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To: BEMIS Working Committee
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Subject: Final Report
Date: June 6, 1993
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The statement of work with which I began my activities was relatively clear: to improve and strengthen the EMIS which should make school-level data available to analysts and decision-makers in formats that are standard across schools, districts, and provinces. In addition, the system was to be coordinated with the work of other donors, especially UNDP and the World Bank), and the GOP federal education planning units, to support a standardized, national EMIS for education.

This final report consists mainly of a series of annexure listed further down. These annexure are the actual documentation of the EMIS process in Balochistan since January 1990 to June 1993. During this period of time regular BEMIS Status Reports, up-dates, and discussion papers that represent several thousand pages of hard copy were presented to the BEMIS Working Committee and were at their time thoroughly discussed.

It has been up to others to determine the level of success in the design, implementation and operation of the Balochistan EMIS, as well as to determine its present level of sustainability. I recommend reading the various USAID/GOB Steering Committee and Annual Review Reports, the World Bank Aid Memoirs for Balochistan 1991 and 1992, and the PED Mid-Term Evaluation Report prepared for USAID by the Education Development Center, dated May 24, 1993.

In my opinion, there has been full compliance with the initial statement of work proposed. Today BEMIS has a fully operational computerized information system capable of collecting, processing and reporting twice per year on a relational database structure on: School by Name, Address, Division, District, Tehsil, Village, Management, Instruction, Year Established, Urban/Rural, Gender, Enrollment by Grade, Age, Gender, Repeaters, Staff, Bio-data of Teachers by School, qualifications (professional/academic), Buildings, Facilities, Non-teaching spaces, Instructional Materials, Textbook distribution by grade, etc..

Data distribution procedures for reaching all levels of education administration from the District to the Federal offices are in place along with Standard Operating Procedures for the complete EMIS operation.

BEMIS Computer Center, Twelve District Level Computer Cells, and Six additional Computer Support Cells at senior provincial level education offices are operational.

Thirty Three Computer Operators have received computer training at basic, intermediate, and advanced levels over a period of two years. Training facilities and equipment is available as well as tested training materials. Data Collection training has been provided to over 700 data collection which now have completed six school censuses.

GOB Staff including a Dy. Director, two Assistant Directors and 17 Computer Operators and Assistant Computer Operators have been appointed and trained. Requests for additional staff are placed through the Schedule of New Expenditures.

Equipment for the whole BEMIS operations has been received from USAID and GOB. Training installations are in place along with storage area at C-11 Railway housing society location. BEMIS Operations are in place along with administration areas at the site of the new Directorate of Primary Education.

Full coordination and compatibility exists with the local representative of NEMIS whom will continue cooperation with BEMIS as Technical Advisor; NEMIS and BEMIS share physical facilities, equipment, costs, operations, etc..

BEMIS has been designated since 1991 by the Secretary Education and the Director of Education Schools as the Official Education Statistics reporting Agency of the Department of Education Balochistan.

There has been full cooperation with UNDP and with WB to the degree that the new WB program to come to Balochistan in 1994 will pickup and continue the present BEMIS components, activities, and requirements according to plans discusses with and approved by PED, GOB, and WB.

Service rules, Regulations, Standard Operating Procedures, Training Programs, Query methods, etc. have all be documented, drafted, discussed, and are in the process of implementation.

Site expansion plans, and all other BEMIS activities have been calendarized for the next year until WB comes in and a total of 49 sites are operational. Budget allocations have taken place as required and funds are available according to expansion and operation plans.

BEMIS staff has not taken part in any management study tour as was expected. However, on Assistant Director will be attending a 6 week EMIS workshop at Harvard University in June/july 1993. Greater BEMIS participation in future Study Tours should be encouraged.

From 1990 to 1993 BEMIS has become a model for the design and implementation of EMIS experiences nation-wide. The system is in place and operational. It has the capability of providing timely, relevant, reliable information required for planning, administration and decision-making.

As an information service unit, BEMIS continuously provides the Department of Education, Planning And Development, Provincial Assembly, Donor Agencies, University of Balochistan, and other offices and individuals with education data in the form of Standard Reports and Ad hoc queries, on hard copy and/or electronic files.

The system works and can be sustained and improved with adequate nurturing over the next two or three years until it becomes an established Institution of the Department of Education Balochistan fully staffed by GOB personnel.

Today BEMIS must still rely on a minimum of contracted personnel (available locally) with computer and management skills; an Technical Advisor will still be required until GOB has one or two skilled system analysts available to BEMIS; the same applies to an Electronics Technician capable of maintenance and minor repair of computer and computer related equipment; a Program Associate is still necessary for management skills training and research oriented output; all of these with the double function of operations and continued training for GOB staff.

RECOMMENDATIONS AND ITEMS FOR DISCUSSION

On May 31st, 1993 there are several BEMIS matters pending that must be followed-up by BEMIS senior staff. Many administrative and Program matters were carried out the BEMIS Technical Advisor. Though a transition period of responsibilities has taken place over the previous three months, many responsibilities have remained with the TA.

What follows is a list of matters pending and some final recommendations and thoughts. In many cases, names will be attached to tasks and responsibilities. These are only recommendations which I offer as guidelines. The decision to follow (or not) these recommendations now lie with the Director of Primary Education, the Dy. Director of BEMIS, and the PED Team Leader.

I. System Structure and Technical Assistance Staff:

a) Discussion:

Technical Assistance now lies in the hands of Mr. Fahim Akbar whose position is sponsored by NEMIS until December 1993.

BEMIS is now at a stage where a complete review of its structural design is warranted. We expected this to take place during the USAID evaluation in early May 1993. However, this aspect was not part of that evaluation.

Though the system is fully operational in each of its components, there are obvious improvements that must now take place:

1. The database structure can be improved to reduce memory space utilization and increase speed. For example, the columns referring to Grade in the enrollment tables are alphabetical instead of numerical. This increases the space requirement for the database by several megabytes. The structure of the tables themselves can be improved.
2. Further training on the RBase software Reports facilities is now required.
3. Though Computer Training programs have taken place on a regular basis with BEMIS and NEMIS support, there is no coherent, long term training plan/strategy in place. Due to the lack of a structured plan, BEMIS has missed several opportunities such as participation in

management study tours; Due to the same, BEMIS Senior Staff has also participated in irrelevant training programs sponsored by Federal agencies.

b) **Recommendations:**

1. It is my opinion that at present there is no GOB BEMIS Staff member with the necessary level of technical skills to review and improve the existing BEMIS database structures.

For this purpose continued technical assistance is required. At present this technical assistance is being provided by the continued support of NEMIS. Unfortunately this support is available only until December 1993.

I recommend a clear provision be made for further (local) Technical Advisor beyond December 1993. THIS POSITION IS ABSOLUTELY NECESSARY for continuation and further development of BEMIS and includes the responsibility of providing advanced training to BEMIS senior staff until a GOB System Analyst is in place.

2. Further Technical Assistance is required in the form of a Program Associate for BEMIS management/coordination and to further the data utilization strategy and report/output preparation.

GOB BEMIS staff skills are improving in this matter. With Senior staff in place, most management functions are covered; with trained computer operators, GOB staff can now produce reliable data output.

However, improved management skills are required for the coordination of all BEMIS activities. The Dy. Director of BEMIS has increasingly taken over these responsibilities but further development in this area is required.

To date, there has been a complete documentation of every aspect of BEMIS implementation and operations. The documentation procedure must continue and BEMIS staff requires support to further develop the documentation procedures.

The present support of a PED BEMIS Program Associate will continue until December 1993. Provisions must be in place for continued support beyond this date. As before, a principal responsibility of the Program Associate is to train a GOB counterpart.

3. Another mandatory position for BEMIS which has been kept under the Technical Assistance category refers to the BEMIS Electronic Technician. This position must continue for BEMIS. At present it is a post hired by GOB. Efforts must be made to make this post a recurrent GOB position.

BEMIS rely on the Electronic Technician for installation, maintenance, transfer, and minor repair of computer and computer related equipment. The Electronic Technician is a key position for BEMIS.

4. Related to the category of Technical support is the service and maintenance contracts held on the computer equipment provided by USAID and/or purchased by GOB.

The USAID provided equipment has been under a maintenance contract with EGS. This contract is to expire on June 30, 1993 and as far as I know, will not be renewed.

GOB purchased equipment has been under a maintenance/service contract with the suppliers of the equipment. Such contracts should be extended to cover any and all BEMIS equipment.

Without a proper service/maintenance strategy in place BEMIS equipment will rapidly deteriorate. As time goes by more and more equipment will require maintenance.

Though a service contract may appear to be expensive, it is certainly cost-effective if the result is maintaining operations. We must consider previous GOB experience with equipment that malfunctions and then is left to rot in a store-room.

II. Field Operations and Data Collection:

a) Discussion:

Coordination of Field Operations and Data Collection has been under the responsibility of GOB staff: Ms. Tahira Qasalbash, Assistant Director of BEMIS, and Mr. Hashmat, Assistant Director of Primary with the assistance of GOB clerks. Both, along with their staff, have performed in an excellent manner and should continue to do so.

However, one of the requirements for an operational EMIS is the presentation of timely data (which should also be relevant and accurate). At present far too much time is involved between the time the data collection instruments are sent to the field and the time it requires to recover them.

At present this activity alone consumes 9 to 10 months. The target time should be no more than 6 months to distribute, complete, and recover 100% of the data collection instruments.

Coordination of this activity requires a tremendous amount of work manpower and organizational skills. It requires support from the Senior Education Department Offices capable of demanding and enforcing actions from field staff including DEOs and SDEOs, and also requires better utilization of available BEMIS manpower.

b) Recommendations:

1. To-date, computer operators already posted in the field have had only marginal responsibilities in the data collection efforts and field operations. Their field capacity has been under utilized due to the fact that they have been undergoing continuous training. It is my opinion that between 12 to 15 of the C.Os. are now ready to receive increased responsibility in BEMIS activities and should be fully utilized in the next data collection efforts.

My recommendation is to consider the C.O. and the Assistant C.O. as the "liaison officers" between the District and the BEMIS Center. Under initial supervision, the District C.O. should be made responsible for: a) receiving an adequate amount of data collection instruments, b) verification of master lists of schools, c) coordination with DEO/SDEO for assignment of data collectors, c) Distribution of data collection instruments, d) supervision of collection activities, ensuring the return of 100% of instruments, e) data entry at the District level, f) delivery of entered data on diskette format to BEMIS Center, g) delivery of questionnaires to BEMIS Center for validation.

III. Data validation:

a) Discussion:

Over the last year data validation is an activity that has been coordinated by the Dy. Director BEMIS. Good work has been done towards improving the field data validation procedures. However, further steps should be taken.

Validation has taken place but not in a systematic manner. Convenience sampling has been conducted on a limited number of schools by district.

Members of the PED team have carried data on their field trips for informal checking of the accuracy. We have been fortunate that though errors have been found, these have been small and not too significant. This has given us confidence in our data.

At our present stage of BEMIS development and as we move towards greater levels of data utilization, greater emphasis should be placed on validation.

b) Recommendation:

1. Data validation is a serious activity and my recommendations is that it be considered as such under a well defined plan.

A procedure for RANDOM sampling of at least 5% of all schools should be put in place under the plan. This activity can not continue with the Dy. Dir. alone.

District Computer operators should be used for this purpose in addition to the validation procedures being used at present.

This will require calculation of applicable TA/DA for the District C.Os..

Additional validation can be performed by the members of other PED components on their scheduled field trips.

2. Another aspect of data validation takes place during data entry itself. In the past BEMIS has spent a large amount of time correcting data entry errors. These errors are usually found after the fact, when district or thesil profiles are being prepared.

Greater attention should be placed on supervision of data entry, specially when performed by contracted personnel.

IV. Data Processing/Output:

a) Discussion:

BEMIS has two GOB Computer Operators assigned to this task: Mr. Hafeez and Mr. Hikmatullah. In addition, two PED Program Associates support this activity.

The Dy. Dir. BEMIS has also been heavily involved in data output procedures by producing ad hoc reports on students, buildings, etc.

One of the BEMIS Computer Operators has received a level of training that can allow him to design and implement data output procedures and respond to ad hoc queries. The second computer operator has received some training but requires more practice.

The bulk of data output has been to date the responsibility of the Technical Advisor and the Program Associates. This situation can no longer continue in view of the fact that there is no longer a PED Technical Advisor and that the Program Associates are temporary personnel expected to leave the program over the following year.

This item of discussion is closely related to BEMIS training requirements.

b) Recommendations:

BEMIS Center Computer operators are now capable of producing the required output under technical assistance from the remaining PED Program Associate (Ms. Ghazala).

This Spring 1993 output will probably be the last to be produced with technical assistance and it is recommended that the BEMIS Computer Operators learn all required procedures.

V. Staff & Administration:

a) Discussion:

Staff and Administration has been under the responsibility of Mr. Sarfraz, Assistant Dir. BEMIS. The main item pending here is the follow-up on the rules and regulation procedures, finalize Job Descriptions for BEMIS Staff, stay up-to-date on the SNE and ADP procedures, and pursue the filling of vacant posts.

b) Recommendations:

Mr. Sarfraz is most familiar with what is required and should continue with this responsibility. However, we must keep in mind that He will participate in a six week training program in the USA and matters must be followed up.

VI. Installations & Inventory:

a) Discussion:

BEMIS now has very clear procedures for purchase, receiving, registering, maintaining, inventory and distribution of equipment. As per BEMIS approved policy, equipment is not distributed to field (or any) site unless:

- * Computer site is prepared according to requirements
- * Trained Computer operator is in place
- * Authorization for distribution has been given by Dir. Primary, Dy. Dir. BEMIS and PED-TL.

To-date BEMIS procedures have proven adequate; the Inventory system is up-to-date and storage capability is adequate.

b) Recommendations:

BEMIS inventory must be continuously checked and updated. Mr. Sarfdar Ali is now trained for maintenance of the records and is fully aware of the distribution requirements.

I have insisted many times on the need to maintain C-11 facilities for Training, Storage, and repair/maintenance workshop. I recommend that this be given serious attention and efforts be made to keep these facilities. There has been previous discussions and general agreement on this matter was reached with Darnell, Malik, and Mae Chu Chang

Additional space is required for placing Dead Files (to be stored for two years). This are is suggested at the new store room area built at algilani Rd.

With the move of BEMIS operations to Algilani Rd. Basement additional space is required.

The Basement has the capacity for Two assistant Directors, Two Computer Operators and five data entry personnel plus two additional workstations for administration and miscellaneous computer support. However, additional office space is required for the BEMIS Dy. Director and three BEMIS clerks.

VII. Repair & maintenance:

a) Discussion:

This item requires careful consideration. At present Mr. Daniel Shafgat is hired by GOB under contract for electrical maintenance and minor repair of equipment that does not have maintenance contract and warranty period has concluded.

USAID has a service/maintenance contract with E.G.S. As far as I know, this contract will end on June 30, 1993 and no provision is made for renewal of sid contract.

BEMIS has to pay close attention to this matter for equipment maintenance is a key element for the continuation of BEMIS over an extended period of time.

b) Recommendations:

GOB-BEMIS must make the necessary provisions to include as part of the PERMANENT GOB BEMIS staff the position of the Electronic Technician for minor repair and maintenance of equipment. Mr. Shafqat should be given the opportunity to compete for such a post when created.

A service maintenance contract with a local computer company is necessary for repair and service of equipment. There are several local companies capable of providing this service at reasonable rates. This matter must be followed-up

VIII. Training:

a) Discussion:

Over and over again we have made it a point to indicate that as long as there is a BEMIS operational, there must be training as an on-going permanent BEMIS activity. We have made it a point to establish the fact that BEMIS requires training facilities and training equipment beyond what is available in its operations room.

BEMIS has now received 12 systems for training purposes. At present BEMIS/NEMIS training facilities are located at C-11 Railway Housing.

b) Recommendations:

Permanent training facilities should remain and continuous up-date courses and courses for beginners should be offered by BEMIS with the support of NEMIS. This is one of the key elements that will allow SUSTAINABILITY in the future.

In-depth training of computer operators is required. Short-term one-shot training experiences are good to report great number of trained persons but do not help in the long-term sustainability of an operation that requires highly skilled personnel.

I appreciate the support provided by the members of the BEMIS Working Committee since my arrival in Balochistan in early 1990. It has been a pleasure and a rewarding experience to have worked with you. I look forward to hearing about the continued successes of BEMIS.

ANNEXURE:

ANNEX I: BEMIS MEMO series: Electronic file containing 600+ memoranda on BEMIS operations from January 1990 to May 1993. Cross referenced under the following headings:

1. Administration, 2. Personnel
3. Field Operations, 4. Validation
5. Data Collection, 6. Data Processing, 7. Data Output, 8. Manuals/Procedures, 9. Status Reports, 10. Training, 11. Data Utilization, 12. Hardware/Equipment, 13. Schedules/work plans, 14. Codes/Structures, 15. Sites/Repair, 16. Equipment Maintenance, 17. Facilities/Storage, 18. Inventory, 19. Coordination, 20. Tenders

Annexure II: BEMIS Report Series:

1. 1990 Education Statistics Profile
2. 1990 Supplement to the Balochistan Education Statistic Book
3. 1991 BEMIS Report Series: Reports 1-7.
4. 1992 BEMIS Report

Annexure III: BEMIS Standard Operating Procedure Manual

Annexure IV: Sample BEMIS District database and District Application

Annexure V: BEMIS Status Reports 1990-1993

Annexure VI: Data Collection Instruments/Codes

Annexure VII: Miscellaneous Reports