

**UNITED STATES  
INTERNATIONAL DEVELOPMENT  
COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT**

*PDAAO 146*  
*1AM 37190*

**MANAGEMENT  
REPORT**

**PHOTOVOLTAIC  
DEVELOPMENT  
AND SUPPORT  
PROJECT**

**AID/NASA  
INTERAGENCY  
AGREEMENT  
DSB-5710-2-79**

Accomplishment: *William J. Bifano* August 21, 1981  
Date

Approval: *W. J. Mason* August 21, 1981  
Date

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RESPONSIBILITY:

APPROVAL W. MASICA

ACCOMPLISHMENT W. J. BIFANO

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PHOTOVOLTAIC  
PROJECT: DEVELOPMENT AND  
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<b>CENTER</b> <u>LEWIS RESEARCH CTR.</u>	<p style="text-align: center;"><b>NARRATIVE ANALYSIS</b></p> <div style="text-align: center; border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <span style="font-size: 0.8em;">2&amp;3 LEVEL</span> </div>	
<b>RESPONSIBILITY:</b> <b>APPROVAL</b> <u>W. MASICA</u> <b>ACCOMPLISHMENT</b> <u>W. J. BIFANO</u>		<b>PROJECT:</b> PHOTOVOLTAIC DEVELOPMENT AND SUPPORT PROJECT

**1.0** INTRODUCTION AND BACKGROUND

The Photovoltaic Development and Support Project is being implemented by the NASA Lewis Research Center (LeRC) for the U.S. Agency for International Development Bureau for Development Support, Office of Energy. The purpose of the project is to facilitate the use of photovoltaics for a variety of applications in support of AID's development assistance activities.

A Participating Agency Services Agreement (PASA No. NASA/DSB 5710-2-79) authorizing this project was signed by AID August 28, 1979, and approved by NASA August 30, 1979. Under this agreement, AID provided an initial funding authority of \$2,000,000. This PASA was amended in August 1980 to provide an additional funding authority of \$500,000.

**2.0** OBJECTIVE

The major objective of this project is to demonstrate the suitability of photovoltaic (PV) power systems for meeting basic electrical requirements in rural areas of developing countries.

The Project Management function at the LeRC is being performed by the Development and Support Project Office in the Solar and Electrochemistry Division of the Energy Programs Directorate.

**3.0** ACTIVITIES

The activities required to accomplish the Project objectives are:

1. Planning and Studies
2. Field Test Support
3. Applications
4. Training and Information
5. Management

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4.0 STATUS OF ACTIVITIES

4.1 Planning and Studies

4.1.1 Survey, Analysis and Selection Task

Activity complete for medical applications.

4.1.2 System Definition Study

Contract DEN 3-248: Education/Communication Applications

DHR personnel met with AID personnel David Sprague S&T/ED; Matt Seymour, AFR/DR; Dick Martin LAC/DR and Barry Heyman NE/DR to discuss possible PV applications of interest to AID. In addition, computer print-outs of AID programs of potential interest were reviewed and specific projects identified for further study.

4.2 Field Test Support

4.2.1 Project Definition

Ecuador - Mr. Alfonso Majia of the National Institute of Energy visited LeRC for technical discussion relative to the PV medical systems procurement. AID/E informed LeRC by cable that the Limited Scope Grant Project Agreement had been signed on July 6 by GOE.

Guyana - Comments on the draft Implementation Plan were received from AID/G. In addition, a cable clarifying the PV medical refrigerator subproject was sent in response to a request from AID/G.

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<p><u>Kenya</u> - AID/K informed LeRC that our request for data collection on diesel operation had not been received by the Ministry of Health (mailed March 5). A follow-up request was sent on July 14. Data received from the AMREF facility at Kibwezi indicated that the cost of diesel fuel had increased from 3.95 to 4.19 KSh/liter (about \$2.12/gal). The unit cost of electricity based on fuel alone is \$1.50 per kW-hour (compared to a total cost of \$0.05 per kW-hour for utility power in the U.S.).</p> <p><u>Zimbabwe</u> - LeRC was informed by cable that Dr. W. Sang, Provincial Medical Officer, would serve as the MOH liaison officer for the PV medical application project.</p> <p>4.2.2 Load Identification and Acquisition</p> <p><u>Contract DEN 3-266: Preparation of a Medical Equipment Catalog for PV-Powered Rural Clinics</u></p> <p>A status review meeting was held with Viking personnel on July 27. Items discussed included the content and format of the final draft of the catalog, winnowing of superfluous information and illustrations and pagination and preparation of final indexing.</p> <p>4.2.3 Load Testing and Evaluation</p> <p>No activity during this reporting period.</p> <p>4.3 Applications</p> <p>4.3.1 Medical Refrigerators</p> <p>The procurement package for the purchase of 10 of the 20 PV medical</p>		

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<p>refrigerators to be deployed for AID has been completed. Contract award is scheduled for October. Table 1 lists the candidate countries and current status for this activity.</p> <p>4.3.2 Medical Applications</p> <p>The technical evaluation committee met and reviewed proposals for the PV medical systems. Based on the review, the Solarex Corporation was selected as the source for the procurement.</p> <p>4.4 Training and Information</p> <p>Dr. Allen Roberts of the University of Michigan visited LeRC on July 13 to discuss planning strategy for the technical workshops which will be part of the PV medical applications with Mr. Majia of INE.</p> <p>5.0 PROJECT MANAGEMENT</p> <p><u>UN Conference on New and Renewable Sources of Energy (UNCNRSE)</u> - Stan Marsik shipped the display material which will be used in Nairobi during the exhibit scheduled for August 5 through 21.</p> <p><u>Egypt Renewable Energy Project</u> - The project planning team headed by LeRC returned from Cairo and began work on preparation of the project paper.</p> <p><u>PV Development and Support Project</u> - A status review meeting was held at AID/Rossllyn on July 30. Topics discussed included the financial status of the project under the existing PASA and redirection of the effort in FY 82 to provide technical assistance to AID Regional Bureaus and Field Missions. The latter would include management of PV projects which would be mission or regionally-funded rather than centrally funded (i.e., by S&amp;T/EY) as is now the case. Funding for a 7 person-year</p>		

TABLE 1 - MEDICAL REFRIGERATOR APPLICATION: STATUS

<u>Mission</u>	<u>Tentative Sites</u>	<u>Status/Remarks</u>	<u>Action Needed</u>
Zaire	Kionzo	Cable giving current procurement status and requesting additional site details sent to AID/Z on July 29.	None
Zimbabwe	TBD	Cable requesting selection of specific site for refrigeration application sent to AID/Z on July 2. Response may be delayed since Mission has limited staff.	None
Liberia	Sanoyea	Cable requesting additional site details sent to AID/L on July 24.	None
Philippines	TBD	Cable Manila 13406 of June 17 indicates that mission cannot formally concur on project until they have seen a draft copy of the agreement, project paper and proposal.	Send follow-up cable indicating approximate time when draft agreement will be available.
Indonesia	1) Tambun Kecamatan 2) Cianjur Kecamatan	Cable requesting additional site details sent to AID/I on July 27.	None
Tunisia	TBD	Mission has not yet responded to our cable of May 11 requesting identification of candidate sites.	"
Morocco	"	"	"
Yemen	"	"	"
Egypt	"	A repeat of the May 11 cable was sent on July 29 at the request of AID/E. The original cable apparently had been misplaced.	"
Jamaica	"	Don Bogart of LeRC discussed this project with Jerome Hulehan of AID/J while in Kingston. Hulehan is still awaiting a response to our May 11 cable from GOJ personnel.	"

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<u>Mission</u>	<u>Tentative Sites</u>	<u>Status/Remarks</u>	<u>Action Needed</u>
Guyana	Schepmoed	Cable sent on July 9 providing additional details on project in response to cable request (Georgetown 3118) of July 27.	None
Ecuador	TBD	AID/E sent a letter dated June 15 to the Instituto Nacional de Energia requesting identification of a site.	"
Dominican Republic	Las Tablas	Cable requesting additional site details sent to AID/DR on July 24.	"
Honduras	TBD	Cable Tegucigalpa 3978 of June 5 expresses interest in project and indicates that sites are currently being selected.	"
Guatemala	Tierra Blanca	Cable requesting additional site details sent to AID/G on July 24.	"
Haiti	Anse-a-Yeau	Cable requesting additional site details sent to AID/H on July 24.	"

<b>CENTER</b> <u>LEWIS RESEARCH CTR.</u>	<h2 style="text-align: center;">NARRATIVE ANALYSIS</h2>	
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level of effort and sufficient travel funds to accomplish this task would be provided LeRC under the redirected project. The possibility of supporting the S&T/ED Rural Satellite Project by providing some PV power systems for remote earth stations is still under discussion. (Note: John Chaplin of the European Space Agency called to arrange for a visit to LeRC in September to discuss powering of remote earth stations with PV systems.)

Andre Roch Compaore, Minister of Rural Development of Upper Volta, visited LeRC on July 20 for a briefing on photovoltaic technology status and possible future developments. He was accompanied by William Carney, U.S. Department of State Escort/Interpreter.

Jack Downey, Associate Technical Advisor from VITA, informed LeRC that Dr. Djibril Fall and Mr. Abdul Salaam Ba of the Centre Regional D'Energie Solaire (CRES) plan to visit LeRC on September 1. Dr. Fall is the director of CERER (a renewable energy center in Dakar) and a physics professor at the University of Dakar. Mr. Ba is the vice-chancellor of the University of Naimey and director of the National Office of Solar Energy. He will be in charge of CRES activities in Niger.

Don Bogart of LeRC presented a paper at "The Exhibition and Symposium on Renewable Energy Applications in the Caribbean" July 28-30, in Kingston, Jamaica. Over 200 people attended. This activity was funded under the U.S. Trade and Development Program.

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# 6.0 MASTER PROGRAM/PROJECT SCHEDULE

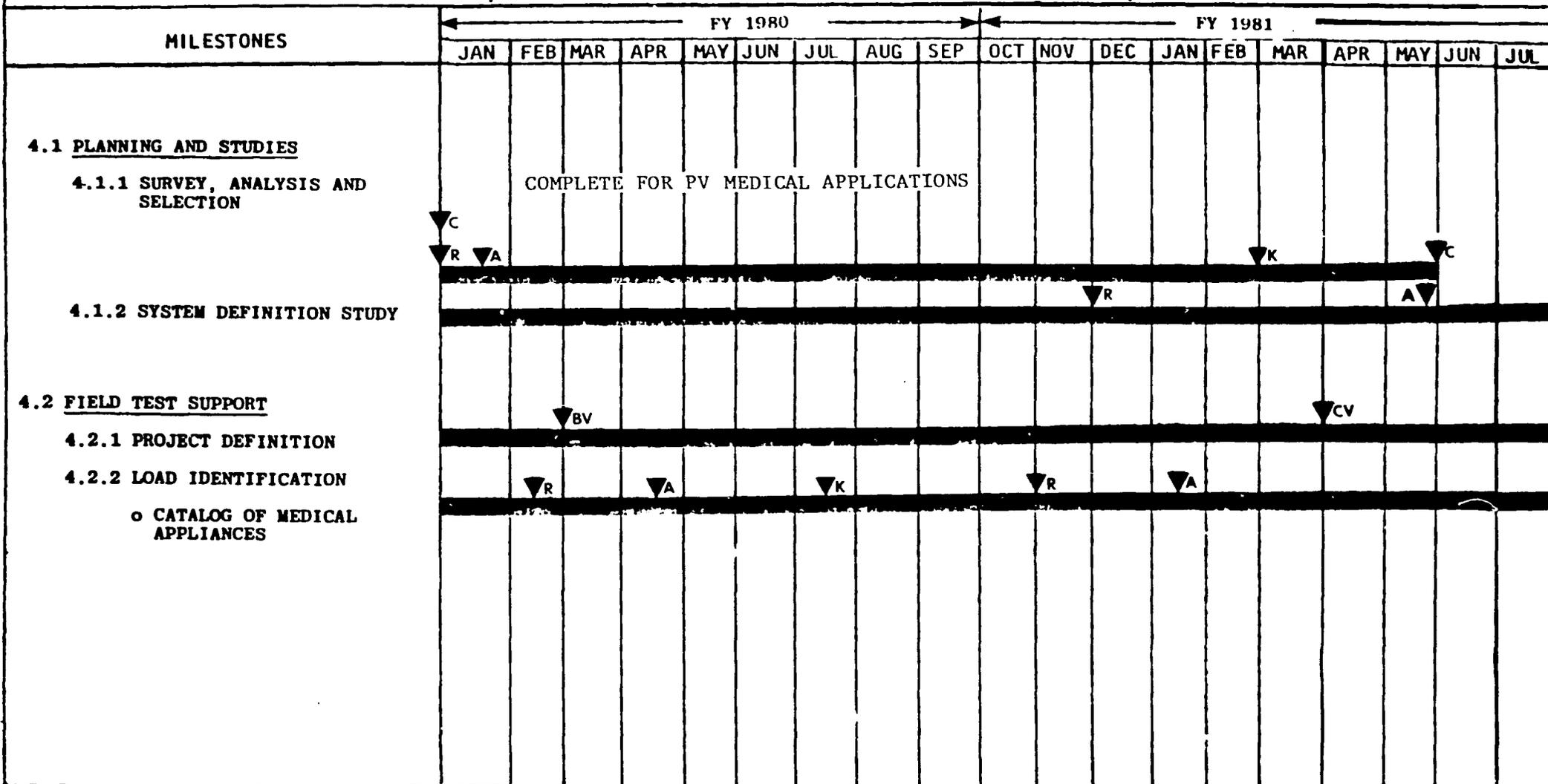
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PHOTOVOLTAIC  
 PROJECT: DEVELOPMENT AND  
 SUPPORT PROJECT

2&3  
 LEVEL

STATUS AS OF July 31, 1981  
 (DATE)



- NOTES: 1...N - RESCHEDULED MILESTONE
- |   |                         |   |                    |   |                                  |
|---|-------------------------|---|--------------------|---|----------------------------------|
| A | AWARD CONTRACT OR GRANT | K | CONTRACT COMPLETE  | T | TESTING                          |
| B | BEGIN                   | R | RELEASE RFP OR IFB | a | SEPT '79 - DEC '80 PLAN COMPLETE |
| C | ACTIVITY COMPLETE       | V | SITE VISIT         | b | 8 MONTH REVIEW                   |
|   |                         | P | PROCUREMENT        | c | 15 MONTH REVIEW                  |
|   |                         |   |                    | d | JAN '81 - DEC '81 PLAN COMPLETE  |



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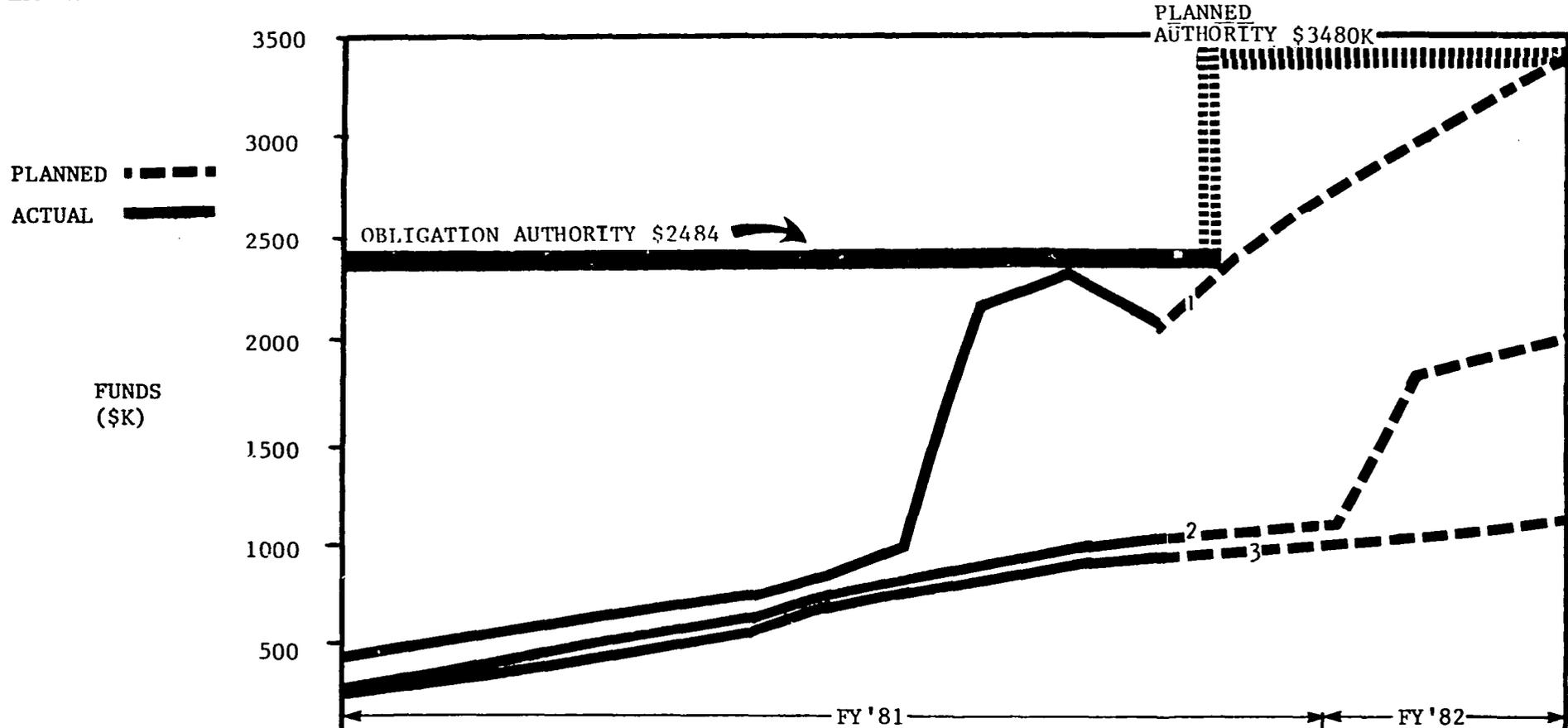
7.0 FINANCIAL STATUS

2&3  
LEVEL

PROJECT: PHC PVOLTAIC  
DEVELOPMENT AND SUPPORT  
PROJECT

OBLIGATIONS AND COSTS FOR TOTAL  
PROJECT, INCLUDING PURCHASES,  
PERSONNEL EFFORT AND TRAVEL.

STATUS AS OF July 31, 1981  
(DATE)



Cumulative		FY '81											FY '82			
		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Authority		2484	2484	2484	2484	2484	2484	2484	2484	2484	3480	3480	3480	3480	3480	3480
1	Commitments (Actual)	500	585	688	720	764	804	1047	2299	2429	*1958					
2	Obligations (Actual)	313	360	469	498	585	622	646	739	854	932					
3	Costs (Actual)	308	346	380	416	573	615	645	663	699	763					

\* \$450K Decommited due to lower than expected bids for PV Medical Systems

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IN-HOUSE PERSONNEL

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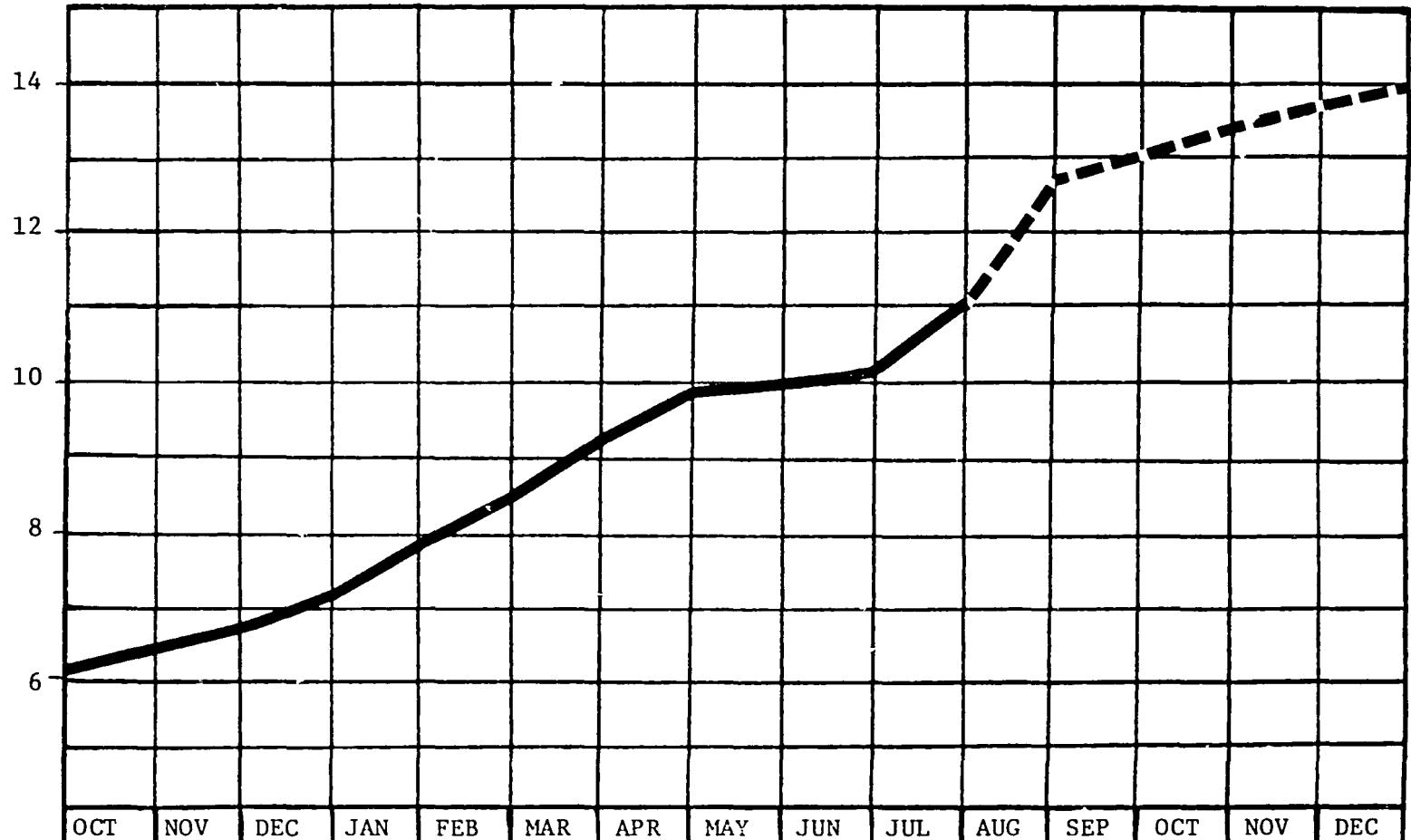
PROJECT: PHOTOVOLTAIC  
DEVELOPMENT AND SUPPORT  
PROJECT

2&3  
LEVEL

STATUS AS OF July 31, 1981  
(DATE)

PLANNED   
ACTUAL 

Cumulative Person Years



Total	Planned	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	Actual	6.1	6.6	7.3	7.8	8.4	9.2	9.8	10.0	10.3	11.0					

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