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**AUDIT OF THE
MALARIA CONTROL II PROJECT
IN PAKISTAN
PROJECT NO. 391-0472
AUDIT REPORT NO. 5-391-90-05
JANUARY 31, 1990**

**USAID/Pakistan should improve its
monitoring of project progress and better
assure the effectiveness of the insecticides
used to control malaria.**

AGENCY FOR INTERNATIONAL DEVELOPMENT
OFFICE OF THE REGIONAL INSPECTOR GENERAL FOR AUDIT
— Singapore —

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January 31, 1990

MEMORANDUM FOR Mr. James A. Norris
Director, USAID/Pakistan

FROM: 
Reginald Howard, RIG/A/Singapore

SUBJECT: Audit of the Malaria Control II Project in Pakistan,
Project No. 391-0472 (Audit Report No. 5-391-90-05)

The Office of the Regional Inspector General for Audit/Singapore completed its audit of the Malaria Control II Project in Pakistan. Enclosed is the final report for your review and appropriate action.

The comments you provided based on the draft report are summarized after each finding and included in their entirety as Appendix 1 to this report. Based on your comments, Recommendation Nos. 1 and 2 are considered resolved and will be closed when the agreed to actions are completed. Please advise me within 30 days of the additional actions taken to implement the recommendations.

I appreciate the cooperation and courtesy extended to the audit staff during the audit.

EXECUTIVE SUMMARY

A.I.D. had obligated \$53.0 million and had disbursed \$38.5 million (as of July 31, 1989) for the **Malaria Control II Project in Pakistan**. The project objective was to establish a nationwide malaria control system. The project was approved in May 1982 and is due for completion on September 30, 1992.

The Office of the Inspector General for Audit/Singapore conducted an audit of the project activities covering the period from May 1982 through July 1989. The audit objectives were to assess whether USAID/Pakistan had adequate systems to measure project progress and whether A.I.D. funds were effectively spent on project-funded insecticides.

The audit disclosed that:

- **USAID/Pakistan should develop better quantifiable indicators and reporting systems to measure project progress, and**

- **A.I.D. funds may be more effectively spent on insecticides if needed research and monitoring determine that mosquitoes that spread malaria have developed a resistance to the insecticides currently used.**

This report recommends that USAID/Pakistan improve its monitoring and reporting systems to measure project progress and ensure that adequate tests and research are conducted to assure the effective use of A.I.D.-funded insecticides. USAID/Pakistan officials agreed with the report findings and recommendations and were taking actions to implement the recommendations. Their comments are summarized after each finding and presented in their entirety as Appendix 1.

Office of Inspector General



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**AUDIT OF THE
MALARIA CONTROL II PROJECT
IN PAKISTAN**

PROJECT NO. 391-0472

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**AUDIT OF THE
MALARIA CONTROL II PROJECT
IN PAKISTAN
PROJECT NO. 391-0472**

PART I - INTRODUCTION

A. Background

The overall objective of the **Malaria Control II Project In Pakistan** was to establish a nationwide malaria control system. This was to be accomplished by expanding the capabilities of Pakistan's basic health units in detecting and treating malaria, and by performing research to determine the effectiveness of various insecticides in mosquito control.

The project was approved on May 19, 1982, and is to be completed by September 30, 1992. The total project costs were estimated at \$116.3 million with A.I.D. and the Government of Pakistan providing \$66.0 million and \$50.3 million, respectively. As of July 31, 1989, A.I.D. obligations and disbursements were \$53.0 million and \$38.5 million, respectively. As shown below, most of the A.I.D. funds were for insecticides (commodities).

A.I.D. Obligations and Disbursements

As of July 31, 1989 (in \$000)

<u>Project Element</u>	<u>Obligated</u>	<u>Disbursed</u>
Technical Assistance	\$ 1,266	\$ 466
Training	1,450	81
Commodities	47,546	37,749
Other Cost	2,210	191
Contingency	<u>528</u>	<u>-</u>
	<u>\$53,000</u>	<u>\$38,487</u>

B. Audit Objectives and Scope

The Office of the Regional Inspector General for Audit/Singapore conducted an audit of the Malaria Control II Project in Pakistan. The audit objectives were to determine whether (1) USAID/Pakistan had adequate systems to measure progress in achieving the project objective to establish a nationwide malaria control system and (2) A.I.D. funds were effectively spent on insecticides.

The audit was conducted during August 1989 at USAID/Pakistan in Islamabad and included site visits to the Rawalpindi and Mardan districts to observe project activities in malaria control. Project records were reviewed, and discussions were held with USAID/Pakistan and appropriate Government of Pakistan officials. The audit covered the period from May 1982 through July 1989 and A.I.D. disbursements of \$38.5 million.

The review of internal controls and compliance was limited to the issues raised in this report. The audit was made in accordance with generally accepted government auditing standards.

PART II - RESULTS OF AUDIT

USAID/Pakistan needs better systems to measure progress in achieving the project objective to establish a nationwide malaria control system. In addition, A.I.D. funds may be more effectively spent on insecticides.

USAID/Pakistan had established improved benchmarks in 1987 to identify and monitor achievements leading to Government of Pakistan's self-reliance in malaria control. Also, the project substantially reduced the use of insecticide for malaria control without an increase in the incidence of malaria.

USAID/Pakistan does, however, need better quantifiable indicators (targets and timeframes) and reporting systems to measure project progress. Also, the effectiveness of the insecticide being used was uncertain because research and monitoring were needed to determine the degree mosquitoes that spread malaria had developed a resistance to the insecticides.

The report recommends actions to improve the monitoring and reporting on progress in achieving the project objective and to ensure use of effective insecticides.

A. Findings and Recommendations

1. Project Progress

Project progress could not be determined because adequate quantifiable indicators (targets and timeframes) and reporting systems were not established as required by the Foreign Assistance Act and A.I.D. regulations. Better indicators and improved reporting are needed to effectively monitor and measure project progress.

Recommendation No. 1

We recommend that USAID/Pakistan:

- a) establish adequate quantifiable indicators (targets and timeframes) to measure progress towards the project objective to establish a nationwide malaria control system,
- b) require the Government of Pakistan to provide reports necessary to monitor progress in achieving the quantifiable indicators, and
- c) ensure that periodic reports to Mission management identify the progress in achieving each established indicator.

Discussion

The Foreign Assistance Act requires A.I.D to establish a management system that includes (1) the definition of objectives, (2) the development of quantifiable indicators to measure progress towards these objectives, and (3) the adoption of methods for comparing actual versus anticipated results. In addition, A.I.D. Handbook 3 requires a reporting system which keeps all parties advised of the current status of project activities.

USAID/Pakistan could more effectively monitor project progress in achieving the project objective to establish a nationwide malaria control system. This could be accomplished

by establishing quantifiable indicators (targets and timeframes) and reporting systems that would objectively measure project achievements.

The project paper was revised in September 1988 to put stronger emphasis on institution building, particularly on expanding the capabilities of Pakistan's basic health units in detecting and treating malaria, and on operational research. The revised project paper identified 40 "objectively verifiable indicators" and 16 "specific target output indicators" to be used for measuring project progress. These indicators, however, were not sufficiently quantifiable (including targets and timeframes) to measure progress, or they were not used to monitor and report on project progress.

Examples of these problems for the 40 "objectively verifiable indicators" are noted below:

- One indicator was to measure the Government of Pakistan's progress in providing required funding. The Government was to provide \$35.7 million in local currency (Rs 642 million) for the five-year period ending September 30, 1992. About \$12.3 million (Rs 258 million) was to be provided as of September 30, 1989. Neither USAID/Pakistan nor the Government of Pakistan had a system to monitor and report actual funding or knew how much had been provided.
- One indicator for determining the availability of health care facilities for malaria surveillance was "...taking slides [for determining malaria] and administering appropriate treatment and follow-up." Targets or interim timeframes, such as the number of slides and treatments, were not established.
- One indicator for the program sector goal to reduce morbidity and mortality from endemic diseases, especially malaria, was increased utilization of the national health services delivery system by the general public. Targets and interim timeframes were not established to measure progress in achieving this component.

The 16 "specific target output indicators" did identify specific targets and interim timeframes. USAID/Pakistan, however, was neither effectively monitoring progress nor identifying known progress in its periodic management reports.

For example, two indicators were established to assure adequate staffing for the malaria control program at both the Government of Pakistan headquarters and at the provincial levels. The maximum percentage of staff vacancies was not to exceed 5 percent annually. USAID/Pakistan, however, did not know and consequently did not identify in any management reports the total number of staff authorized or the number of staff vacancies. An analysis of the status and reporting for the 16 "specific target output indicators" is provided in Exhibit 1.

A September 1988 amendment to the project agreement included additional interim indicators. These indicators were to measure progress toward the project objective and to be used as conditions precedent to disbursement for procurement of insecticide for each fiscal year ending September 30, 1989, through September 30, 1992. Although these indicators should help in monitoring project progress, they were not comprehensive enough to adequately monitor overall progress for the project objective.

USAID/Pakistan officials acknowledged that better quantifiable indicators and improved reporting were needed. The officials said that such indicators would be developed and they would have the Government of Pakistan submit progress reports on progress made toward the indicators. Also, the officials said a planned project evaluation would include an assessment of progress made in achieving the new indicators.

In order to improve measurement of project progress, USAID/Pakistan should establish better quantifiable indicators and require the Government of Pakistan to provide reports necessary to monitor progress in achieving the quantifiable indicators. The status of achieving these indicators should be in management reports.

Management Comments

USAID/Pakistan officials concurred with the finding and recommendation. They stated that (1) action was taken to establish improved quantifiable indicators, (2) the Government of Pakistan would be required to provide annual progress reports to monitor achievements of the indicators, and (3) periodic reports to Mission management would highlight the progress in achieving each indicator.

Office of Inspector General Comments

Based on USAID/Pakistan's comments, Recommendation No. 1 is considered resolved and will be closed when USAID/Pakistan provides the documentation to support that the agreed to actions have been completed.

2. Type of Insecticide Used

The effectiveness of insecticide spraying could not be determined because sufficient monitoring and research had not been performed to assure that malaria carrying mosquitoes have not developed a high resistance to the A.I.D.-funded insecticide (malathion). With such assurance, A.I.D. funds may be more effectively spent on insecticides.

Recommendation No. 2

We recommend that USAID/Pakistan:

- a) ensure that the necessary research is performed to determine whether or not the mosquito strain *anopheles stephensi* is a malaria carrier in Pakistan, and
- b) ensure that the tests carried out by the Government of Pakistan to determine mosquito resistance to insecticides are reliable and the results of these tests are used in the annual spray plan.

Discussion

Malathion is the insecticide primarily used under the Malaria Control II Project and represents its largest expenditure. As of July 31, 1989, \$36.4 million of the \$38.5 million A.I.D. had spent under the project was for malathion. The September 1988 project paper for the project extension estimated that malathion procurements would cost an additional \$6.9 million for the three-year period ending September 30, 1992.

Tests performed by the Government of Pakistan showed that mosquito strains, especially the *anopheles stephensi* strain, were developing increased resistance to malathion. For example, testing in the Lahore district of the Punjab Province showed the mortality rate of *anopheles stephensi* mosquitoes decreased from 80.5 percent in 1982 to 37.6 percent

in 1986. Examples of districts in the Punjab Province and the North West Frontier Province where Government tests have shown high resistance are presented in Exhibit 2.

The effectiveness of malathion had been questioned since the inception of the Malaria Control II Project in 1982. For example:

- The 1982 project paper noted that tolerance to malathion was appearing in some locations and would require intensive study.
- A December 1986 consultant's report concluded that there was clear evidence that high malathion resistance in anopheles stephensi was prevalent in Pakistan and recommended that the resistance issue be continuously and thoroughly monitored.
- An April 1987 project evaluation concluded that the resistance was high and recommended intensive testing to determine the extent mosquitoes had developed a resistance to malathion.

Notwithstanding the above concerns, USAID/Pakistan had not yet assured that adequate research and testing were performed to determine the extent malaria carrying mosquitoes had developed a resistance to malathion. For example, USAID/Pakistan had not performed any reviews to determine the reliability of the tests performed by the Government of Pakistan to determine resistance levels. Available documents indicate that the testing may not be reliable due to inadequate testing procedure.

In addition to the reported increase in the resistance to malathion by the anopheles stephensi strain of mosquito, USAID/Pakistan officials were not convinced that this mosquito was a malaria carrier. They said that tests performed to date to determine whether anopheles stephensi strain actually was a malaria carrier in Pakistan were not sufficient to come to a conclusion and that more field testing was required.

In conclusion, A.I.D. funds may be more effectively spent on insecticides if USAID/Pakistan ensures necessary research is performed to determine if the anopheles

stephensi strain is a malaria carrier and determine if the Government of Pakistan's resistance tests can be relied upon and used in the annual spray plan.

Management Comments

Although USAID/Pakistan officials believed that special attention had been given in the past to assure that A.I.D. funds were effectively spent on insecticides, they concurred with the finding and recommendation. They said a consultant was hired subsequent to the audit to determine the role of anopheles stephensi in malaria transmission and to provide technical guidelines to assure the effective use of insecticides.

Office of Inspector General Comments

Based on USAID/Pakistan's comments, Recommendation No. 2 is considered resolved and will be closed when USAID/Pakistan provides the documentation to support that the agreed to actions have been completed.

B. Compliance and Internal Controls

Compliance

Finding No. 1 identifies that USAID/Pakistan did not fully comply with A.I.D requirements for monitoring and reporting on project achievements. The review of compliance was limited to the findings presented in this report.

Internal Controls

Finding No. 1 identifies the need for more comprehensive quantifiable indicators and to improve the monitoring and reporting systems to measure project progress. The Other Pertinent Matters section of this report identifies the need for USAID/Pakistan to improve its monitoring of host country contributions to the project. The audit review of internal controls was limited to the findings presented in this report.

C. Other Pertinent Matters

The project agreement provides that the Government of Pakistan contribute \$50.3 million (Rs 1.05 billion) over the project life from 1982 to 1992. USAID/Pakistan and the Government of Pakistan Directorate of Malaria Control did not effectively monitor and report the amount of contribution and consequently they did not know exactly how much was required nor actually provided for the project.

The audit did not attempt to assess the adequacy of the Government's contribution for project activities. However, there have been shortages. For example, a 1987 project evaluation reported that planned activities in malaria control had not been fully carried out in the Sind Province of Pakistan due to a shortage of host country contributions. Also, Baluchistan Province officials reported in April 1989 that its budget was cut by 20 percent which would hamper spray operations and this could lead to an increase in malaria disease. We suggest that USAID/Pakistan improve its monitoring of the Government of Pakistan's contribution to the Malaria Control II project.

In response to the draft report, USAID/Pakistan officials agreed that a system was not in place for periodic reporting of the Government's contributions. They said a system would be established.

PART III - EXHIBITS AND APPENDICES

Analysis of Status and Reporting on
"Specific Target Output Indicators"

<u>Indicator</u>	<u>Target</u>		<u>Status 1/</u>		<u>Reported In USAID/Pakistan Management Reports</u>
	<u>9/30/88</u>	<u>9/30/89</u>	<u>9/30/88</u>	<u>8/31/89</u>	
<u>Administration:</u>					
Maximum percentage of staff vacancies					
- Headquarters	5%	5%	Unknown	Unknown	No
- Provinces	5%	5%	Unknown	Unknown	No
<u>Program Planning:</u>					
- Annual Plan of Action	1	1	Completed	Completed	
- Annual Spray Plan	1	1	Completed	Completed	
<u>Transport:</u>					
- Percent of total fleet off road	10%	10%	Unknown	Unknown	No
- Percent of fleet replacement	14%	11%	Unknown	Unknown	No
<u>Training:</u>					
- Long term (outside)	1	3	1	7	Yes
- Short term (outside)	6	29	25	11	Yes
- NIMRT	200	200	Unknown	Unknown	No
- Provincial	200	400	Unknown	Unknown	No
<u>Spray Operations:</u>					
- Percent of housing targeted	20%	20%	20%	20%	No
- Percent of targeted housing sprayed	90%	92%	46%	Unknown	Yes

<u>Indicator</u>	<u>Target</u>		<u>Status 1/</u>		<u>Reported In USAID/Pakistan Management Reports</u>
	<u>9/30/88</u>	<u>9/30/89</u>	<u>9/30/88</u>	<u>8/31/89</u>	
<u>Surveillance:</u>					
- Percentage of Passive Case Detection to total country slides	20%	29%	2/	2/	No
- Average turnaround time from taking blood slide to treatment of positive malaria cases	14 days	12 days	Unknown	Unknown	No
- Laboratory services error rate in cross check of slides examined remains under:	1%	1%	Unknown	Unknown	No
<u>Evaluation</u>					
- Annual Program-wide	1	1	None	Planned	Yes

1/ The status presented is based on discussions with USAID/Pakistan project officials and a review of documents provided by those officials.

2/ This information is available in Directorate of Malaria Control Annual Reports which are submitted to USAID/Pakistan. However, the reports are issued 9 to 10 months after the end of the Pakistan fiscal year and contain data almost two years old. For example, the report for the period ended June 1988 was issued in April 1989 and contained information for the period ended June 1987.

Examples of Anopheles Stephensl Mosquito
Mortality Rates Using Malathion (Insecticide)

Punjab Province

<u>District</u>	<u>Percentage of Mortality</u>	
	<u>1982</u>	<u>1986</u>
Lahore	80.5	37.6
Kasur	100.0	59.3
Sargodha	98.6	60.1
Faisalabad	80.0	56.6
Jhang	100.0	83.3
Multan	96.0	77.4
Vehari	100.0	72.7
Sahiwal	84.4	68.5
Bhawalnagar	81.9	53.5
R.Y. Khan	98.4	94.0
D.G. Khan	77.7	42.3

North West Frontier Province

<u>District</u>	<u>Percentage of Mortality</u>	
	<u>1982</u>	<u>1986</u>
Kohat	100.0	67.5
Bannu	85.6	73.0
D.I. Khan	87.8	57.5

Note: The information presented is based on a December 1986 report by a USAID/Pakistan consultant who used data provided by the Directorate of Health Services in the respective Pakistan provinces.



UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

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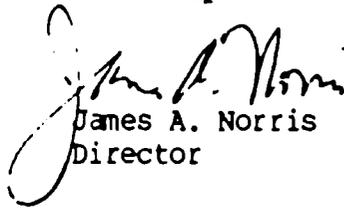
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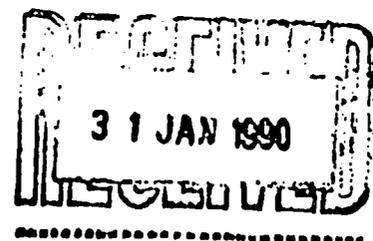
Mr. Reginald Howard
Office of The Regional I6/Audit
C/O American Embassy
30 Hill Street
Singapore 0617

Dear Mr. Howard:

I have reviewed the draft reports and responses on Malaria Control II (391-0472) and Salaries Reimbursement. I believe our comments are responsive to your concerns. Since we are under time-pressure to get this to you soonest, we are not further editing the technical office comments.

Sincerely


James A. Norris
Director



memorandum

DATE: January 22, 1990

REPLY TO
ATTN OF: *[Signature]*
Dr. Razaq A. Ismail, Project Officer/MCP II

SUBJECT: Comments on Audit Report of Malaria Control II Project in Pakistan
Project No.391-0472 dated October 27, 1989

TO: Inspector General for Audit, USAID/Singapore

Thru: *[Signature]* *[Signature]*, Chief/HPN
RMCClure: Controller *[Signature]*

Following are my comments on the subject report:

1. General

The audit report remarks quote USAID Pakistan could improve its monitoring of project progress and better assure the effectiveness of the insecticide used to control malaria unquote. It may be noted that USAID Pakistan has already taken steps towards improving quantifiable progress indicators and that it will continue to follow its current strategy of ensuring effectiveness of insecticide used for malaria control. The Mission recommends that audit observations especially for insecticide usage be amended to reflect the Mission's continued position of ensuring effective spending of AID funds on insecticide for malaria control.

Detailed comments on each subheading are as follows:

2. Executive Summary

A. Quantifiable Indicators: The report recommends that USAID Pakistan develop better quantifiable indicators and improve its monitoring and reporting systems to measure project progress. It should be noted that the quantifiable indicators and reporting systems of the PP and ProAg dated September 29, 1988 were proposed by the project design team and the mission project committee. The Mission has a system of semi-annual portfolio reviews and PROMIS reporting for internal control. Project evaluations are planned as annual features to ensure the project's progress.

In November/December 1989, expert consultants visited Islamabad at the mission's invitation to examine the project's existing progress indicators and recommend improved purpose level project indicators. The consultant's final report recommended sets of improved quantifiable purpose level project indicators for monitoring the project's progress. These improved project indicators will be incorporated into the Mission's management information system (MIS) in FY 1990. Further, the external project evaluation scheduled for February 1990 will also assess the

adequacy of GOP inputs to the project. Any related recommendation of the evaluation will be incorporated in the Mission MIS. Thus the resultant MIS system, incorporating improved purpose level indicators, will meet monitoring and reporting requirements and the audit report requirements.

B. Effective Spending of AID Funds on Insecticide: The audit report advised quote AID funds may be more effectively spent on insecticide if needed research and monitoring determines that mosquitos that spread malaria have developed a resistance to insecticide currently used unquote. The report recommends that USAID Pakistan ensure that adequate tests and research are conducted to assure the effective use of AID funded insecticide.

Special attention has been paid in the past to assure that AID funds for insecticide were spent effectively, and activities planned in the future will assure the continued effective use of AID funds.

In the past three years USAID has carefully considered changing the insecticide used in the annual spray operations. The number of malaria cases in the country was decreasing in the last three years with no change of insecticide. A report in 1986 by an expert in the field of insecticide resistance, Dr. George P. Georghiou, referred to the reduced mortality rate of An. Stephensi against malathion, and advised phasing in of Fenitrothion insecticide. However, in 1987 the Mission was advised not to do so by the external project evaluation team until there were sufficient epidemiological and entomological reasons to justify the change. The team explicitly supported the conclusion of the 1983 external review team that quote: the use of organophorous (O-P) compound, should be maintained as long as possible. We recommend that malathion be the only insecticide for use in spray operations until such time as when there is epidemiologic evidence of the ineffectiveness of this compound. A change to another O-P compound, e.g., fenitrothion, when indicated by a combination of resistance and epidemiologic data, should be on a sector-wide rather than large scale unquote. This advice is consistent with WHO's world-wide guidelines for considering a change in insecticide. The WHO philosophy on discontinuing an insecticide is that quote: the final decision should be based on epidemiological data, since in certain situations, an acceptable level of disease control may be maintained even though the vector shows some resistance to the compound unquote. The project evaluation team, referring to the WHO technical report series No.65 and 5th report of WHO expert committee on vector biology and control, had further commented quote both the reports urged caution in switching from malathion to fenitrothion unquote. USAID therefore initiated operational research in 1987 through the National Institute of Malaria Research and Training (NIMRT) to assess the role of An. Stephensi in malaria transmission. This research was completed in 1989.

Further, to ensure the continued use of cost effective insecticide for 1990 spray operations under the project, the Mission has invited Dr. Georghiou to review all aspects of vector resistance to insecticide in

Pakistan including the epidemiological impact as it relates to malaria control. This review includes an assessment of the need of any change of insecticide in future spray operations beginning in 1990 and recommendations on cost effective insecticides for 1990 spray operations. In this way the Mission will further ensure cost effective spending of AID funds for malaria control in the future.

3. Part II - Results of Audit

The audit report's observations and recommendations regarding the need for better quantifiable indicators in Part II are well taken. The Mission agrees to the recommendation to improve the monitoring and reporting system under the project and has already taken actions to that effect. Regarding observations of the audit report on use of effective insecticide, the comments provided under the subheading "Effective Spending of AID Funds on Insecticide" of the Executive Summary, relate to these observations.

A. Findings and Recommendations

1. Project Progress: As noted earlier, the existing project's indicators have been revised and the Mission now has improved purpose level indicators for the project. These improved indicators will be included in the project implementation plans in 1990 along with any recommendations of the external Project Evaluation scheduled for February 1990. Regarding the report's recommendation that the Government of Pakistan (GOP) provide progress reports to monitor achievements of quantifiable indicators, a project implementation letter will be issued requiring that the GOP provide these reports annually. Based on the GOP monitoring reports and the observations of the annual evaluation team, periodic reports highlighting the progress in achieving each indicator will be prepared and forwarded to Mission management as recommended. These reports will be in addition to the reports prepared under PROMIS.

Regarding the points raised under subheading Discussion, as advised earlier, the proposed improved quantifiable indicators and reporting system to measure project achievements have been developed through the experts' report. The Mission management information system of semi-annual PROMIS reporting will be modified in FY 1990 by adding the newly proposed improved purpose level indicators.

For the 16 specific target output indicators, the monitoring process was planned to take place through annual evaluations. A few of those indicators were also covered under the Mission's PROMIS reporting system. There have been some delays, due to cancellation of the 1988 evaluation and postponement of the 1989 evaluation until qualified technical experts were available. The next evaluation is scheduled to take place in February 1990.

2. Type of Insecticide Used: In the past three years, the Mission has ensured that in the light of available technical information

including the information on spray impact, the insecticide in use for malaria control operations, was effective and was bringing about reduction in positive malaria cases and in the annual parasite incidence rate (API). Therefore during this period of time the insecticide was not changed.

As noted earlier, the Mission has now hired Dr. George P. Georghiou, an expert on insecticide resistance, to review the available entomological and epidemiological data and the completed NIMRT research study on the role of An. Stephensi in malaria transmission. This review, which is just being completed, will provide technical guidelines for implementing any cost effective change in insecticide under the project.

Regarding points raised under the subheading Discussion, please refer to the comments on the Executive Summary.

B. Compliance and Internal Control

1. Compliance: The report observes that USAID Pakistan did not fully comply with AID requirements for monitoring and reporting on project achievements. As noted in comments on the Executive Summary, the Mission has now obtained improved purpose level quantifiable indicators which will be incorporated into the Mission MIS reporting system. The indicators proposed by the audit report will also be incorporated into the system. This will meet AID requirements for monitoring and reporting.

2. Internal Control: The audit report identifies the need for more comprehensive quantifiable indicators and to improve the monitoring and reporting system including the monitoring of host country contribution to the project. As noted above, comprehensive quantifiable indicators are now available. A mechanism to monitor host country contributions to the project will be established. The Mission plans to incorporate these indicators into the Mission MIS system. These steps will improve the existing monitoring and reporting system to measure project progress and will meet the audit report proposal.

C. Other Pertinent Matters

The audit report states that USAID/Pakistan and the Government of Pakistan, Directorate of Malaria Control, did not effectively monitor and report the amount of contributions and consequently they did not know how much was required nor actually provided for the project. USAID agrees that the system and the indicators were not in place for periodic reporting of the exact amounts of funds made available by the GOP for the project. The system is now planned to be established. However, information is available for each year on the exact amounts made available for project. With the establishment of a more comprehensive system of monitoring the GOP contribution to the project, any shortages in GOP contributions will be identified quickly so that the situation can be resolved.

4. Part III - Exhibits

A. Analysis of Status and Reporting on Specific Target Output Indicators

The exhibits attached to the report indicate that the status of 8 specific target output indicators is unknown. As advised earlier, monitoring these target output indicators was planned to occur through scheduled annual evaluations. While the start of the evaluations has been delayed until February 1990, the Mission expects that with an improved monitoring system in place and annual evaluations taking place on time, updated information on these indicators will now begin to be available on a routine basis.

B. Examples of An. Stephensi Mortality Rate against Malathion

The data presented in the report are self explanatory. Application of these data is addressed in comments under the subheading "Effective Spending of AID Funds on Insecticide" of Executive Summary.

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Report Distribution

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Office of Programs and Systems Audit (IG/PSA)	1
Office of Legal Counsel (IG/LC)	1
Office of Resource Management (IG/RM)	5
Assistant Inspector General for Investigations and Inspections (AIG/I)	1
Regional Inspector General for Investigations/Singapore (RIG/I/S)	1
RIG/A/Cairo	1
RIG/A/Dakar	1
RIG/A/Manila	1
RIG/A/Nairobi	1
RIG/A/Tegucigalpa	1
RIG/A/Washington	1