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RESEARCH ON THE EFFECTS OF
POWER PACKS ON COLOMBIAN VILLAGES

PHASE I REPORT
to the
Agency for International Development
Contract No. AID/csd-755

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8 March 1965

PHASE I REPORT

Research on the Effects of Power Packs on Colombian Villages

INTRODUCTION

This report covers Phase I of a two-phase project on the use and impact of electrical generators in small towns in Colombia. The purposes of the first phase of this project were:

1. to inspect power pack sites in order to determine the quality of the data, already collected by Peace Corps Volunteers and the availability of further data,
2. to investigate and make tentative plans for cooperation with Colombian research organizations,
3. to investigate the possibility of using other sites in addition to or as substitutes for the original sites, and
4. to plan and make tentative logistics arrangements for Phase II.

In accordance with these purposes, two staff members of the American Institutes for Research, Paul Spector and Augusto Torres, visited Colombia from January 11 to February 1, 1965. Conversations were held with AID officials, Peace Corps officials, CARE/Peace Corps officials, Colombian army personnel, the chief of the U. S. Military Mission to Colombia, members of the staff and students of the National University, a representative of INCORA (the Colombian land reform institute), officials of various departmental Electrificadoras, officials of the Accion Comunal program, Peace Corps Volunteers, officials of the juntas at various town sites, and citizens of the various towns. A complete list of the individuals interviewed is given in Appendix A.

The following eight sites, where electrical generators are already installed or are in the process of being installed, were visited: Caracoli (Atlantico), Guazo (Bolivar), Itaibe (Cauca), Loma Arena (Bolivar),

Mundo Nuevo (Cundinamarca), Pitalito (Atlantico), San Andres (Huila), and Santa Rita (Atlantico). In addition, visits were made to Barranquilla, Cartagena, and Neiva to talk to persons in the Electrificadoras and Community Action programs. Other personnel were interviewed in Bogota.

The files on the power pack project assembled by AID were reviewed. This included a file of background information prepared by Peace Corps Volunteers on each town site.

RESULTS OF SURVEY

1. Availability of Data

Thirteen of the fifteen generators have been installed. The fourteenth generator is to be installed shortly. The fifteenth site remains to be chosen. Dates of installation of the power packs range from March 29, 1964, to the present, as shown in Table 1.

Peace Corps Volunteers have collected and reported data about twelve of the thirteen towns in which generators have been installed. These data consist of maps of the towns, a log of the events prior to and after installation of the electrical plants, descriptions of the physical appearance of the towns, very brief discussions of the history of the towns, information concerning immigration and emigration, an assessment of the morale of the towns, brief discussions of the cohesive and divisive factors in the towns, information about informal and formal leaders and specialists, social stratification, and relationships with nearby towns, descriptions of typical families and their living conditions, and of communications and transportation facilities, belief, attitude, and value systems, the economic compositions of the towns, and present and intended uses of the electrical generators.

The electricity has been used only for lighting, and, in a few instances, for electric flatirons. The PCVs and community action promoters have in almost every case stressed only the lighting application, although

TABLE 1

LOCATION, DATE OF INSTALLATION, AND SIZE OF ELECTRICAL GENERATORS

<u>Town</u>	<u>Date Installed</u>	<u>Size of Generator</u>
1. Apure (Magdalena)	To be installed	15 kw
*2. Caracoli (Atlantico)	August 7, 1964	20 kw
3. El Libano (Antioquia)	Being installed	5 kw
*4. Guazo (Bolívar)	Being installed	8 kw
*5. Itaibe (Cauca)	January 6, 1965	20 kw
6. La Gramala (Antioquia)	August 20, 1964	20 kw
7. La Plazuela (Cundinamarca)	April 4, 1964	8 kw
*8. Loma Arena (Bolívar)	Being installed	20 kw
*9. Mundo Nuevo (Cundinamarca)	June 14, 1964	8 kw
10. Pescado (Huila)	March 29, 1964	10 kw
*11. Pitalito (Atlantico)	August 8, 1964	15 kw
12. Punta Soldado (Valle)	October 5, 1964	10 kw
*13. San Andres (Huila)	November 4, 1964	10 kw
*14. Santa Rita (Atlantico)	August 8, 1964	8 kw
15. To be located		5 kw

*Sites visited in present survey (January 1965)

other applications have sometimes been mentioned. In the main, the generators have thus far had relatively little apparent impact on the towns. Functionally, therefore, despite differences in installation dates, the towns are all still more or less at the same stage of pre-economic or social use.

Interviews with junta officials, ordinary citizens, community development workers, and Peace Corps Volunteers in each of the eight towns visited indicate that most of the townspeople will willingly furnish a wide range of information. Answers were freely given by townspeople to sample questions concerning attitudes toward the generators, toward events leading to the installation of the generators and their actual installation and use, toward economic activities and educational systems, toward relations with other towns, with departmental and municipal governments, and with the Electrificadoras, and toward potential uses of the electrical plants and leisure time and recreational activities.

No questions were asked of the townspeople concerning family and social relationships or political activities and religious beliefs. In almost all cases, Peace Corps Volunteers had some (unsystematic) information concerning all of these topics. All held the opinion that resident observers who can establish good rapport with the villagers would be able to obtain such information without great difficulty. Volunteers generally believed that it would be relatively difficult to obtain information about income and intra-town politics because of the relatively great proportion of income in kind in these towns and because of the unwillingness of individuals to discuss interpersonal problems.

All Volunteers who were interviewed approved the purposes of the present project and indicated willingness to cooperate in data collection. However, it should be noted that Volunteers will be leaving four of the sites shortly, and several Volunteers (an undetermined number) will be replaced during the course of the project. It would be advisable to interview Volunteers concerned with the generators who have returned to the United States.

2. Cooperation of Other Research Organizations

Both the National University and INCORA indicated a willingness to cooperate in the project. They suggested students and graduates who could serve as resident observers and interviewers, and helped to recruit a number of these for employment interviews. Dr. Orlando Falls Borda, Dean of the Faculty of Social Sciences, indicated that students and computing facilities would also be available for data analysis.

In view of the distribution of the fifteen towns, we judge that it will be necessary to employ three resident observers, each to be responsible for gathering data in five towns. The present budget is sufficient to pay for three field observers. Six applicants were contacted, and, of these, five were interviewed. Two university graduates were tentatively selected and agreed to join the staff pending approval of Phase II. There should be little difficulty in obtaining a third observer.

3. Other Sites

The Colombian army is planning to install a total of fifteen generators. Five have already been installed; a sixth will be installed soon. Most of these generators are to be used for the specific purpose of electrifying community health centers. In some cases, electricity will also be supplied to a few nearby homes. Although Colombian military authorities indicated that they would welcome research on the sites under their auspices, it was believed by American authorities that it would be undesirable at present to incorporate these sites in the study. The sites are in violence areas, and the safety of the investigators could not be guaranteed. With further pacification of these areas, it may be possible to undertake relatively brief surveys at some of these sites in order to supplement information obtained from the AID sites.

4. Logistic Arrangements for Phase II

a. Transportation. USAID/Bogota has an exceedingly difficult transportation problem, aggravated by the Colombian government's prohibition on importing vehicles. Vehicles in Bogota would be available occasionally,

as for transportation to and from the airport. Generally, it will be necessary to fly from Bogota to department capitals or other major cities and then to use ground transportation to the villages. The departmental Electrificadoras can make transportation available on occasion to visit field sites from department capitals. However, it will be necessary to reimburse the Electrificadoras for their expenses when their vehicles and drivers are used routinely. It will be necessary to hire commercial transportation on most occasions in order to visit the villages. Colombian military authorities would provide transportation (jeep or helicopter) to the sites under their auspices should any research be conducted there. In view of these conditions, no significant savings can be expected from the amount originally estimated for local travel expenses.

b. Office Space. USAID/Bogota is crowded for space and will not be able to provide office space for the full period of the contract. However, the Mission can provide an office for a temporary period if space is available. It is recommended that \$2,000 be added to the present funds to cover the probable costs for office rent.

c. Office Furniture and Equipment. USAID/Bogota cannot furnish these items. The present budget appears to be adequate.

d. Household Furnishings for Project Field Director. USAID/Bogota cannot furnish these items. It is recommended that \$600 be added to the present estimate for moving household furnishings between Quito and Bogota.

e. Housing for Field Director. It will be necessary to rent a house or apartment as none are currently available to the Mission. In view of the prevailing rates in Bogota, it is recommended that \$1,600 be added to the budget for this purpose.

f. Availability of U. S.-owned Local Currency. U. S.-owned local currency controlled by AID/W will be available for this project.

CONCLUSIONS

There are sufficient data available concerning the events before and after the installation of electrical generators to provide a coherent view of the factors which influenced their utilization. The attitude of the townspeople toward the project and their willingness to provide information, coupled with the cooperative attitude of the Peace Corps Volunteers and local Colombian officials, make it highly probable that a great deal of data will be available concerning both the utilization of the generators and the impact of the generators on the towns. The fact that the electricity has been used thus far only for light or for ironing would indicate that the impacts have been relatively uniform despite differing periods of use among the towns.

There is still an opportunity to conduct a systematic experiment in which:

- a. the factors in the community relevant to electrification are systematically studied,
- b. the townspeople are educated concerning the potential uses of electricity in their particular circumstances, and
- c. they are aided in developing suitable organizations and in obtaining the necessary facilities to enable them to employ the generators optimally.

It would be possible to undertake systematic model programs in two groups of five towns each and to permit the remaining towns to develop naturally without such a concerted effort. An experiment of this sort would provide practical information concerning effective methods for introducing and utilizing generators which would be of use to any agency contemplating electrification in similar communities. This sort of experiment would provide a greater degree of control over the course of events in the experimental towns and therefore greater validity in the resulting information about the events than would be possible in a study which

depended merely on observation of natural conditions. By leaving five towns untouched experimentally, it would also be possible to gather data concerning towns in which the sole independent variable has been the introduction of the generators.

Perhaps most importantly, it would be possible to test a major theoretical question concerning the development of human resources. It is proposed that the economic organization of the towns, or motivational factors affecting the towns, be varied experimentally in order to determine which forms are most effective in inducing people to utilize electric power to the greatest economic and social advantage. Although it is still too early (before further study of the towns) to fix on a particular variable, it might be possible, for example, to form cooperatives in five towns, to encourage individual private enterprise in another five towns, and to maintain the remaining five towns as controls. The chief dependent variable would be increase in income as measured in pesos. Other dependent variables such as changes in educational practices and aspirations, changes in leisure activities, in attitudes toward other innovations, etc., etc., would also be measured.

It would be necessary, of course, to match towns to the greatest extent possible and to minimize or eliminate other sources of variance, for example, to make spare generator parts and maintenance services equally available to all towns.

The availability of qualified junior research personnel and the cooperation which can be expected from Peace Corps Volunteers and local research organizations both in the gathering and processing of data would be distinct advantages in conducting Phase II of the study.

Although USAID/Bogota cannot furnish substantial logistic support, housing, office space, and transportation facilities are readily available in Colombia on a commercial basis. The Mission's assistance in providing its information file on the project and the assistance of its personnel in introducing the project staff to the townspeople at each site and in making administrative arrangements have been, and promise to continue to be, extremely useful in conducting the project.

PROPOSED PLANS FOR PHASE II

The general plan for Phase II would be as follows:

1. to survey and observe all fifteen towns for the remainder of the first year,
2. to introduce a controlled experimental program of development in association with the generators in ten of the towns at the end of the first year, basing the program on data collected during the initial study period, and
3. to follow up the uses and impacts of the generators in naturally evolving circumstances and those under the experimental development program during the second year.

The specific steps are presented below.

Step One

Administrative arrangements, including hiring of resident observers, a secretary, and survey interviewers, renting of office space, etc., will be completed by April 1, 1965.

Step Two

An interview schedule to be employed in a complete survey of all fourteen (or fifteen) towns which have been chosen will be completed by April 15, 1965.

Step Three

All towns will be surveyed during the month of April 1965 for basic information concerning occupational distributions, education, literacy levels, knowledge of potential uses of electrical generators, political relations with departmental governments, etc. Each permanent resident observer, assisted by five interviewers hired for the purpose, will survey five towns during this period under the general supervision of the project field director.

Step Four

Survey data will be analyzed and interpreted during the month of May 1965. Objective dependent variables permitting measures of the uses and impacts of the generators will be devised. Observational check lists and topical interview schedules will be prepared for use by resident observers. (Additional data-collection instruments such as attitude scales, sociograms, and economic measures will be developed during later months in Bogota and Washington, D. C.)

Step Five

The first field observational period will be conducted during June and July 1965. Each of the three resident observers will spend approximately a week or ten days in each of five towns during this period. A questionnaire will be distributed to Peace Corps Volunteers during the month of June 1965.

Step Six

An analytic system for observational data will be prepared during the latter part of July and the first part of August 1965, and preliminary analysis of these data will be done by the end of September 1965. In the meantime, the second cycle of field observations will be undertaken during the months of August and September 1965.

Step Seven

The experimental program to be introduced into ten of the towns will be designed during the month of October 1965 on the basis of the results of the first survey and the first four months of resident observations.

Step Eight

The third observational period will be conducted during November and December 1965. During this observation cycle, the experimental programs will be introduced, and a systematic survey will be conducted in each town to determine its status with regard to the dependent variables. The fourth, fifth, sixth, and seventh observational periods will be conducted from January through August 1966. During this period, data collected by observers will be analyzed on a continuing basis.

Step Nine

The final observational period during July and August 1966 will be devoted to a complete survey of all fifteen towns to determine the final status of the dependent variables.

Step Ten

Analysis of all data will be completed during the months of September and October 1966.

Step Eleven

A final report will be prepared during November and December 1966.

APPENDIX A

Individuals Contacted in Colombia

<u>Place</u>	<u>Name</u>	<u>Identification</u>
Barranquilla	Alfredo Carbonell	Manager, Electrificadora of Atlantico
	N. Echeverry	Chief Engineer, Electrificadora of Atlantico
	Faye Hooker	Peace Corps Volunteer
	Eber Macias	Head, Atlantico Regional Office for Accion Comunal
	Luis Ignacio Melo	Technical Adviser, Electrificadora of Atlantico
Bogota	Robert Bernero	Peace Corps Volunteer
	Teresa Bocanegra	Legal Counsel, USAID/Bogota
	Mariela Bonilla	Graduate of National University of Colombia (potential assistant interviewer)
	Orlando Falls Borda	Dean, Social Science Faculty, National University of Colombia
	Jackson Ellis	Accountant, USAID/Bogota
	Richard F. Going	Controller, USAID/Bogota
	William Flinn	Faculty, National University of Colombia
	Antonio Ibarquen	Food for Peace Assistant, USAID/Bogota
	William M. Kelly	Executive Officer, USAID/Bogota
	Major Julio Linares	Chief, Civic Action, Colombian Army
	Ruby Mercado	Graduate of National University of Colombia (potential assistant interviewer)
	Ana Dolores Miranda	Graduate of National University of Colombia (potential assistant interviewer)
	William Monahan	Peace Corps Volunteer
	Roderigo Pena	INCORA
Neil Rasmussen	Peace Corps Volunteer	

Appendix A (continued)

<u>Place</u>	<u>Name</u>	<u>Identification</u>
Bogota (cont'd.)	William E. Rayman	CARE/Peace Corps Director
	William Rodgers	Assistant Director, Peace Corps/Colombia
	Captain Victor Manuel Rodriguez	Administrative Section, Section 5, Colombian Army
	Christopher Sheldon	Director, Peace Corps/Colombia
	Roger G. Sprowls	Food for Peace Officer, USAID/Bogota
	George St. Louis	Program Officer, USAID/Bogota
	Colonel Alvaro Valencia Tovar	Chief, Department 3, Colombian Army
	Gilberto Vejarano	Graduate of National University of Colombia (potential assistant inter- viewer)
	Estela Villamizar	Graduate of National University of Colombia (potential assistant inter- viewer)
Caracoli	Jose de la Hoz	Former Secretary, Accion Comunal Committee
	Alfonso Tornado	President, Accion Comunal Committee
Cartagena	Jaime Gonzalez Manrique	Manager, Electrificadora of Bolivar
Guazo	Cecilio Perea Aldana	Fish and Forestry Inspector
	Bob Colombo	Peace Corps Volunteer
	Manuel S. Diaz	Owner of saw mill
	John Greven	Peace Corps Volunteer
	Maria Carvajal Martinez	President, Accion Comunal Committee
	Ed Missean	Peace Corps Volunteer
	Dona Peterson	Peace Corps Volunteer
	Katie Taylor	Peace Corps Volunteer
David Thomas	Peace Corps Volunteer	

Appendix A (continued)

<u>Place</u>	<u>Name</u>	<u>Identification</u>
Itaibe	Enrique Lemos	Power Pack Operator
	Dietz Montgomery	Peace Corps Volunteer
	Miguel Olave	Villager
	Gustavo Perez	President, Accion Comunal
	Simon Valencia	Treasurer, Accion Comunal
Loma Arena	Daniel Arenas	Vice President, Accion Comunal Committee
	Tremecio Arenas	Treasurer, Accion Comunal Committee
	Fred Bakunin	Peace Corps Volunteer
	Robert Graninger	Peace Corps Volunteer
	Richard Swanteck	Peace Corps Volunteer
Mundo Nuevo	Desiderio Cubillos	President, Accion Comunal
	Vidal Cortez	Treasurer, Accion Comunal
	Juan Vicente Pardo	Teacher
	Santiago Fidel Pardo	Teacher
	Pedro Julio Rico	Member, Accion Comunal
	Purificacion Romero	Teacher
Neiva	Phillip Harvey	Peace Corps Volunteer
	Ildefonso Polanco Perez	Manager, Central Electrica for Huila
	Jaime Afanador Tovar	Governor of Huila
	Yezid Velasquez	Promotor, Accion Comunal
Pitalito	Willie Nieves	Peace Corps Volunteer
	Vidal de la Rosa	President, Accion Comunal Committee
San Andres	Calixto Chanta	Former President, Accion Comunal Committee
	Robert Diezt	Peace Corps Volunteer
	Andres Munoz	Villager

Appendix A (continued)

<u>Place</u>	<u>Name</u>	<u>Identification</u>
San Andres (cont'd.)	Francisco Quibano	Villager
	Arcadio Silva	Member, Accion Comunal
	Jaime Tierradentro	President, Accion Comunal
Santa Rita	Luis Gonzaga Barrios	Secretary, Accion Comunal Committee
	Miguel Antonio Barrios	Vice President, Accion Comunal Committee
	Brian McNamara	Peace Corps Volunteer
	Casimiro Polo	President, Accion Comunal Committee