

PROJECT APPRAISAL REPORT (PAR)

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1. PROJECT NO. 995-574		2. PAR FOR PERIOD: Jan. 1974 TO Dec. 1974		3. COUNTRY Worldwide		4. PAR SERIAL NO.	
5. PROJECT TITLE Sulphur Surface Bond Housing							
6. PROJECT DURATION: Began FY 1974 Ends FY 1976		7. DATE LATEST PROP N/A		8. DATE LATEST PIP N/A		9. DATE PRIOR PAR NONE	
10. U.S. FUNDING		a. Cumulative Obligation Thru Prior FY: \$ --		b. Current FY Estimated Budget: \$ 80,000		c. Estimated Budget to completion After Current FY: \$ 175,000	
11. KEY ACTION AGENTS (Contractor, Participating Agency or Voluntary Agency)							
a. NAME				b. CONTRACT, PASA OR VOL. AG. NO.			
Southwest Research Institute, San Antonio, Texas				Contract AID/ta-C-1057			

I. NEW ACTIONS PROPOSED AND REQUESTED AS A RESULT OF THIS EVALUATION

A. ACTION (X)			B. LIST OF ACTIONS	C. PROPOSED ACTION COMPLETION DATE
USAID	AID/W	HOST		
	X	TA/OST	Prepare PIO/T for FY 1975 funding	Dec. 1974 <i>all Action completed</i>

D. REPLAINING REQUIRES						E. DATE OF MISSION REVIEW	
REVISED OR NEW:	<input type="checkbox"/> PROP	<input type="checkbox"/> PIP	<input type="checkbox"/> PROJ AG	<input checked="" type="checkbox"/> PIO/T	<input type="checkbox"/> PIC/C	<input type="checkbox"/> PIP/P	11-13-74
PROJECT MANAGER: TYPE NAME, SIGNED INITIALS AND DATE				MISSION DIRECTOR: TYPE NAME, SIGNED INITIALS AND DATE			
Merrill W. Conitt				Office Director			

KPA 21 Reducing Public Investment Costs

Worldwide Technical Assistance and Research

Obligation: Initial FY 1974 Final FY 1976

Project

FY 1975/76 Technical Assistance Bureau Program Submission
Project and Budget Analysis Matrix

Service : Start FY 1974 End FY 1977

No. 995-574 Title Sulphur Surface Bond Housing

RAC/EXR Status: Project approved thru FY 1977

Contract/RASK

Section 2(d): Project approved thru FY 1977

AID/ta-C- Name Southwest Research Institute
-1057

Major Country/Countries

Colombia, Botswana, Indonesia*

Evaluation Scheduled Inv. 1974 6
Month Year Type

*Candidate Countries

Project Officer Merrill Conitz Extension 28937

On-Going Only

Narrative	Objectively Verifiable Indicators	
B1 PURPOSE: To compare sulphur surface bond techniques with concrete-base surface bond and conventional mortar techniques of house wall construction in three developing countries in the following respects: degree of skill required, cost, builder and buyer acceptability, durability, wall strength, and suitability of local materials.	B2 End of Project Status: 1. Basis established for decisions on use of sulphur bonding technique in house construction.	B3 Progress to Date: Test houses constructed, data being collected and technical assistance in construction of forty sulphur bonded houses requested by Instituto Credito de Territoria.
C1 OUTPUTS: 1. New knowledge related to use of sulphur bonding as cost effective and socially acceptable technique for house construction in LDCs. 2. Familiarization of LDC housing officials and builders with use of sulphur bonding in house construction.	C2 Output Indicators: 1. Comprehensive reports on cost effectiveness of sulphur bonding technique compared with other techniques for test houses constructed in three LDCs.	C3 Progress to Date: 1. Liaison relationships established with COLCIENCIAS and ICT in Colombia. 2. Four surface bonded houses constructed in Colombia. 3. Evaluation of technical aid economic feasibility by SWRI continuing. 4. Evaluation of social acceptability by host country counterpart, Instituto Credito de Territorial continuing. 5. Tentative selection of Botswana as second host country and plans for January 1975 visit.

D1 INPUTS:	D2 Budget Summary (in thousands of dollars)							
1. Financial support and technical monitoring by AID (TA/OST) assisted by NBS. Technical implementation by SWRI. 2. Contribution of local counterparts (ICT and COLCIENCIAS in Colombia) in country coordination; identification of local participants; site identification and selection; provision of labor and materials for test houses; economic, social, and physical data collection; testing of structures and material in local laboratories; and assistance in disseminating results.	(1)		(2)		(3)		(4)	
	All Prior Year	Personnel Dollars FY	Commodities	Other Costs	Total	Expenditures	June 30 Pipeline	Funding Period Month Year
	1. Thru FY 1973	75	12	5	80	42	38	June 1974
	2. Actual FY 1974	100	15	10	110			June 1975
	3. Estimated FY 1975	60	10	5	65			June 1976
	4. Proposed FY 1976**							
	5. All other							
	6. Total	235	37	20	255			

* FY 1975 Congressional Presentation level. ** Estimate

Expenditures are to be reported on an annual basis

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III. Standard/Key Questions

A. Project Inputs

1. Are key inputs being supplied according to plan by:
(a) AID, (b) action agent, (c) cooperating countries,
(d) multilateral organizations, and/or (e) other
donors?

YES NO If no, explain.

2. Are assumptions regarding the supply of inputs still valid?

YES NO If no, explain.

3. Rate performance of action agent(s) against plan:

Outstanding Satisfactory Unsatisfactory

Comment on key factors determining rating.

B. Transformation of Inputs into Outputs

4. Given the answers above, i.e., progress to date in supplying inputs, changes in assumptions, etc., is the management hypothesis that the totality of the resources applied to the project will be sufficient to produce the predetermined outputs by the specified target dates still valid?

YES NO If no, explain.

5. Is the approach or course of action originally selected, i.e., project design and/or methodology, still the most appropriate?

YES NO If no, what changes need to be made in either inputs, workplans and/or output expectations?

C. Project Outputs

6. List the output indicators, their planned targets, and the actual performance achieved for each during the period under review. See Matrix

- a. Was actual performance less than planned target?

YES NO If no, explain.

No, however, additional issues were identified during the construction. These issues are addressed in the narrative statement.

7/ For this and any other questions or statements, if adequate reference may be made to the project matrix, issues narrative, action agent's report, worksheets, or any other attached or readily available documentation.

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Additional testing and analysis of the physical properties of sulphur as a surface bonding agent required. This is reflected in the matrix as additional output.

Are they reflected in attached matrix?

YES NO

c. Do action agent's reports provide adequate progress data for monitoring and analysis?

YES NO If no, what action will be taken to correct situation?

NOTE: At the discretion of the Office Director, the following questions may be omitted in an informal (Option A) evaluation.

E. Project Purpose

7. Give statement of purpose as currently conceived if different from attached matrix.

a. Is it same as in PROP?

YES NO

b. Same or consistent with contract/PASA/grant?

YES NO

8. List conditions which will exist when above purpose is achieved--if different from those in attached matrix--or at any other particular point in project implementation, and cite or refer to evidence to date of progress towards conditions (EOPS).

9. Are critical assumptions for achieving purpose still valid?

YES NO If no, explain.

10. Is the development hypothesis that the aggregate production of outputs will lead to the creation of a set of conditions at the end of project, i.e., achievement of project purpose, still valid?

YES NO

Is the rationale as stated in the PROP still sound.

YES NO

If answer to either question above is negative, what changes are necessary (e.g., redesign, extend or terminate project, increase amount of inputs or production rate, change action agent)?

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SULPHUR SURFACE BOND HOUSING

IV. Issues Narrative

This project was reviewed informally on November 13 by a four member panel consisting of Ms. M. Kranz (ARA/LA/NC), Mr. J. Cabrero (ENGR/SP/UE), Mr. R. Mills (TA/PM) and Mr. M. Conitz, TA/OST. David Black of Southwest Research Institute, project coordinator, met with the panel to review progress, help identify issues and answer questions.

At the time of the review, the four test houses, scheduled to be constructed during Phase I had been completed in Colombia, 2 in Bogota and 2 in Cartagena. Construction had been accomplished with the cooperation of two Colombian agencies, Colciencias and Instituto Credito de Territorial (ICT). The four houses were constructed on ICT construction sites in Bogota and Cartagena respectively with the assistance of ICT engineers and contractors. Details are included in the Phase I Preliminary Report which is attached.

The major issues identified during the review were work performance, the need for additional testing of certain physical properties of sulphur, the Colombians' request for technical assistance in a major follow-on effort, and the selection of an African host country.

Mr. Juan Cabrero, ENGR/SP/UE had visited Bogota during the construction of the first two houses and identified certain problems in the organization and training of the laborers. These problems included need for better communication (translation) between the AID contractor and the laborers, need for minimal training in the application of sulphur prior to construction and the need for better supervision by the host country contractor. Recommendations for correcting these problems were implemented in Cartagena resulting in a much smoother operation.

Following construction of the four houses in Colombia, it became evident that more data were needed on certain physical properties of sulphur as a bonding agent. The specific properties in question are combustibility of the formulation used on walls, strength when used in the construction of beams, lintels and other structural members, and effect of aging on strength and durability. David Black reported that Southwest Research Institute has already begun testing these properties and will have a complete report before additional construction is undertaken.

ICT has been an enthusiastic participant in this experimental project and has become interested in further utilizing the sulphur technique in Colombia. Accordingly, ICT has proposed the construction of 20 additional houses in Cartagena and 20 in Cali or Popayan. They have asked AID and SwRI for additional technical assistance to support this construction. Because assistance of this magnitude is clearly beyond the scope of the present contract, ICT has been asked to seek the needed financial support through block grant funds that AID has made available to the Colombian government.

Preliminary plans for Phase II call for the construction of four additional houses in an African country. Preliminary contacts have been made with Ethiopia, Kenya, Tanzania, Zambia and Botswana. Since the review Botswana has been tentatively selected and a preliminary visit scheduled for January or February 1975.