse manufacture  
Alcohol production from wood  
Watershed management in river basins  
Contaminant control for water purification and solvent recuperation  
Watershed management for erosion and sediment control  
Water hyacinth use in water purification  
Raw materials manufacture of plastics  
Factors affecting aquaduct construction  
Multivariate analysis in statistical applications  
Use of ash in construction materials  
Manufacture of antibiotics  
Manufacture of food products  
Shrimp production  
Water distillation for fish farming  
Boiler installation  
Operating procedures for power boilers  
Animal feed production  
Publication of pharmaceuticals  
Renewable energy production of efficient burning wood

The use of materials in building infrastructure is also important in this category (six applications).

Since Level 6 deals with technological applications which have been assimilated or used in research, it is clear that the end-users of NTIS information in Latin America show strong interest in the systematic application of relevant technologies to solving energy, infrastructure, and food production problems. This is clearly borne out in the next and highest category in the hierarchy (hands-on application of information, Level 7) where 34% of the respondents gave examples of specific applications. A large number of them were related to water resource utilization and control (six). A significant number were applicable to energy conservation and resource development (four), and to food production (four). Manufacturing processes and heavy machinery operation were also found among the group of applications at this level, as well as marketing/transportation and electronic applications.

#### Spanish-language Materials

Since one of the alternatives NTIS has been pursuing in order to augment its holdings in Spanish has been that of introducing extant Spanish-language materials into its database, the respondents were asked whether they knew of any such technical materials, in the public domain, which would be useful to share with other Latin American institutions and colleagues. Forty-three percent said they did know

of such materials, but the majority (57%) said they knew of none. Interestingly, almost three-fourths (74%) indicated they did not know they could in fact introduce materials into the NTIS database and almost everyone (98%) said they would be willing to recommend materials for inclusion.

## AMTID

Since AMTID is the primary dissemination vehicle for publicizing NTIS documents, and since all respondents were contacted through the local information centers, the fact that only 60% of all respondents interviewed were regularly receiving the AMTID bulletins is indicative of the uneven outreach activities undertaken in the region. It would appear that often the AMTID bulletins are sent to intermediaries who do not consistently bring them to the attention of the end users themselves. In fact, in the course of setting up the interviews, particularly in the larger countries (Mexico and Colombia), the initial interview was often with an intermediary, despite telephone requests for appointments directly with the end users. In those instances, follow-up interviews had to be rescheduled.

Of those receiving the AMTID regularly, 84% stated they read each issue, further corroborating the usefulness and importance of the AMTID bulletins. Only 4% stated they barely used them and 12% indicated they read them occasionally.

When asked how valuable they thought the AMTID bulletins were, all responses indicated the end users felt the AMTID was very valuable to them. Fifty-two percent of the responses indicated AMTID was a key resource in keeping abreast of the latest information in their field of interest. An additional 10% of the responses felt it kept them informed of developments in fields other than their own. The balance

of the responses indicated that while they thought the AMTID bulletins were very valuable, they had not found much new to order lately (2%), there was not enough coverage in their field of interest (8%), the abstracts left something to be desired (4%), and some of the information was obsolete (8%), or, on occasion, too generic (8%). Some also complained of lack of regularity in the reception of the AMTID (8%).

#### Other Sources of Technical Information

When asked what other sources of technical information they used, 37% referred to technical books, magazines and periodicals; 20% utilized other technical information services such as the British Lending Library, Chem Abstracts and the National Institute of Health, several respondents mentioned the Soviet technical information service; 19% referred to research institutions and international organizations such as UNIDO and FAO; 13% relied on institutional libraries, and 11% utilized manufacturers and other commercial sources for technical information.

#### Other sources of technical information

Technical books and magazines	37%
Other information services	20%
Research Institutes and International Organizations	19%
Libraries	13%
Manufacturers and commercial sources	11%

When asked to compare NTIS publications to those received from other sources, 30% rated NTIS better than others, 50% felt they were about the same, 17% felt they were not as good, and 3% did not feel it was possible to draw a comparison. Those that thought the NTIS publications were better or not as good were asked to share their views, and 33% of those responding stated that they thought the NTIS publications were better because of their in-depth coverage of issues. An additional 15% of those responding felt NTIS information was more up-to-date, often representing state-of-the-art advances in technologies. However, 35% of the responses stated that they felt the NTIS publications were not as specific nor as specialized as some of the other information available to them. Another 8% felt the presentation was not as good, 5% felt the information was complementary, and 4% felt the NTIS information they had received was either obsolete or too basic to be useful.

#### Technical Information Needs

And finally, when respondents were asked what type of information, if they could access any type of technical information, would be most useful to them or to their organizations, some thoughtful responses indicated unmet needs in areas in which NTIS information can provide assistance, and some needs that are well outside of the system's ability to fill. Foremost among the former was an urgent need for information on management skills, theory, and application, as well as

for management training, which falls into the latter instance. The need for management know-how, including research management and strategic planning, was a recurring thread in interviews in all five countries. Comments ranged from "Our problem is how to determine which are the real administrative problems which interfere with our development programs. We need good methodology to determine where the problems lie." To, "We need business testimonials, experiences, case studies, testimonial proof of successes and failures." And, "It is very difficult to find someone who has survived a project and has then written up his management experience." And even more succinctly, "The biggest problem we face is the problem of management."

Another recurring theme was the need for linkages between what someone may be implementing or investigating, what is on-going in that field, and where this is all leading to (new directions, new technologies), especially as this knowledge or awareness relates specifically to Latin America. Implicit in this linkage need is an unstated awareness of the important role technology transfer can play between countries in the region, as well as a desire to benefit from the trials and experiences of similar others grappling with the same technological issues or problems. Another theme, calling for evaluations of different technologies in light of Latin American constraints and opportunities, can be placed on the linkage continuum as an unmet need, after the knowledge or awareness has been arrived at.

Yet another theme was the need for specifications and industrial standards for plant manufacturing processes. The call for up-to-date information on plant requirements and plant lay-outs was often accompanied by criticism of the information in the NTIS data bank, publicized in the AMTID bulletin, and of 1950 vintage. A component of this theme was the need for information and training in equipment maintenance, as well as for production systems and quality control procedures. A related theme addressed the need for computer programs and software systems appropriate to the region.

The agroindustrial theme voiced by respondents called for more information on the processing and marketing of agricultural products and by-products, as well as an urgent need for information and technologies on recycling wastes.

While the NTIS systems was neither designed nor should be expected to meet or address most of the needs expressed, an awareness of them can assist the information distributors and program planners in their task.

## E. CONCLUSIONS AND RECOMMENDATIONS

The ability to make technological choices, to adapt and improve upon chosen techniques and products, and eventually to generate new technology, are essential aspects of the development process which are evidenced in the application profiles of the utilization of scientific and technical information supplied by NTIS in the five countries studied.

These applications are far-reaching and indicate a strong trend towards adaptive transfers of technology. They run the gamut from responding to scarcity situations in the allocation of natural and energy resources, to a preoccupation with developing underexploited food sources (fisheries), and expanding food production capabilities, to experimental development of infrastructure. Also evidenced is a preoccupation with environmental control issues especially as they pertain to water pollution control in industrial applications and watershed management.

The large number of applications (six) in the applied research category relating to nontraditional energy technologies (solar and wind) corroborates the trend evidenced towards adaptive technology in the face of scarcity. In infrastructure development, this trend is also present and the emphasis on the use of natural building materials (bamboo, soil cement, ashes) for prefabricated housing units and other construction points towards the generation of new endogenous technologies.

In the area of management and training, the trend evidenced was for the development and implementation of more rigorous management systems and procedures, including strategic planning for commercial development and technology control, development of training programs for small entrepreneurs, and software implementation systems, each of these as adapted to the needs and constraints of the contexts in which they were to be applied.

It is in the industrial and health applications where we find the more traditional utilizations of technical information including time and motion applications, electrostatic painting processes, manufacture of stainless steel flatware and antibiotics, and boiler installations. However, even among this group, innovative technologies are evidenced, such as in the development of glass wool and experimental technologies for alcohol distillation from wood, and for the manufacture of plastics.

Thus, the major conclusion which is drawn from the evaluation of the utilization of NTIS-supplied scientific and technical information is that the exceptionally high utilization rate (81%), and the specific uses to which it is applied, demonstrate the significant actual and potential contribution of the information towards technological capacity building, and, therefore, towards development in Latin America. This conclusion is supported by the views expressed by end users, who value the availability of the information highly, as well as the expansive, in depth-coverage of subject areas, and the breadth and scope of information that can be accessed. It is also

corroborated by the fact that the majority of end users, whose applications fell into Levels 6 and 7 of the Utilization Hierarchy (applied research and hands-on applications), considered the NTIS information to have been of primary importance in their applications. As well as by the fact that 66% of the respondents indicated the NTIS material was read by more than one person, and that 65% indicated the materials was subsequently deposited in a central file or library where various people could have access to it.

The principal recommendation of the study is that the NTIS network should continue to receive the support it requires, and that streamlining and strengthening in two major areas would significantly improve the service and expand its coverage. The first of these areas is the ordering process, and the second is the outreach activities.

From data gathered, both from end-users and staff of the distribution centers, it was found that very little active promoting of NTIS publications or services takes place beyond the AMTID bulletins. On the average, there is only about one full time person in each distribution center devoted to NTIS related activities, including time devoted to processing orders as well as outreach. Users expressed frustration in not knowing what the universe from which they could draw included, and there was practically no awareness of the range of NTIS services. Users expressed dissatisfaction with delays in receiving the documents, and with other aspects of the ordering process.

Specific recommendations which have been formulated and reviewed together with appropriate AID and NTIS officials are: (1) That the staff of the distribution centers, whose time is currently spent processing orders, be employed promoting NTIS services and documents, and that a system be designed which permits end users to order the publications directly from NTIS. This system could be patterned after the one successfully employed in Latin America by the British Lending Library; and UNESCO coupons, which are already accepted by NTIS, could be used to effect payment. And, (2) That the NTIS-designated distribution centers be significantly increased in number to cover more cities in a given country and more locations within large cities.

A final recommendation concerns the AMTID bulletin. While it is clearly a valued and important source for knowledge of available technical information in the region, as well as practically the only institutionalized outreach activity, the recurring, unsolicited comments on improvements it received, suggest the advisability of format and/or content changes. An AMTID-specific evaluation is recommended to yield data for the determination of specific improvements and changes to enhance and expand its distribution and utilization.

A major goal of this evaluation has been to contribute towards a more solid understanding of the usefulness of information services. The accumulation of technological capacity is at least as important to economic development as the accumulation of capital, and this

capacity, in turn, is critically dependent on access to scientific and technical information, the primary objective of the NTIS network. The data collected in the course of this study demonstrates the significant role information services and international institutions can play in the transfer of technology in the developing world, by assisting in information collection and diffusion.

INFORMACION SOBRE EL USUARIO

Razón social \_\_\_\_\_

Dirección \_\_\_\_\_

Teléfono \_\_\_\_\_

Nombre de la persona entrevistada \_\_\_\_\_

OBSERVACIONES

.. REACCION A LA INFORMACION PROPORCIONADA

Favor de indicar la respuesta que mejor corresponde a su punto de vista sobre la información proporcionada por el Centro de Información

- |   |   |   |   |   |
|---|---|---|---|---|
| 1. La información abarcó la gama de tópicos y recursos sobre los cuales ud. solicitó información. | 1 | 2 | 3 | 4 |
| 2. La información cubrió sus necesidades  | 1 | 2 | 3 | 4 |
| 3. La información amplió su conocimiento de los recursos disponibles                              | 1 | 2 | 3 | 4 |
| 4. La información le fue proporcionada eficazmente y a tiempo                                     | 1 | 2 | 3 | 4 |

II. PLANIFICANDO PARA EL FUTURO

5. ¿Qué es lo que mas le gusta del Centro de Información?

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6. ¿Qué es lo que menos le gusta del Centro de Información?

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7. Nos interesa saber mas sobre sus necesidades de información. Nos quisiera indicar cinco tópicos o áreas en las cuales usted cree que hay necesidades críticas de información.

(1) \_\_\_\_\_

(2) \_\_\_\_\_

(3) \_\_\_\_\_

(4) \_\_\_\_\_

(5) \_\_\_\_\_

III.. UTILIZACION DE LA INFORMACION PROPORCIONADA

Al contestar las siguientes preguntas, le suplicamos piense en una solicitud de información que haya usted hecho en los últimos seis meses.

8. ¿Cómo usó la información recibida?

- (1) La información no fue leída.
- (2) Sirvió como referencia general
- (3) Fue usada para desarrollar un plan de proyecto
- (4) Fue fundamental para el desarrollo del proyecto, pero el proyecto no ha sido puesto en marcha
- (5) El proyecto ha sido terminado.

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9. ¿Cómo fue que usted se dió cuenta de la necesidad de esta información?

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10. ¿Qué tan apropiada fue la información recibida?

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11. ¿Por qué fue que solicitó usted la información del Centro y no de otra fuente?

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12. Si utilizó otra información además de la proporcionada por el Centro ¿podría decirnos qué grado de utilidad (en términos relativos representó la información recibida del Centro?

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COMENTARIOS ADICIONALES

## NTIS/AID EVALUACION DE IMPACTO

## Introducción

NOMBRE DEL SOLICITANTE: \_\_\_\_\_

ORGANIZACION: \_\_\_\_\_

DIRECCION: \_\_\_\_\_  
\_\_\_\_\_

TELEFONO: \_\_\_\_\_

Mi nombre es \_\_\_\_\_ . Estoy llamando del  
 \_\_\_\_\_ (centro) en \_\_\_\_\_ (localización).

1. Nuestros archivos indican que usted o su organización han solicitado una o más publicaciones del NTIS. ¿Es así?

(1) Sí (PASAR A LA P.2)

(2) No (TERMINAR LA ENTREVISTA)

(3) No sé (SOLICITAR HABLAR CON QUIEN PUDIERA SABER Y REPETIR LA INTRODUCCION)

2. ¿Fue usted el usuario de la información, es decir el que la usó? ¿o la solicitó usted para alguien más en su organización?

(1) El entrevistado la solicitó para sí mismo (PASAR INFORMACION NECESARIA AL REGISTRO DE VISITAS, LEERLE LA DESCRIPCION DEL ESTUDIO Y CONCERTAR CITA PARA LA ENTREVISTA)

(2) El entrevistado solicitó la información para alguien más (PASAR A LA P.3)

3. ¿Para quién solicitó usted la información? ¿Cómo puedo localizarlo(a)?

NOMBRE DEL USUARIO: \_\_\_\_\_

CARGO: \_\_\_\_\_

TELEFONO: \_\_\_\_\_

PASAR LA INFORMACION AL REGISTRO DE VISITAS, LEERLE POR TELEFONO LA INTRODUCCION Y LA DESCRIPCION DEL ESTUDIO Y CONCERTAR CITA PARA LA ENTREVISTA.

## NTIS/AID EVALUACION DE IMPACTO

Registro de Visitas

CALL RECORD SHEET

I. NOMBRE DEL USUARIO: \_\_\_\_\_

II. CARGO: \_\_\_\_\_

III. ORGANIZACION: \_\_\_\_\_

IV. DIRECCION: \_\_\_\_\_

V. TELEFONO: \_\_\_\_\_

MI nombre es \_\_\_\_\_ en \_\_\_\_\_ (localización).

Estamos colaborando con una organización en Estados Unidos que está llevando a cabo una evaluación de la red de distribución latinoamericana del Servicio Nacional de Información Técnica de los Estados Unidos, comúnmente conocido como NTIS. NTIS es un servicio de información que distribuye información y materiales técnicos a solicitud de individuos u organizaciones. Estamos interesados en saber más sobre los usos y los fines que sirve la información distribuida, si los usuarios están satisfechos con la información y recabar sugerencias sobre mejoras en el servicio.

Una persona de Washington, D.C., \_\_\_\_\_ (nombre), se encuentra aquí en estas fechas y desearía entrevistarse con usted durante unos 45 minutos para charlar sobre sus experiencias e impresiones de las publicaciones NTIS. ¿Cuándo sería posible que usted se entrevistara con el(ella)? (CONCORDAR FECHA Y HORA, CERCORARSE DE LA DIRECCION CORRECTA Y PEDIR INDICACIONES SI ES NECESARIO -- APUNTANDOLAS EN EL REVERSO DE ESTA HOJA. DEJAR NUMERO DE TELEFONO PARA QUE LLAMEN SI HUBIESE ALGUN CAMBIO.)

CONTACTO	FECHA	HORA	ENTREVISTADOR	RESULTADOS
1				
2				
3				
4				

C = Se concertó cita  
 N = No hubo respuesta  
 X = Se concluyó la entrevista  
 F = La persona no cumplió con su cita

V = La persona indicada está de vacaciones  
 E = La persona indicada está enferma  
 L = No se localizó a la persona indicada  
 M = El entrevistado no ha utilizado materiales NTIS (inadecuado)

## NTIS/AID EVALUACION DE IMPACTO

Usuarios

INTERVIEW GUIDE

RAZON SOCIAL: \_\_\_\_\_

- CIRCULE UNO:
- (1) Agencia gubernamental (departamentos y ministerios)
  - (2) Agencia gubernamental (descentralizada)
  - (3) Organización comunitaria
  - (4) Pequeña empresa
  - (5) Otro ESPECIFICAR \_\_\_\_\_

Mi nombre es \_\_\_\_\_ . Soy miembro de InterAmerica Research Associates, una compañía en Washington, D.C. que lleva a cabo investigaciones. Como le mencionó la persona que le llamó del centro \_\_\_\_\_, estamos llevando a cabo un estudio para evaluar el impacto de la red de distribución latinoamericana del Servicio Nacional de Información Técnica de los Estados Unidos, comúnmente conocido como NTIS. Como usted sabe, NTIS es un servicio de información que distribuye información o materiales técnicos a solicitud de individuos y organizaciones. Estamos interesados en saber más sobre los usos y los fines que sirve la información, así como la satisfacción de los usuarios con la información recibida. También deseamos recabar sugerencias de los usuarios sobre posibles mejoras en el servicio.

1. Para comenzar ¿me puede usted decir a qué se dedica su compañía/organización?  
(SONDEAR PARA DETERMINAR EL PROPOSITO O RESPONSABILIDAD PRINCIPAL DEL NEGOCIO  
O AGENCIA GUBERNAMENTAL)

CIRCULE UNO:

- |                                    |  |
|------------------------------------|--|
| (1) Agricultura y desarrollo rural | (8) Población                            |
| (2) Industria de la construcción   | (9) Telecomunicaciones                   |
| (3) Educación                      | (10) Turismo                             |
| (4) Energía                        | (11) Transporte                          |
| (5) Medio Ambiente                 | (12) Desarrollo urbano                   |
| (6) Salud                          | (13) Abastecimiento de agua y salubridad |
| (7) Industria                      | (14) Otro _____                          |

2. ¿Cuántas personas trabajan para esta empresa/organización?

3. ¿Solicitó usted las publicaciones para uso personal o como parte de su trabajo?

- (1) Uso personal
- (2) Parte de su trabajo

4. ¿Cómo fué que se enteró de la existencia de las publicaciones NTIS?

- (1) Boletín NTIS/AMTID
- (2) Boletín del centro
- (3) A través de contacto directo con el centro -- visitas, actividades de promoción, etc.
- (4) Por indicaciones de colegas, amigos, etc.
- (5) A través de anuncios en periódicos, revistas, publicaciones profesionales, etc.
- (6) Biblioteca
- (7) Otro ESPECIFICAR \_\_\_\_\_

5. En el último año, ¿cuántas veces ha solicitado usted publicaciones NTIS?

- (1) Nunca (TERMINAR LA ENTREVISTA)
- (2) Una vez
- (3) 2-4 veces
- (4) 5-9 veces
- (5) 10 o más veces

6. La última vez que usted solicitó una publicación NTIS, ¿cuánto tiempo tomó desde el día en que usted hizo la solicitud hasta el día que le llegó la publicación?

- (1) Menos de 3 semanas
- (2) 3-6 semanas
- (3) 6 semanas a 2 meses
- (4) Unos 3 meses
- (5) 4-6 meses
- (6) Mas de 6 meses
- (7) Nunca la recibió

7. ¿Estaría usted dispuestos a pagar unos diez dólares más por publicación si la pudiera usted recibir en 3 semanas?

(1) Sí (PASAR A LA P.8)

(2) No

(3) Algunas veces

7a. ¿Por qué? ¿Cuándo?

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8. En general ¿diría usted que está de acuerdo o en desacuerdo con las siguientes aseveraciones sobre las publicaciones de NTIS? :

	<u>De acuerdo</u>	<u>En desacuerdo</u>
a. La información NTIS fué proporcionada de una manera oportuna	(1)	(2)
b. La información cubrió la gama y los tipos de recursos sobre los cuales usted solicitó información	(1)	(2)
c. La información amplió sus conocimientos	(1)	(2)
d. El costo de las publicaciones es razonable	(1)	(2)
e. En general, la información que usted recibió llenó la necesidad para la cual usted la solicitó	(1)	(2)
f. Hay material disponible sobre todos los temas técnicos que le serían de utilidad a usted	(1)	(2)

9. ¿Piensa usted que la información o materiales que usted ha recibido de NTIS han sido más específicos técnicamente de lo deseado, lo suficientemente específicos, o no tan específicos como se hubiera deseado?

(1) Más específicos técnicamente de lo deseado

(2) Lo suficientemente específicos

(3) Menos específicos de lo deseado

10. ¿Qué es lo que más le gusta de NTIS?

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11. ¿Qué es lo que menos le gusta, o qué cambiaría usted de NTIS?

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12. En los últimos años ¿en qué áreas o temas ha solicitado usted información de NTIS?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

13. En general, ¿diría usted que las publicaciones que usted recibe de NTIS son guardadas sin leer, son leídas solamente por usted, o son compartidas y leídas por varias personas en su organización?

- (1) no son leídas
- (2) leídas sólo por el solicitante
- (3) leídas por varias personas

14. Cuando usted termina con una publicación NTIS, ¿la guarda en sus archivos personales para algún uso futuro, pasa a formar parte de un centro de referencia o biblioteca, o tiene algún otro destino?

- (1) se guarda en archivos personales para algún uso futuro
- (2) pasa a formar parte de un centro de referencia o biblioteca
- (3) otro ESPECIFICAR \_\_\_\_\_









20. Estamos interesados en conocer más sobre las necesidades actuales de información para que se pueda mejorar el sistema NTIS. En su área de concentración ¿en qué temas cree usted que se necesiten materiales e información?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

21. ¿Sabe usted de algún material o información disponible en español -- que no sean de editoriales o casas comerciales -- que piensa usted sería bueno incluir en el banco de datos NTIS?

- (1) Sí
- (2) No

22. Es posible incluir material que no sea propiedad de alguna casa comercial en el banco de datos NTIS. ¿Sabía usted esto?

- (1) Sí
- (2) No

23. Si usted supiera de materiales o información que usted pensara fueran una buena adición al banco de datos NTIS ¿los sometería al NTIS con una recomendación para su inclusión?

- (1) Sí (SALTAR A LA P.24)
- (2) No

23a. (SI LA CONTESTACION ES NO) ¿Por qué no?

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24. ¿Que otras fuentes de información técnica utiliza usted?

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25. ¿Diría usted que las publicaciones que recibe usted del NTIS son en general mejor, igual o no tan buenas como las recibidas de otras fuentes?

- (1) Generalmente mejores
- (2) Mas o menos igual (SALTAR A LA P.26)
- (3) No tan buenas
- (4) No he recibido otras (SALTAR A LA P.26)

25a. (SI GENERALMENTE MEJOR O NO TAN BUENAS) ¿Por qué cree usted que son (generalmente mejores/no tan buenas)?

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26. ¿Qué mejoras o cambios cree usted que podría hacer el NTIS para mejorar su servicio y la utilidad de sus materiales para su organización?

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(SALTAR A LA P.27 SI LAS MEJORIAS SUGERIDAS NO COSTARIAN DINERO.)

26a. ¿Estaría usted dispuesto a pagar más por las publicaciones para cubrir el monto de las mejoras sugeridas?

- (1) Sí (SALTAR A LA P.27)
- (2) No
- (3) Algunas veces (SALTAR A LA P.27)

26b. (SI LA CONTESTACION ES NO) ¿Por qué no?

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27. ¿Recibe usted actualmente una subscripción al boletín AMTID, un boletín bimensual publicado por el NTIS y distribuido por el centro \_\_\_\_\_

(1) Sí

(2) No (SALTAR A LA P.28)

27a. (SI LA CONTESTACION ES SI) ¿Diría usted que usa o lee cada número que recibe, que los lee ocasionalmente, o que casi no los utiliza?

(1) Usa o lee cada número

(2) Ocasionalmente

(3) Casi no los utiliza

27b. En general, ¿qué tan valioso cree usted que es el boletín AMTID?

28. Por último ..... Haciendo a un lado todo lo que hemos hablado, qué clase de información -- si usted pudiera tener acceso a cualquier tipo de información técnica -- sería la de más utilidad para usted o para su organización?  
(SONDEAR: ¿Qué información técnica sería la más útil para usted?)

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NTIS/AID IMPACT ASSESSMENT PROJECT  
INTERVIEWER INSTRUCTIONS

Interview Appointments

Upon your arrival in each country, a person from the Information Center will have to make calls to individuals that have ordered NTIS publications at least six months before your visit. They will have to determine that an NTIS publication was actually ordered, determine the end-user, and set up interview appointments for you.

For each person to be interviewed, you will receive a Call Record Sheet. Unless the appointment was made the day before, you should call to re-confirm each appointment. These brief calls can save you hours of needless driving, waiting and frustration due to broken appointments and make your valuable time in each country optimally spent.

The person from the Information Center who arranged the interview will have kept a log of all contacts with the respondents in section VI of the Call Record Sheet. You should continue this log, indicating when the interview is completed. You may use the abbreviations provided when applicable. This record-keeping is invaluable at the end of the data collection in tracking what happened to each identified end-user.

In the right-hand upper corner of the Call Record Sheet make certain that the appropriate country name is entered. Also, make certain that the user identifying information is complete and accurate and obtain any missing information. Do not fill in the blank next to Interview No. This will be filled out by the data analyst at a later time.

### Conducting the Interview

Interviews shall be conducted in-person by the interviewer alone with the designated respondent, the end-user of the NTIS publication. Having other persons present during the interview lessens the rapport that can be established and studies have shown that the presence of other people during an interview alters respondents' answers.

Before leaving to conduct the interview, attach the Call Record Sheet by staple, not paper clip (they come off too easily), to a questionnaire so they do not become separated. Indicate the name of the organization from the Call Record Sheet at the top of the questionnaire and circle the appropriate organization type. If unsure, circle other and explain their function in the space provided.

At the beginning of the interview, re-explain who you are and the nature and purpose of the study. Then immediately begin asking the questions. Following are techniques to keep in mind while you are conducting these executive interviews:

1. Know the questions well and be able to ask them smoothly and in a non-judgemental manner. In an executive interviewing situation it is important to make the respondent feel he is participating in a smooth-flowing discussion, not an inquisition.

2. Ask the questions as they are worded in the interview schedule. Changes in wording produce changes in responses.

3. Ask the questions in the order they appear on the interview schedule (or as the routing indicates) as there are reasons for the order.

4. Study the skip patterns carefully so that only applicable questions are asked each respondent.

5. Read the questions slowly in order to maximize the respondent's understanding of the questions.

6. Remain neutral and do not suggest responses or lead the respondent. It is particularly difficult in executive interviewing to remain neutral because it is usually one informed, articulate person interviewing another informed, articulate person. It is imperative that the urge to be an equal contributor to the conversation or to share what you have learned from other respondents be stifled, however, as it is your function to ascertain the respondent's opinion not to give him yours. This is not meant to imply you should be in

any way unfriendly or abrupt. Time may be taken at the end of the interview to share professional ideas, after the respondent has been guided through the interview schedule.

7. Probing. Properly used, probing is a very powerful technique to encourage the respondent to elaborate, clarify, or explain the reasons behind his response. Examples of useful neutral probes are: a) repeating the question; b) repeating the respondent's answer (it often causes him to expand upon it); c) use of the expectant pause (silence usually causes a respondent to attempt to fill the gap with additional information); and d) neutral comments or questions such as, "Anything else?", and "Why do you feel that way?" or "Any other reasons?"

8. Discourage irrelevancies. However interesting, getting side-tracked from the subject of the interview is a waste of your time and an unfair burden on the respondent's time. If the respondent wanders, firmly but politely guide him back to the question you were discussing.

### Recording the Responses

The appropriate response to closed-ended questions should be circled. In cases where a respondent's answer does not fit into a listed category or you are not certain which category it fits into, circle 'other' and record the response on the lines provided. Record the response verbatim to all open-ended questions. This allows the per:

doing the analysis to benefit from the 'flavor' as well as the substance of what was said.

Write legibly, for unreadable data is lost data, and edit the questionnaire as soon as possible after the interview to ensure all questions were asked and that responses were recorded completely and accurately. If a question was missed attempt to call the respondent to obtain the missing information.

#### A Final Reminder

Don't check the completed and blank questionnaires and related forms with your baggage; carry them with you so that in the unfortunate case your baggage is lost the irreplaceable data is not lost also



TECHNOLOGY INFORMATION DELIVERY TO THE  
CARIBBEAN-CENTRAL AMERICAN BASIN

DISCUSSION PROPOSAL  
MARCH 26, 1982

I. Summary

Increasingly efficient access to technology information and technology utilization opportunities are essential to economic development in lesser developed countries (LDCs).

Building on the ongoing International Technical Information Network established and managed by NTIS and sponsored by USAID this project will greatly facilitate local private sector development. It will do so by promoting utilization of existing U.S. private sector technologies and joint ventures with U.S. firms. This will be done through delivering screened, quality technology information and business contacts to requestors in LDCs.

A secondary benefit of the project is the strengthening of already existing local entrepreneurs by providing them the opportunity to expand the scope of their business.

Among the major resources for identifying this information is Control Data's DEVELOP Search Service, based on Control Data's International Development (DEVELOP) Data Base. The data base contains information and applied technology geared to solve contemporary problems and provide business contacts and technology transfer opportunities.

The DEVELOP Search Service is a custom research service that uses the DEVELOP Data Base as its primary resource, but which also conducts original research to locate, screen, and qualify responses, especially where business contacts are concerned.

## II. Project Description

### A. Service Delivery

#### 1. Geography

The target area for this project is the Caribbean/Central American basin (15 countries).

#### 2. Outlets

The service will be offered through the U.S. Commercial Attache' and the local NTIS representative already established in each country. The involvement of the NTIS representative expands the project outreach, provides an opportunity for the local agent to improve his business, and ensures the effective use of the NTIS resource for information delivery.

### B. Additional Services

#### 1. Information Services

In order to ensure the best possible service and information delivery, this project will also include researching sources normally outside the subject matter scope of DEVELOP, such as other specialized technical data bases (bibliographic and non-bibliographic).

#### 2. Original Document Delivery

Document delivery is another important feature outside the normal scope of DEVELOP. Original documents or reprints of articles responding to the information requests can be procured and forwarded upon user's request. This service will be provided by a document delivery contractor; users can order directly from the contractor or through Control Data. Payment for documents can accompany the order, or the user can be billed by the vendor. (The average cost per document is \$10-\$15, including postage.)

### 3. Training

In order to ensure the best possible understanding of the service and to encourage its use, an introductory seminar followed by subsequent personal meetings with each commercial attache' and NTIS agent are proposed. These meetings could be country-by-country visits by project staff or a series of centrally located seminars.

### C. Technology Data Base Augmentation

To further ensure the identification of commercially viable technologies and business opportunities, and to respond to areas of critical interest and need in the Caribbean basin, an effort to augment the base of information in selected industries is proposed.

#### 1. Target Data

Technologies suitable for export or license to other countries abound within U.S. industry. These technologies can be described in three ways:

- a. "Off-the-shelf" - Technologies in use by the companies that developed them; that those companies are willing to license abroad.
- b. "Harvest" - Technologies that have reached their market peak in the U.S. but which are still needed in the U.S. and have potential new markets in other countries.
- c. "Dormant or surplus" - Technologies that have been developed in conjunction with other research and development but have not been exploited.

#### 2. Target Industries

Although many of these technologies are already listed and described on DEVELOP, a more exhaustive data base development effort could be undertaken. While these technology opportunities are present in all industries, a few target industries should be chosen for the initial effort.

There are several advantages to this approach:

- a. Familiarity with an industry will be developed.
- b. Contacts can be made working through established trade associations and industry groups.
- c. The procedure is methodical and thus more comprehensive.

Considering the information needs of the Caribbean region, two target industries that would produce fruitful information are:

- a. Food Processing and Packaging.
- b. Renewable Energy.

If a need for other specific target industry information is identified, additional industry studies can be undertaken.

Control Data will contact the appropriate people within each industry, identify technologies suitable for the data base, write descriptions of and index the technologies, keypunch, and enter them on to the data base.

Other specialized technical consulting will be provided as required.

III. Budget

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
DEVELOP Search Service Subscriptions* 25 searches per subscription at \$2,500 each-- two per country	\$ 75,000	\$ 75,000	\$100,000
Additional Information Services	80,000	90,000	100,000
Training	45,000	45,000	45,000
Data Base Augmentation and Specialized Technology Consulting**	35,000	35,000	35,000
User Materials	5,000	5,000	5,000
Promotion	<u>10,000</u>	<u>7,500</u>	<u>5,000</u>
	250,000	\$257,500	\$290,000

NOTE: Charges for document delivery have not been included; they will be passed directly to the end user.

\*This is a volume discount subscription price, providing for 50 searches per country, or an overall total of 750 searches. This price will be guaranteed for two years.

\*\*Additional industries can be covered upon request for \$15,000 to \$20,000 each.

#### IV. Price/Cost Schedule

Using the U.S. Commercial Attachés and the in-country NTIS representatives as distribution outlets, searches will be offered on an individual basis to entrepreneurs and organizations requesting them. The following pricing schedule offers the searches to USAID at a discount price. AID will subsidize the NTIS agent by charging half the cost. The NTIS agent can then offer the search to the end user at a mark-up, thereby earning money on the transaction.

<u>DEVELOP Search Individual Retail Price</u>	<u>USAID Cost</u>	<u>NTIS Rep Cost</u>	<u>Suggested End User Price</u>
\$150	\$100	\$50	\$75

This pricing structure benefits AID by virtue of the volume discount; the NTIS representative pays one-third the retail price; and the end user pays one-half the standard retail price.

As volume increases and use of the service becomes more established, the NTIS representative will be able to afford (or more willing to afford) to buy the Search Service directly at standard wholesale government volume discount prices. It is anticipated that AID's subsidization of the NTIS representative will be phased out by the end of the project term.

## V. Issues for Discussion

### 1. Customer Billing

The NTIS representatives are entrepreneurs with established procedures for selling information and billing customers. It is suggested for the course of this project that they utilize the same procedures for paying for searches and billing customers that they currently use for standard NTIS business.

As the commercial attaches are government representatives, it may not be appropriate for them to charge customers. It is also unclear whether they will be expected to pay for the service, either during the course of the project or thereafter.

### 2. Promotion of the Service

In order for the project to be successful, the potential end users of the information service must be made aware that it exists and encouraged to use it. Depending on the extent of existing promotional and outreach activities among the NTIS agents and the commercial attaches, varying types of periodic promotional campaigns will be required. The exact nature and extend of this promotion needs to be determined; it is suggested that NTIS and Control Data undertake some of the promotion, but that incentives also be established for the local representatives and commercial attaches to do their own promotion.

### 3. Project Evaluation

The DEVELOP Search Service currently has an optional customer evaluation form for customers to complete upon receiving the search results. Customer evaluations will be offered in conjunction with this project. Additional evaluation of the project as a whole is recommended; a detailed evaluation plan will be required.

TECHNOLOGY AND INFORMATION DELIVERY  
TO THE CARIBBEAN - CENTRAL AMERICAN BASI...

CONTROL DATA CAPABILITII

I. INTRODUCTION

Control Data Corporation is a multinational company having revenues in excess of four billion U.S. dollars, employing 57,000 individuals, and operating in some 47 countries. Control Data believes its organization and experience uniquely complement the needs of the Technology Information Delivery and Transfer Project.

The single most important element of Control Data Corporation's proposal is the consideration that the company already has in place functioning units that perform the vast majority of the tasks required.

II. CONTROL DATA APPROACH

Control Data has long recognized the need to transfer technology and know-how between individuals and organizations, thereby improving productivity, creating jobs, and improving standards of living.

In the mid-1970's, the company formed two subsidiaries, WORLDTECH, a technology marketing and transfer organization, and TECHNOTEC, a technology and know-how data base organization. These two organizations, as well as the newly formed DEVELOP Search Service, using Control Data's worldwide data services network, CYBERNET, provide the vehicle for exchanging technology and know how throughout the world.

Other Control Data organizations that promote enterprise development are: Control Data Business Advisors, Inc., Professional Services, Productivity Planning, and Technology Centers, which together offer the expertise of more than 3,000 consultants. Control Data Business Advisors, Inc. has as its mission helping businesses to achieve profitable growth through professional management assistance, while Productivity Planning has as its charter the development of tools to enhance business productivity.

A. Control Data WORLDTECH

The WORLDTECH Technology Marketing Service markets technologies for its clients, helping to locate buyers who need new products or processes in order to expand its clients' existing businesses or to create new businesses and job opportunities.

The WORLDTECH Quest Service searches for technologies for its clients and provides Quest Advisory Reports. These reports contain information about the availability of technologies that provide business opportunities.

WORLDTECH Technology Transfer Management expands the Technology Marketing and Quest Service by actually managing the technology transfer. This service helps convert the technology into an operating business after a licensing, joint venture, or other transfer agreement has been negotiated.

The WORLDTECH Business Development Program encourages the creation and development of small and medium-sized enterprises in the host country or region by bringing technologies and local entrepreneurs together with potential new business partners who have records of establishing successful businesses. In preparing a program, WORLDTECH helps identify the host country's technology and business development needs, then recruits participants most likely to meet them.

WORLDTECH's marketing network is made up of WORLDTECH Joint Ventures, WORLDTECH Associate Representatives, and WORLDTECH headquarters staff, including direct sales offices. Network members may remain independent, yet they cooperate to achieve the common goal of technology transfer.

Existence of the WORLDTECH network means that technology can be transferred quickly and that each member's ability to solve problems is increased.

Locally based marketing representatives give the network particular depth and breadth by acting as cultural interpreters and first-hand assessors of the strengths, needs, and business opportunities of specific locales. Currently, the network includes representatives in over 30 countries.

B. Control Data Business Advisors, Inc.

Control Data Business Advisors, Inc. (CDBAI) provides professional management assistance to businesses anticipating changes in markets, products, or technology. Achieving profitable growth in an environment of change often requires entrepreneurs to be experts in planning, financing, engineering, producing, marketing, and personnel--all at once. Working with CDBAI, managers can receive effective assistance in these critical areas as needed.

Clients of CDBAI have access to a rich fund of resources. By drawing from its staff professionals and a talent pool of business and technical experts, it provides high-quality management assistance for various businesses.

C. Control Data International Development Services  
(DEVELOP Data Base and DEVELOP Search Service)

1. DEVELOP Data Base

The DEVELOP Data Base has been developed to respond to the information needs of entrepreneurs and organizations in developing countries and those who serve them. The data base covers technologies, products, know-how, projects, organizations, research, and experts relevant to developing economies.

A number of characteristics distinguish the DEVELOP Data Base from other computerized information resources.

- o DEVELOP information entries stress detail: actual technology or product specifications, resources required, mode of operation, environmental setting, costs, scale of operation, users, prices where appropriate, and business opportunities (licensing, direct sale, distributorship, joint venture/joint development, etc.). Complete contact information is given for each entry so that users may go directly to the source.

- o While DEVELOP contains many citations to the literature (and supplies prices and ordering information for many unusual and difficult-to-find items), the thrust of the data base is not primarily bibliographic as with most data bases.
- o Much of DEVELOP's information is unpublished elsewhere or unavailable through ordinary channels. Files difficult to search because of their size or difficulty of access, have been screened to produce the technologies, products, project studies, and directory information most relevant to the needs of DEVELOP's users. Many entries come directly from the unpublished files of practitioners in various areas of economic development. Collection and organization of this material on DEVELOP substantially reduce users' research costs.
- o Because so much of DEVELOP's information comes directly from practitioners, research institutes, and other organizations directly involved in the broad spectrum of development activity, DEVELOP entries are authoritative and relevant. Actual operating experience is fundamental to this information.
- o DEVELOP information is accurate both because it comes from highly qualified, authoritative sources and because DEVELOP's system of user evaluations encourages continuous monitoring and feedback of information entries by users.
- o Currency of DEVELOP information is maintained by continuous addition of new information units and updating or purging of older units. Users assist DEVELOP staff in this process also.
- o Owing to the comprehensiveness of the subject areas covered in DEVELOP and the worldwide network of providers of information who are its sources, DEVELOP is able to offer assistance in the areas of activity, both individual and interrelated, that are of primary concern to developing economies.

Use of the DEVELOP Data Base leads to the identification of problems shared by others in similar circumstances and with similar needs. These problems have been attacked and solutions to them worked out--through the development of technologies and products and the discovery of sources of relevant know-how, technical assistance, and education and training. Solutions to problems exist in many places, but unshared their value is only local. Through entry on the DEVELOP Data Base, however, this accumulated knowledge and experience is organized and immediately retrievable for application in whole or in part or with appropriate modifications to the needs of users worldwide.

In addition, through the communication network that the DEVELOP Data Base represents, the impact of specific problem solutions can be assessed and shared among participants: For example, how did a particular technology work in a given situation? How was it received and what are its economic or cultural implications? What are its short-term/long-term advantages or disadvantages? Does it offer potential for use in other places?

## 2. DEVELOP Search Service

The function of the DEVELOP Search Service is to provide DEVELOP information to clients who do not have on-line access to the data base. In response to requests for information, the Search Service searches the DEVELOP Data Base, evaluates and selects appropriate results to meet the client's needs, edits these results to make them user friendly, and reproduces and mails the prepared information to the client.

In the event that the data base does not contain adequate information to respond to appropriate requests, Search Service staff conduct independent research, which is then added to DEVELOP as well as supplied to the requestor. For this purpose, the Search Service staff tap other relevant Control Data data bases, such as SOLPAT (solar patents) and those maintained by TECHNOTECH and WORLDTECH. The staff also search external data bases (most of which are bibliographic).

A highly productive source of additional information has been trade associations, for identification of private companies as information sources. The staff have been extremely pleased by the enthusiastic cooperation they have received from most companies in providing expert advice, contributing technical materials, and acting as further resources for clients. The staff have developed refined techniques for identifying the most productive sources of information within companies. Excellent contacts have been established with individual companies and with networks for identifying appropriate companies.

Additional information sources include:

- o Government agencies: E.g., Departments of Agriculture, Commerce, and Energy, National Agricultural Library, Library of Congress
- o Land-grant college departments of agriculture, agricultural research stations
- o Research institutes in various fields as identified by numerous directories
- o Other information networks: E.g., VITA, LIFE, AED Development Communications Clearinghouse
- o Directories, both general and specific, of relevant fields: E.g., Thomas Register of American Manufacturers, National Trade and Professional Associations of the U.S. and Canada, U.S. Agency for International Development Directory of Development Resources, Staff Directory of the Bureau of Industrial Economics of the U.S. Department of Commerce, Denver Research Institute's Information Handbook: Techniques and Tools for Scientific and Technical Information Service in Developing Countries (unpublished)

DEVELOP Data Base Contents  
 Compared with  
 Search Service Requests (1981/1982)

This chart represents a breakdown of DEVELOP Search Service requests since June 1981 and illustrates how the contents of the data base match requests. Data base coverage percentages do not total 100% because of overlap and because both subject area and data base categories were counted.

Subject or Category of Information	Search Service Requests	Data Base Coverage
Technologies (all fields)	59%	46.5%
Energy	25%	40%
Agriculture	24%	30%
Food Processing	5%	4.5%
Education and Training	3.5%	6%
Social Systems and Issues (illiteracy, women)	3.5%	3%
Health and Nutrition	2.5%	3%
Housing	2.5%	2.8%
Infrastructures (including water supply, sanitation)	2%	10%
Background/Statistics	4%	5.2%
Organizations/Directory Information	6%	12%
Other	22%	--

### III. CONCLUSION

The capabilities of these representative organizations within Control Data coupled with the Corporation's significant links with external organizations, both large and small, established through normal day-to-day business uniquely qualify Control Data to satisfy the needs of the Technology Information Delivery and Transfer Project.

APPENDIX A

DEVELOP Search Service  
Selected Case Studies

THE FOLLOWING INFORMATION IS CONFIDENTIAL AND MAY BE USED FOR PURPOSES OF THIS PROPOSAL ONLY.

I

Client: George A. Samitier  
Director, CIME-Center for Investigation of Methods and Techniques for Small and Medium Enterprises.  
Buenos Aires, Argentina

Inquiries: Names and addresses of companies offering licensable technologies for freeze-drying, maintenance-free batteries, prestressed concrete, ferrocement, grain dryers, methyl bromide.

Inquiries made on behalf of private Argentine manufacturing enterprises.

Purpose of information requested: "To select a foreign enterprise for a technology-transfer agreement."

Client's ratings of DSS responses on a scale of 1 to 7, equaling least value, 7 equaling greatest value: four 6's, one 4.

Content of responses:

Freeze-drying: 6 U.S. companies, 2 of which have Argentine representatives, and 1 Canadian company

Maintenance-free batteries: 4 U.S. companies, 1 British company

Prestressed concrete: 4 U.S. companies, 1 Canadian company

Ferrocement: 1 British company offering licensable technologies, 10 descriptions of ferrocement technologies (with contacts, one organization specializing in ferrocement technology)

Grain dryers: 6 U.S. companies

Methyl bromide: 3 U.S. companies

## II

Client: Roberto Caceres, Patricia Gutierrez  
Centro De Estudios Mesoamericano Sobre Tecnologia  
Apropiada (Cemat)  
Guatemala, Guatemala

Inquiry: Utilization of garbage for the production of biogas  
from digesters; methods for the domestic separation  
of garbage; small-industry methods for garbage  
separation and reuse.

Purpose of information requested: "For experimentation in the  
use of biogas produced from digesters loaded with garbage in  
suburban human settlements."

Evaluation of our response: "The information about garbage for  
energy that you sent us was very useful and we thank you very  
much for it."

Content of response: 25 information units referring to garbage  
separation and biogas and other fuel production from garbage  
(20 technology units, 3 literature units, 2 research units).

## III

Client: Louis A. Cohen  
Director, USAID/Botswana

Inquiries: Semi-arid land crop agriculture; small-  
enterprise development

Purpose of information requested: "Formulation of project  
design and program direction."

Ratings of responses: (letter attached).

Content of responses:

Small-enterprise development:

31 technology units  
12 organization units  
5 literature units  
3 education units

Semi-arid land crop agriculture

10 technology units  
3 research in progress unit  
1 product unit  
3 literature units  
4 background information units

IV

Client: Paulette F. George  
Postharvest Institute for Perishables  
University of Idaho  
College of Agriculture  
Moscow, Idaho 83843

Inquiry: Low-technology tools for harvesting, drying, and storing groundnuts and legumes.

Inquiry made on behalf of Filemon Agbisit, Director of Research, Isabela State University, Cabagan, Isabela, Philippines.

Purpose of information requested: "Contacts to get ideas for building low-cost legume and groundnut machinery."

Rating of response: 7

Content of response:

17 technology units  
8 organization units  
1 expert unit  
8 product units  
1 education unit

## APPENDIX B

### Business and Technology Transfers Through WORLDTECH: Selected Case Studies

The transfer of technology and business is a complex and many-faceted activity. Some of the transfers WORLDTECH has arranged follow.

- o Through WORLDTECH, a major European clothing manufacturer licensed its know-how in the manufacture and marketing of jeans to a company in southern Asia. As well as providing a supply of this popular clothing item for the people of Asia, the licensing arrangement creates a significant number of jobs, from manufacturing work at the factory itself all the way through the complete processes of marketing, distribution, and retail sales.
- o Clean water for drinking and bathing is difficult to come by in many parts of the world. The French atomic energy commission developed an inexpensive and easily-maintained hand- or foot-operated pump that can draw water from as deep as 245 feet (almost 75 meters). One such pump can supply water for 300 people. Through WORLDTECH, the technology for these pumps was transferred to the Ivory Coast, and now they supply villages where water was difficult or impossible to obtain before. Because the pumps can be operated by foot as well as by hand, they can be used by children and elderly people, who are often not strong enough to work hand pumps.
- o A Latin American client manufactured abestos cement products and sought distributors of its products in the southeastern United States. WORLDTECH'S study of this area of business resulted in a Quest Report providing a list of high-potential prospective distributors, along with specific recommendations on how the Latin American company could best present itself to those prospects.

- o A Swedish inventor developed an adjustable manhole frame that allows the level of the manhole top to be adjusted at any time with a hand wrench. If the road is to be resurfaced, the manhole top is easily adjusted to stay level with the road surface. An American firm licensed this technology and, in turn, sub-licensed it to another American firm, which found out about it through WORLDTECH. This technology saves government bodies millions of dollars in road construction costs.
- o At one time, a major manufacturer of computer equipment developed a multifunctional, "smart" terminal. Changes in the overall market, however, made the terminal unsuitable for the corporation's marketing plans. The terminal was then offered for transfer through license. It was just the item a maker of small computers was seeking to broaden its product line. WORLDTECH helped arrange transfer of this technology, a process in which Control Data took an equity interest in the receiving company to help finance the technology transfer.
- o A sugar-growing country wanted to acquire the technology to manufacture replacement sugar mill parts. Under a Quest Report agreement, WORLDTECH located a number of sugar mill manufacturers interested in licensing or otherwise transferring their technology to that country.
- o An eastern European country has retained WORLDTECH to be its exclusive technology transfer representative in North America. Metallurgists in this country developed a new process for bonding titanium nitride to the cutting edges of machine tools, increasing their life span and cutting speeds three to five times. Through WORLDTECH, it was licensed to a newly formed American firm which is now building the equipment for the process and marketing it.
- o A firm in India has entered into an agreement and has secured government approval to become a licensee of a WORLDTECH client who has a process to make a long-lasting polyvinyl chloride plastic resistant to ultraviolet light by using the "red mud" left after extracting aluminum from bauxite.

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