

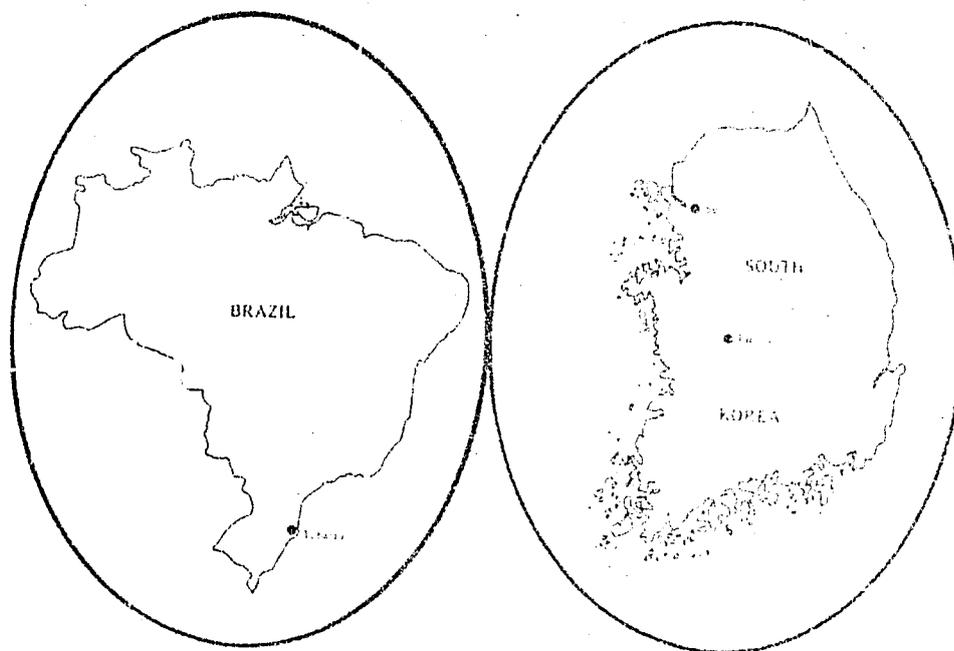
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523
BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY

Batch 97

1. SUBJECT CLASSIFICATION		A. PRIMARY Development and economics		DM00-0000-0000	
		B. SECONDARY Industries and industrialization			
2. TITLE AND SUBTITLE Stimulating the growth of small-scale industry; final report					
3. AUTHOR (100) Wall, N.C.; (101) Ga. Inst. of Technology. Industrial Development Division					
4. DOCUMENT DATE 1975		5. NUMBER OF PAGES 29p.		6. ARC NUMBER ARC BR338,64,W187	
7. REFERENCE ORGANIZATION NAME AND ADDRESS Ga. IT					
8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability) (Final activity summary)					
9. ABSTRACT					
10. CONTROL NUMBER PN-AAG-284				11. PRICE OF DOCUMENT	
12. DESCRIPTORS Brazil Korea Rep. Small scale industries				13. PROJECT NUMBER 931099000	
				14. CONTRACT NUMBER AID/ta-C-1062	
				15. TYPE OF DOCUMENT	

SMALL-SCALE INDUSTRY
GRANT



ADMINISTRATION PROJECT

Grant Period: January 10, 1974 to January 9, 1975

A PROGRAM FUNDED BY THE U.S. AGENCY FOR
INTERNATIONAL DEVELOPMENT

FINAL REPORT

STIMULATING THE GROWTH OF
SMALL-SCALE INDUSTRY

by

Nelson C. Wall

Project A-1600

Contract No. AID/ta-c-140

Industrial Development Division
ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
January 1975

Table of Contents

	<u>Page</u>
INTRODUCTION	1
PROGRAM PLANS FOR YEAR I	4
Background	4
Objectives	6
Total Project Goals	7
Program of Work	7
Use of Grant Funds	13
GENERAL ACTIVITIES DURING PROGRAM YEAR I	15
Soong Jun University	15
Fundação Educacional do Sul de Santa Catarina	17
Industrial Development Division and Technology and Development Institute	19
RESULTS AND CONCLUSIONS	21
Results of Soong Jun University Program	21
Results of the Fundação Educacional do Sul de Santa Catarina Program	23
Conclusions	24

Tables

1. Disbursement of Grant Funds, Soong Jun University	14
2. Disbursement of Grant Funds, Fundação Educacional do Sul de Santa Catarina	14

INTRODUCTION

The Agency for International Development (AID) funded Contract No. AID/ta-c-1062 on January 23, 1974, through which the Industrial Development Division (IDD) of the Engineering Experiment Station at the Georgia Institute of Technology was charged with the responsibility of implementing a specific program of work in the area of "Stimulating Growth of Small-Scale Industry" by providing technical assistance grants to two counterpart institutions. The administrative portion of the contract was assigned the project number A-1600 by the contracting office at the Georgia Institute of Technology.

This is the final report of Year I of this project which has been implemented in two different geographic regions of the world. The two selected counterpart institutions were Soong Jun University, Seoul, Korea, and the Fundação Educacional do Sul de Santa Catarina, Tubarão, Brazil.

Following the contract guidelines, the following criteria were applied in selecting the two counterpart institutions:

1. Suitability of the national macroeconomic framework for local business conditions.
2. Existence of practicing or potential entrepreneurs.
3. Community concern over unemployment.
4. Existence of potential market for additional products.
5. Linkages (current or potential) with educational, financial, and business communities.
6. Quality of staff.
7. Institution's potential for utilizing grant effectively.
8. Potential multiplier effects.
9. Host government commitments.

After an extensive survey, which was funded by a companion project B-414 (AID grant 211(d)), of 11 countries (Bolivia, Brazil, Colombia, Ecuador, Ivory Coast, Indonesia, Kenya, Korea, Nigeria, Paraguay, and Thailand), the two institutions mentioned above were selected for this project.

Both institutions prepared and presented appropriate proposals which were established as two separate projects (B-426 and B-427) and which were each funded by a \$45,000 grant provided for by Project A-1600.

Some of the immediate results of this project during the first year are the following:

Project B-426 -- Soong Jun University (SJU), Korea

1. Study of the trends of small-scale industries during the first half of 1974.
2. Establishment of the Small-Scale Industry Information Center (SSIIC).
3. Provision of on-site technical assistance to 18 small-scale industries in the area of Yongdung-po and Taejon.
4. Development of a simple test machine and tools for small-scale industries.
5. Presentation of training program to unskilled workers in 66 small-scale industries at the Yongdung-po Industrial Complex.
6. Training at Georgia Tech's Industrial Development Division of staff members of SJU.
7. Provision of consulting services by IDD staff in Korea.
8. Preparation of an industrial engineering curriculum for SJU.
9. Request to and authorization by the government of Korea for SJU to establish an industrial engineering curriculum at the university.
10. Preparation of an audiovisual documentation of the first-year program.
11. Establishment of a cooperative program between local industry organization and the university.
12. Formal interaction between SJU and many domestic as well as foreign organizations.
13. Research study on the population status of small-scale industries in the Yongdung-po area.
14. Completion of base-line data study during the project year.

Project B-427 -- Fundação Educacional do Sul de Santa Catarina (FESSC), Tubarão, Brazil

1. Establishment of the Basic Data Center (CDB) within the Department of Research and Development (DPD) at FESSC.
2. Establishment of the Center for Management and Technical Assistance (CETEG).

3. Establishment of the Community Development Center (CDC).
4. Training at IDD of three senior staff members of FESSC.
5. Provision of technical assistance services to 45 local small-scale industries.
6. Preparation and publication of one feasibility study.
7. Preparation and publication of an industrial expansion project.
8. Preparation and publication of two new manufacturing opportunity studies.
9. Establishment of the Adaptive Technology Center (CATT).
10. Preparation of an audiovisual documentation of the first-year program.
11. Training of over 2,500 persons through 112 training programs.
12. Participation in and contribution to the following development meetings or conferences:
 - a. Third National Seminar of the Small and Medium Industry
 - b. Regional Meeting on Human Resources
 - c. Meeting of the Brazilian Institute of Technical and Management Assistance
 - d. Meeting of the Brazilian Agro-Cattle Research Company
13. Completion of base-line data study during the project year.
14. Provision of consulting services by IDD staff in Brazil.

The sections that follow in this Year I final report describe in more detail the background, objectives, and general activities of the program. The report also highlights the results achieved and the conclusions reached by the combined project staffs.

PROGRAM PLANS FOR YEAR I

Background

For the past 10 years, the Industrial Development Division (IDD) has had within its organization the International Development Branch which is responsible for the overseas activities of the division. In 1972, after a series of successful AID-sponsored projects in Latin America, the Industrial Development Division was awarded an AID 211(d) grant.

It was under this grant (Project 8-415) that IDD identified the need for stimulating the growth of small-scale industries in Lesser-Developed Countries (LDC). In an attempt to respond to this identified need, IDD prepared a proposal under the title of "Stimulating Growth of Small-Scale Industry," which was submitted to AID for consideration on October 15, 1973. Early the following year (January 23, 1974), the proposal was accepted and funded by AID, and the administrative portion of the contract became Project 8-1000 at the Georgia Institute of Technology.

The IDD staff had identified the general problems associated with the expansion and diversification of existing industries and the creation of new small industries in the following manner:

1. Lack of a systems analysis approach to providing research, services, and information to industry.
2. Insufficient funding to expand industrial assistance activities.
3. Continuing need for training of more organization staff personnel.
4. Lack of knowledge of pragmatic methodologies.
5. A deficient information base related to technical and management problems of small-scale industries.

The Industrial Development Division suggested a program that would attempt to cope with these problems. Some of the basic elements suggested in the proposal were:

1. An organization focus with clearly defined aims.
2. A well-trained and motivated staff.
3. An information base.
4. A technical assistance "delivery system."

When this program was funded by AID, Project A-1600 was created to serve as the "administrative project," and \$45,000 grants were made to each of two counterpart institutions. Mr. Nelson C. Wall, Head of the International Development Branch, served as Project Director on A-1600.

The terms of the grants to counterpart institutions permitted the grantee to utilize half of the grant funds for personnel, travel, materials and supplies, conferences, etc. The balance of the funds were to be used by the grantee to obtain training and consultation from U.S. technical assistance organizations.

The Georgia Institute of Technology and the Technology and Development Institute, East-West Center, subsequently contracted with both grantees to provide training, consultation, and an audiovisual documentation of the projects.

The two selected counterpart institutions for this project may be briefly described as follows:

Soong Jun University. Soong Jun University was formed in 1970 when Soong Sil College united with Taejon College to form a new cooperative venture in the field of Christian education. Soong Sil College, in turn, was formed in Pyeng Yong (North Korea) in 1897 and reopened in Seoul in 1954, after being closed in 1938 during the Japanese occupation. Taejon Presbyterian College was founded in 1956 by the Southern Presbyterian Mission in the city of Taejon. At present, Soong Jun University has an enrollment of about 2,200 students, of which some 800 are in engineering.

The main campus is located in Seoul near the large industrial area of Yongdung-po, which has a population of about 1.5 million inhabitants. The second campus at Taejon is also near a smaller industrial area with a population of about 450,000 persons. Recently, the government of Korea announced plans for the development of a new "science town" adjacent to the Taejon campus.

Immediately after Dr. Hahn Been Lee became president of Soong Jun University in March 1973, contacts were made by Mr. Ross W. Hammond, Chief of the Industrial Development Division, with Dr. Lee. As a result of these contacts, both institutions entered into an agreement of mutual cooperation on July 30, 1973.

Fundação Educacional do Sul de Santa Catarina. The Fundação Educacional do Sul de Santa Catarina (FESEC) is an autonomous entity, as established by the

Civil Code and National Legislation established specifically by the Decree Laws 200 and 900. It was constituted by Municipal Law Number 443-67 of October 18, 1967. It was recognized as being of utility to the Federal Government by Decree Number 70.680 of June 7, 1972.

FESSC has the following objectives: develop middle and higher education as required by the labor market, which is to be done by formal and informal course work; promote education and research related to the development of the State of Santa Catarina; and engage leadership and population in the process of self-promotion to develop the local and the regional areas.

From 1972 to 1973, enrollment in higher education (at present 10 programs) of FESSC increased from 350 to 1,200 persons, representing 32 municipalities. In 1974, there were over 2,000 students in nine programs at the middle education level as part of the integrated professional-educational system of the city. Through its multidisciplinary staff, with nine full-time technical persons, the Department of Research and Development (DPD) of FESSC had by 1974 been able to carry out 30 research projects and studies at the request of the public sector and private initiative, specifically in the areas of small and medium industries.

Objectives

The objectives of this program were clearly defined initially and they are threefold:

1. To encourage selected developing country organizations to focus on employment generation through programs which accelerate the expansion of existing industry and the creation of new small industries.
2. To demonstrate and document the impact of alternative approaches to the stimulation of small industry
3. To create in the appropriate governmental industrial and financial sectors of small industry an awareness of potentials and ways to maximize these potentials.

The counterpart projects (B-426 and B-427) had their own specific objectives which coincided with the philosophy of the main objectives of this program. In order to meet the program's objectives, two main areas of activity were established by the project administration: 1) training of selected grantee staff members both overseas and in the U.S.A. at IDD and 2) providing

of on-site consultation by staff members of the Industrial Development Division. The participating IDD staff members were selected on their ability to provide engineering, scientific, and technical assistance to selected small-scale industries in both Korea and Brazil. All established objectives were met during Year 1 of the project.

Total Project Goals

The project goals for Year 1 were established in the AID contract with the Georgia Institute of Technology and may briefly be described as follows:

1. Select and recommend to AID/Washington, TA/OST, four Lesser Developed Country (LDC) institutions from different geographic regions as candidate institutions.
2. Carry out preliminary visits to the selected institutions to develop and establish patterns of collaboration.
3. After final selection, assist the grantee in preparing final plan for the utilization of the grant funds in a manner best suited to achieve the stated objectives.
4. Award the grant once this was approved by AID.
5. Provide consultation to the grantee during the planned activity period.
6. Monitor and evaluate project at least twice during the following 12-month period.
7. Assemble base-line data study at the start of the project.

The total project goals have been met during Year 1, and the base-line data studies were completed and published under the following titles: Base Line Data, Republic of Korea and Areas Served by Soong Jun University and Base Line Data, Areas of Brazil Served by Educational Foundation of South Santa Catarina. Copies of both documents are provided under separate cover.

Program of Work

When the program of work was developed, it was designed with the intent to provide the counterpart institutions involved with the necessary latitude and freedom so they could design and implement meaningful programs of work to stimulate employment generation through native small-scale industries.

Under Project X-1600, the role of the Georgia Institute of Technology was that of administering the project, providing assistance to the counterpart institution in the development and design of the program, providing advice and counsel, and suggesting alternative options, all leading to the enhancement and assurance of positive results as established by the project goals.

The IDD staff then generated a suggested program of work to be considered by the counterparts as an illustration and to be changed by them during the planning and design process. The illustrative program was as follows:

1. Counterpart Organization Functional Activities

- a. Organization. The counterpart will administratively designate a unit to mount a program of research, service, training, and technical information for the small industry sector. Staff personnel will design the program based on the organization goals and motivations.
- b. Facilities and Staff. The counterpart will provide adequate office, equipment, and other resources to the designated units to permit its staff to function effectively. Staff personnel who have appropriate backgrounds and who, with appropriate training can implement the program of assistance, will be assigned to the unit.
- c. Technology Transfer. An information collection will be established by the counterpart where it does not exist to permit the staff to conduct research on industrial problems, needs, processes, and products, especially as they relate to small-scale industry, and to disseminate technical information.
- d. Delivery System. The counterpart will design and implement a procedure to permit direct contact with small industries and entrepreneurs for the purpose of ascertaining their needs and problems and for the provision of staff assistance and research in the solution of problems, both management and technical in nature. This industrial extension activity will have as its aim the expansion and diversification of existing and new industry.
- e. Education and Training. The counterpart will design and deliver appropriate training programs related to small-scale industry. Educational programs related to industrialization will be encouraged.

2. Independent Continuing Activities. A list of specific activities were offered in which the counterpart could engage as appropriate to his case.

a. Research Activities

Preparation of case histories.
Applied research on employment generation approaches.
Evaluation of alternative methodologies aimed at accelerating industrialization and employment.
Relationship of infrastructure development to industrialization.
Economic planning strategies and alternatives.
Analysis, evaluation, and development of new industrialization techniques and principles, products, and processes.
Identification of appropriate manufacturing opportunities.
Import substitution analyses and procedures.
Export development considerations and potentials.
Investigations of natural resource potentials.
Production of market analysis and feasibility studies.
Financing studies of small-scale industry.

b. Industrial Extension Activities

Surveys of small industry problems and needs.
Industrial problem-solving.
Advice and consultation with industry.
Provision of technical information to industry.
Provision of management assistance to industry.

c. Training Activities

Small industry operations.
Industry-community interaction.
Specific small-scale industry subjects.
Problems and needs of small industry.
Industrial processes.
Identification of manufacturing needs.
Market analysis.
Feasibility studies.
Plant location factors.
Entrepreneur development.
Financing of small-scale industry.

d. Educational Activities

At the option of the counterpart if it is an educational institution.

e. Training and Consultation

This assistance will be provided by the Industrial Development Division of the Engineering Experiment Station at the Georgia Institute of Technology as needed by the counterpart, either on site or in the U.S.A.

The training will take various forms as appropriate, including classroom work, on-the-job training, consulting and advising, plant tours, contacts with technical information sources, the provision of technological information, etc., both in the target area and in the United States.

On the basis of the outline suggested by IDD, the two counterpart institutions established the following programs of work:

1. Soong Jun University (SJU). A program of work was designed to implement the following activities during the 12-month period:

- a. Small-Scale Industry Information Center (SSIIC). The center was to be established during Year 1 of the program. It was to be the responsibility of the SSIIC to carry out surveys of small-scale industries in the two target areas and to generate the necessary basic data relevant to industry size, products, processes, major problem areas, and other governing factors. The center would also initiate a relevant collection of information from outside sources which would serve in the future as reference material. At the same time, the center would attempt to collect and disseminate management and technical information appropriate to the activities of small-scale industries. As part of the operation of the center, the gathered data would be cataloged, indexed, and stored in such a manner that it could be retrieved when needed.
- b. Industrial Training and Education. A specific short-term training program was to be established for staff members of SJU, in an attempt to enhance the capability of the counterpart staff in the area of "real world" problems common to small-scale industries. The training program could be carried out in various forms as appropriate, including classroom activities, on-the-job

training, guidance, consultation, industrial tours, and general business contacts, as needed. It was also planned to allow students to participate in this activity, so that they too could contribute to the development of the small-scale industries in Korea.

- c. University Training and Education. It had been established early in the project that since SJU was a technologically-oriented institution, it would be desirable to assist it so that it could expand its engineering programs to include industrial engineering. This would in the future allow the SJU graduates to participate more usefully in the industrial development of the nation. It was further planned that during the first year a curriculum would be generated and that this would then evolve into an "academic program" to be instituted as soon as the proper government authorization could be obtained.
- d. Industrial Extension and Research Activities. Through this tour in main portion of the program of work, a linkage would be made between SJU and the existing small-scale industries in the SJU area of influence. It was originally planned to provide technical assistance to small-scale industries through an industrial extension service system similar to the one presently in use by IDB in the state of Georgia. When needed, applied research activities would also be incorporated in this portion of the program.

2. Fundação Educacional do Sul de Santa Catarina (FESSC). FESSC considered the following specific activities as having the highest priorities and initiated these activities in a continuing program to the limit of available funds:

- a. Implementation of Assistance for the Basic Data Center (CDB). FESSC possessed an incipient Basic Data Center within its Department of Research and Development. In that center, information of social, economic, and technological origin would be collected and classified to serve as a source of information to the activities of FESSC as well as entrepreneurs and organizations, both public and private. The systematic expansion of this center within its specialty of providing information to medium and small-size industries will be a priority activity within this project. The

following activities were considered necessary: the collection and identification of data to integrate a system which will allow interchange with IDD and other counterparts, both in the receiving of information and in the technology of new and innovative processes. Therefore, FESSEC would utilize the appropriate space and staffing for this activity. The program would also provide for the specialization of the manager of this department, as well as provide assistance in the establishment of this center. The growth and acquisition of data and equipment will be established in the future so that microfilming and better processes can be implemented to be used by both parties.

- b. Implementation of a Center for Management and Technical Assistance (CETEG). These activities have sporadically been carried out within DPD and, at this time, it was desirable to formalize a rationale for the future implementation of this service within the project. The center would be staffed with appropriate personnel, and a manager would be trained by IDD. It is to be an action organization in the areas of research, industrial extension, and training for small and medium-size industries and will be coordinated with the Center for Adult Education at FESSEC.
- c. Selection and Activities of Priority Communities. During the first year, three communities will be selected from the general areas of AMUREL (the Municipal Association of the Region of Laguna, made up of 16 municipalities) where the program of small-industry stimulation will be developed. The selection of these development poles will be through guidelines drawn from previous experience, and the activities will include the following: perform an audit and determine existing industries, raw materials, capital entrepreneurs, small industry problems, and other data; motivate the community leaders so that they will become involved in the project to expand existing industry and generate new ventures; and establish the necessary infrastructure within the community that will allow the successful development of these activities.
- d. Study of Opportunities and Preparation of Profiles. A study will be conducted to identify within the universe of opportunities

those that are to be selected. This is to be done through profiles, new industrial projects, expansions, diversification of existing activities, financial resources, and existing trained manpower. These industry studies will be further developed in the program. At this preliminary stage, and on the basis of existing information and products, the following major areas of interest are selected on the basis of past experience of FESSC:

1) Agro-industries:

Planning and industrialization of papaws, citrics, peppermint, garlic, onions, asparagus, brussel sprouts, mulberries, castor oil, peanuts, mushrooms, and avocados. Industrial utilization of algae, peelings of bitter oranges, and mink.

2) Chemical industries (appropriate for small and medium-size industries).

3) Mechanical industries.

4) Electric and electronic industries.

- e. Training of Staff of FESSC. The staff training for FESSC, as considered by the project, will be done in the USA and in Brazil and in other areas of the world, if considered appropriate.

Details of the programs established by SJU and FESSC are described in the following reports:

Yoon Bae Ouh and Nelson C. Wall. Soong Jun University Small-Scale Industry Grant, Atlanta, Georgia: Georgia Institute of Technology, B-426 Report, 1975.

Jose Muller and Nelson C. Wall. Fundação Educacional do Sul de Santa Catarina Small-Scale Industry Grant, Atlanta, Georgia: Georgia Institute of Technology, B-427 Report, 1975.

Use of Grant Funds

For the 1974-1975 grant year, each grantee was funded in the amount of \$45,000. Disbursement of these funds by SJU is shown in Table 1, and FESSC's disbursements are detailed in Table 2.

Table 1
DISBURSEMENT OF GRANT FUNDS
SOONG JUN UNIVERSITY

Activities	Disbursed to			Total
	SJU	GIT	TDI/E-W	
Personal Services	\$11,100	\$13,840 ^{1/}	\$2,000 ^{2/}	\$26,940
Travel				
International	4,810	6,485		11,295
Local	1,500			1,500
Material and Supplies	2,100	175		2,275
Conferences and Seminars	1,000			1,000
Dev. of Testing Machine	250			250
Testing Experiments	940			940
Printing	800			800
TOTAL	\$22,500	\$20,500	\$2,000	\$45,000

^{1/}The GIT personal services include the authorized overhead and retirement charges.

^{2/}The contract with the East-West Center was for a total of \$2,000 for the preparation of audiovisual material.

Table 2
DISBURSEMENT OF GRANT FUNDS
FUNDAÇÃO EDUCACIONAL DO SUL DE SANTA CATARINA

Activities	Disbursed to			Total
	FESSC	GIT	TDI/E-W	
Personal Services	\$18,000	\$12,500 ^{1/}	\$2,000 ^{2/}	\$32,500
Travel				
International		7,500		7,500
Local	4,000			4,000
Materials and Supplies	500	500		1,000
TOTAL	\$22,500	\$20,500	\$2,000	\$45,000

^{1/}The GIT personal services include the authorized overhead and retirement charges.

^{2/}The contract with the East-West Center was for a total of \$2,000 for the preparation of audiovisual material.

GENERAL ACTIVITIES DURING PROGRAM YEAR I

As indicated throughout this report, Project A-1600 was established as the administration project and the implementation was to be done under Projects B-426 and B-427. Because of this, it was considered desirable to structure this section to highlight some of the specific activities of SJU, FESSC, and IDD.

Soong Jun University

Under the B-426 project funded by A-1600 under the AID grant to the Georgia Institute of Technology, the staff at SJU carried out the following activities:

1. Description of Major Small-Scale Industries. During two quarters of the year, a study was prepared in an attempt to classify and describe the characteristics of Korean small-scale industries. The result of this activity was later incorporated into a separate report entitled Trends of Korean Small-Scale Industries During the Period 1974, which will be published by SJU early in 1975.

2. Small-Scale Industry Information Center. Once the information center was established, the SJU staff continued to operate it. They are at present increasing the collection while, at the same time, serving the needs of the SJU staff in the areas of management and technology. The collection has been classified into five major areas: (a) economic and statistical information, (b) professional material, (c) official material, (d) directory material, and (e) technical information.

3. Industrial Files. In order to achieve maximum effectiveness in the area of management and technical assistance, the Integrated Development Center (IDC) has developed a file system so that they may retain copies of all technical-management problems that are covered by the staff. All companies, at the time they request service, must complete a standard form which is later filed for future usage. This allows the SJU staff to be able to answer questions instantly by phone or letter when they receive additional service requests from the registered enterprises. The forms also are being used in the basic research being conducted in the area of surveying the small-scale industries in Yongdung-po and Taejon.

4. Technical Assistance to Small-Scale Industry. This has been the most demanding portion of the program. During the year, the SJU staff serviced 18 industries in either Yongdung-po or Taejon. This represented some 78 visits by staff teams, and about 183 persons were involved to provide well over 200

hours of technical assistance. A complete listing of companies serviced and a description of each case is presented as part of the final report for Project B-426.

5. Development of Testing Equipment and Industrial Tools. In the process of providing the necessary technical assistance to the industries in Yongdung-po and Taejon, the SJU staff identified the need for certain testing machines and industrial tools. The staff took it upon itself to develop a low cost test machine to be used in determining the tensile strength of moulded metal parts.

During the provision of technical assistance to a manufacturer of small metal parts for handbags, another problem was encountered which was solved by designing and fabricating a simple shaping die. This industrial tool was also developed by the SJU staff and given to the company being serviced.

6. Technical Training for Unskilled Workers. A program was established by the SJU staff to provide technical training for unskilled workers in small-scale industries in the Yongdung-po Industrial Complex. The first program was presented during the period of October 11 to October 19, 1974. Five staff members were responsible for the instructional material and 40 persons participated.

7. Industry-University Cooperative Committee. In order to further unite the bonds between SJU and the companies that received technical assistance under this program, the Integrated Development Center created the Industry-University Cooperative Committee. Those companies that have implemented the recommendations made by the SJU staff and have achieved some success because of it are invited to join this committee. Membership cards are issued as well as certificates. At present, five companies have been awarded the certificate.

8. Administration and Linkages. When the project was initiated, an organization was in existence. Over the year, the administration at SJU has changed the organization so that specific administrative units could be established. At present, these new units have the responsibilities of research, training, education, information service, and industrial extension.

As part of the project, SJU set up linkages with other institutions interested in small-scale industry development such as the Asian Institute of Technology, Asian Productivity Organization, Technology and Development Institute (East-West Center), and all the counterpart institutions working with IDD.

9. Base-Line Data. The staff at SJU was of great help to the IDD staff in the preparation of the necessary base-line data on Korea. The completed report is presented under separate cover.

Fundação Educacional do Sul de Santa Catarina

The companion Project B-427, also funded by Project A-1600, was implemented by the highly motivated staff of FESSC. For Year I, the following are representative of their activities:

1. Establishment and Operation of the Basic Data Center (CDB). Three persons of the FESSC staff are at present operating this center -- two are senior members of the staff and one is a junior member. Mr. Marcos F. Henkemeier, Head of the Center, has an academic background in economics and statistics. The center suffered a serious setback in March, when part of the collection was lost as a result of a flood. The staff has since reconstructed the center and it is now in full operation. During the year, the following activities were also carried out:

- a. Registration of existing periodicals.
- b. Preliminary listing of existing bibliographies.
- c. Initial cataloging of local industrial enterprises.
- d. Initial classification of bibliographies.
- e. Continued collection of relevant newspaper clippings.

2. Center for Management and Technical Assistance (CETEG). The staff at this center, under the direction of Mr. Humberto Dalozzo, has quickly moved forward into the area of providing technical assistance to small and medium-scale industries. As indicated in the B-427 report, the staff at CETEG was able to provide technical assistance to 45 industries during the year. It is important to recognize the fact that the staff at CETEG is responsible for a geographic area of 9.5 thousand square kilometers, encompassing 32 municipalities forming two micro-regions called AMURLL and AMSESC.

3. Adaptive Technology Center (CATE). This is the newest of the administrative units established during Year I of the program. This unit will in the future review existing "foreign" technology and attempt to adapt it for use by local small-scale industries. While it may take several years before this endeavor is "on stream," this is the only institution in South Brazil that is presently willing to attempt to do this.

4. Community Development Center (CDC). This center was established and funded by the FESSC administration in an attempt to develop the different communities in the target area. Although not an integral part of this project, this center, together with the Center for Bio-Medicine (CMBM), was developed with the objective of better serving the population of South Santa Catarina. Both of these units played a very important role during the emergency period following the March 1974 flood.

5. University Training and Education. The academic staff at FESSC has now been working for the past nine months in the development of an "academic program" that would provide higher education to students in the field of industrial engineering. The final "academic program" proposal will be submitted by FESSC to the Minister of Education of Brazil. If approved, the program will be presented to FESSC students as part of the yet-to-be-created Department of Industrial Engineering. It is anticipated by FESSC authorities that the required authorization will be issued early in 1976.

6. Industrial Training and Education. Early in the program year, it was planned that members of the FESSC staff would go to IDB headquarters in Atlanta for special training. It was anticipated that the participants would be in Atlanta by fall 1974 but, due to the March flood, the dates had to be changed. On January 6, 1975, three participants started a six-week training program at IDB which was presented in Portuguese to facilitate instruction.

As part of the industrial training and education activities,² the staff at FESSC established the Center for Continuous Education (CEP) designed to provide special training to workers and the public in general. During the past year, the CEP presented 117 training programs and had over 2,500 participants complete the training programs.

7. Emergency Program. In an effort to assist the public in general and the industrial community in particular following the March 23-25 flood which covered 90% of the city of Tubarão, the FESSC staff established an emergency program which used all available manpower at that time. In general, the following public services were performed by volunteers from FESSC:

- a. Team of three persons to work in the central area.
- b. Team of three persons to locate in the AMSESC area.
- c. Team of four persons to locate in the AMUREL area.
- d. Preparation of reports suggesting priorities for the disaster areas.

- e. Preparation of reports establishing the housing needs for the areas.
- f. General community reconstruction projects.
- g. Studies to determine the material losses caused by the flood.
- h. Innoculation of vaccines to 65,000 persons.
- i. Emergency saving of 18 lives and participation in 2,000 emergency cases.
- j. Assistance in food and clothing distribution.
- k. General counseling and assistance to local and federal authorities.
- l. Reconstruction of FESSC after a material loss of well over one quarter million dollars.

It is significant to note that although the work was carried out as part of the B-427 project, FESSC did not use any of the project funds for this activity. The emergency program was funded internally by FESSC and other administrative units of the government of Brazil.

8. Internal Organization. As the project evolved, so did the internal organization. By the end of the year, the counterpart project director had modified the structure from the original to a more viable organization which corresponds to the present needs of FESSC and the Department of Research and Development.

9. Base-Line Data. The FESSC staff worked together with the on-site IDD staff to generate the necessary information for the preparation of a base-line data report on the area of Tubarão. This document is presented under separate cover.

Industrial Development Division (IDD) and Technology and Development Institute

Both Soong Jun University and Fundação Educacional do Sul de Santa Catarina utilized one half of their grant funds to obtain training and consulting assistance from the Georgia Institute of Technology and assistance in developing documentation of the projects from the Technology and Development Institute at the East-West Center in Hawaii.

Under these contracts with the two institutions, many members of the Georgia Tech staff were assigned to carry out individual tasks with the two counterpart institutions. A brief listing of the individuals involved follows.

<u>1974</u>	<u>Name</u>	<u>Country</u>
March 4 - March 8	Ross W. Hammond	Brazil
April 3 - April 16	Nelson C. Wall	Korea
April 3 - April 10	Richard Johnston	Korea
April 28 - June 14	Ben James	Korea
June 28 - July 6	George A. Morelos	Brazil
August 16 - September 19	George A. Morelos	Brazil
August 16 - September 19	Phil Potts	Brazil
September 8 - October 13	William Studstill	Korea
September 29 - October 13	Ross W. Hammond	Korea
December 7 - December 19	George A. Morelos	Brazil
December 12 - December 18	Nelson C. Wall	Korea

During Year I of the program, two audiovisual case histories were filmed. Both SJU and FESSC contracted with the East-West Center of Hawaii for the filming of this videotape and photographic record to document the activities of the project and initiate an audiovisual case history. Mr. Fred Burian of the East-West Center staff traveled to FESSC and SJU to do the actual on-site filming of the tapes and photography.

Copies of the videotapes, as well as a collection of photographs, are available to the sponsor and to other interested organizations. The audiovisual material is considered an integral part of this report.

RESULTS AND CONCLUSIONS

In the introduction of this report, it was indicated that many positive accomplishments had resulted from the Year I program of Project A-1600, B-426, and B-427. This section will briefly outline the results of the year's activities and summarize the conclusions of the project staff.

Results of Soong Jun University Program

1. On May 9, 1974, there was a ceremony between Yongdungr-po Industrial Complex companies and SJU. The purpose was to establish relationships between local industry and the SJU program. On June 4, a similar ceremony took place at Taejon between the Taejon Chamber of Commerce and SJU. Both of these ceremonies were used as reference at a later date by President Park as an example of university-industry interaction.
2. The staff at SJU was able to prepare a study entitled Trends of Korean Small-Scale Industries During the Period 1974. This research study will be published by SJU early in 1975 as indicated before. The study looks into the characteristics of Korean small-scale industries and attempts to classify and describe the different types of small-scale industries that were surveyed.
3. The Small-Scale Industry Information Center (SSIIIC) was established as a viable part of the first-year program. The center, which is presently in operation, has initiated the first serious collection of relevant industrial data in Korea. Not only is the center a depository of industrial data, it is also attempting to generate information valuable to future small-scale industrial programs.
4. The staff at SJU provided well over 200 man-hours of direct technical assistance service plus nearly 100 man days of 100 staff time to small-scale industries in the area. As a result, 18 small-scale industries were serviced and their specific problems were resolved.
5. Simple testing machines and industrial tools were designed as part of a technology application or adaptive technology effort. Two main accomplishments should be mentioned: (a) the design, construction, and application of an inexpensive tensile tester; and (b) the design, construction, and application of a simple die or industrial tool.

6. IDD presented a meaningful training program especially designed for the senior staff at SJU. This was the first of a series of training programs to be offered during the life of this project.

7. The SJU staff trained about 40 unskilled laborers in the Yongdung-po Industrial Complex.

8. Consulting services were provided by the IDD staff. Besides the time utilized in the provision of technical assistance to small-scale industries, the IDD staff also provided on-site consultation in such areas as curriculum planning, project development, project administration, operations, logistics, report preparation, and many others.

9. An industrial engineering curriculum was developed. Although this activity was funded under IDD's 211(d) grant, it was the first step toward the establishment of the Department of Industrial Engineering as part of the College of Engineering. As a direct result of this effort, the Ministry of Education authorized the establishing of the Industrial Engineering Department at SJU late in December 1974.

10. An audiovisual history of the program was prepared by the East-West Center. The resulting videotape and photographic collection provide a concise history of the highlights of the program of technical assistance to small-scale industries in both Yongdung-po and Taejeon.

11. The staff at SJU spent much time compiling demographic and industrial data on selected areas of Korea, as well as conducting research studies on small-scale industries in the Yongdung-po area. These studies will be published by SJU at a later date.

12. During the program year, internal organization changes evolved and, as a result, a new organization structure had emerged by the end of the year. It is significant to note that this was accomplished totally by the SJU staff as they went further into the program year.

13. During the grant year, both the SJU staff and the IDD staff had the opportunity of working together and getting to know new problems which needed solution. The knowledge gained of real world problems and solutions will be of direct value in staff development and in feedback to the university education curricula.

Results of the Fundação Educacional do Sul de Santa Catarina Program

1. The FESSC/IDD staff, working with the Department of Research and Development (DRP), the Center for Adaptive Technology (CATT), and the Center for Management and Technical Assistance (CETEG), was able to provide technical assistance to 45 small and medium scale industries in four municipalities in South Santa Catarina.

2. Through this program, the staff at FESSC was able to prepare an "industrial expansion" study for a local industry. The study was published under the title, "Industrial de Doces Aurea -- Projeto de Expansão Industrial." The study was prepared for Nicodemos Philippi and Cia, which is now implementing the project. The expansion will allow the company to produce 700 tons per year (at 80% of production capacity) of assorted jams, jellies, and sweets. The expansion represents an additional investment of about \$100,000 and will provide direct employment to 18 local persons. All financing has been provided by local banks.

3. The FESSC staff also completed and published two "new industry" studies for interested investors -- Fabrica de Carrocerias Basculantes for the Creso Taudres & Cia. Ltda. and Fabrica de Tijolos e Correlatos for Cerâmica Itapoa Ltda. Both of these new industries are now being established by the corresponding entrepreneurs. The first case will represent an investment of about \$200,000 and will have a direct employment of 30 persons. The second case represents an investment of about \$130,000 and will employ 23 local persons.

4. Another study prepared by the FESSC staff during the year is a feasibility study which was published under the title Regeneração de Borracha -- Projeto de Viabilidade. The results of the study are still under consideration by interested investors.

5. The Basic Data Center (CDB) was established early in the project year. After the March flood, the center was rebuilt by the FESSC staff. At present, the center is operational and has proven to be of great value in providing the necessary data for the four studies mentioned above.

6. Both the Community Development Center (CDC) and the Adaptive Technology Center (CATT) were also established during Year I of the project. The CDC is at present gathering information on the communities in the two micro-regions

of AMUREL and AMSESC. The staff is systematically carrying out community audits in these two areas. The Adaptive Technology Center is just starting operations and no major results are anticipated until Year II of the project.

7. Three senior staff members of FESSC, Mr. Humberto Dalsasso, Head of CETEG; Mr. Marcos Hemkemeier, Head of CDB; and Mr. Adalgiso Domingues, Head of CATT, are completing their training program at IDD in Atlanta, Georgia. When the team returns to FESSC, they will be able to better assist in the performance of project tasks.

8. Through the Center for Continuous Education (CEP), over 2,500 persons were trained by the project staff during this year. This activity has been very well received by both the local population and the industries of the area.

9. The staff at FESSC spent much time compiling relevant demographic and industrial data on the area they serve. They also compiled a card index of all industries of the area, which eventually will be used in the preparation of a manufacturing directory.

10. During the program year, the administration at FESSC noted the deficiencies of the existing organization and evolved it into a more viable one. This activity was totally carried out by the FESSC top administration.

11. An audiovisual history of Year I was completed, base-line data of the area were compiled and published, contributions were made to newsletters, and a curriculum for industrial engineering was developed.

12. FESSC staff members contributed and participated in four development meetings or conferences during the year.

Despite the detrimental factors imposed on the project by the March 1974 flood, all project commitments were met during the program year.

Conclusions

During Year I, the administrative contract (A-1600) and the two associated contracts (B-426 and B-427) have assisted in the establishment of units in two developing countries that are specifically interested in the generation and the expansion of small-scale industry. These newly created units are now beginning to implement action-oriented, pragmatic programs in the areas of applied research, technical service, technology adaptation and transfer, and industrial training and education.

The results have been even greater than anticipated, and both counterparts are for the first time serving the industrial base of their developing areas. The vast majority of the work has been carried out in rural areas with small industries and, as a result, low-income groups are being benefited.

Both counterpart institutions are anxious to continue growing in this area as indicated by the Year II proposals that were submitted to the sponsor earlier this year.