

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

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|--|---|--|---|--|--|---|--------------------------------|--|--|---|--|--|---|--|
| 1. PROJECT TITLE Expanded Program of Immunization | | | 2. PROJECT NUMBER 625-0137.05 | 3. MISSION/AID/W OFFICE USAID/Mauritania | | | | | | | | | | |
| 4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>82-2</u> | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION | | | | | | | | | | | | | | |
| 5. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent. FY <u>80</u> B. Final Obligation Expected FY <u>83</u> C. Final Input Delivery FY <u>83</u> | 6. ESTIMATED PROJECT FUNDING A. Total \$ <u>1,100,000</u> B. U.S. \$ <u>400,000</u> | 7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>July 1980</u> To (month/yr.) <u>July 1982</u> Date of Evaluation Review <u>8/82</u> | | | | | | | | | | | | |
| 8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR | | | | | | | | | | | | | | |
| A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.) | | | | | | | | | | | | | | |
| | B. NAME OF OFFICER RESPONSIBLE FOR ACTION | C. DATE ACTION TO BE COMPLETED | | | | | | | | | | | | |
| 1. Maintain essential Project implementation as defined in Project Paper and Pro-AG. 2. Revise or improve the following: a. Improve mobile team and fixed center integration and adherence to program regulations by holding training seminars for all mobile team leaders and MCH center directors. b. Reprogram bulk of vaccine procurement budget to buy vaccine warehouse, vehicles, refrigerators, and generator. c. Develop a standardized health information reporting system. d. Train 2-3 Mauritians to maintain and do simple repair of cold chain equipment and generator. | - Ministry of Health/WHO/USAID MOH/USAID MOH/ (USAID funding from central Project (ADSS)) MOH/USAID | - seminars completed by Spring 1982. P.I.L. No.6. procurement nearing completion 8/82. System developed as of 6/82; now being tested. Training program approved to begin 9/82. | | | | | | | | | | | | |
| 9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS | | | | | | | | | | | | | | |
| <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;"><input type="checkbox"/> Project Paper</td> <td style="width: 33%;"><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td style="width: 34%;"><input checked="" type="checkbox"/> Other (Specify) <u>P.I.L. No.6</u></td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input checked="" type="checkbox"/> PIO/C</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input checked="" type="checkbox"/> PIO/P</td> <td></td> </tr> </table> | | | <input type="checkbox"/> Project Paper | <input type="checkbox"/> Implementation Plan e.g., CPI Network | <input checked="" type="checkbox"/> Other (Specify) <u>P.I.L. No.6</u> | <input type="checkbox"/> Financial Plan | <input type="checkbox"/> PIO/T | <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Logical Framework | <input checked="" type="checkbox"/> PIO/C | | <input type="checkbox"/> Project Agreement | <input checked="" type="checkbox"/> PIO/P | |
| <input type="checkbox"/> Project Paper | <input type="checkbox"/> Implementation Plan e.g., CPI Network | <input checked="" type="checkbox"/> Other (Specify) <u>P.I.L. No.6</u> | | | | | | | | | | | | |
| <input type="checkbox"/> Financial Plan | <input type="checkbox"/> PIO/T | <input type="checkbox"/> Other (Specify) _____ | | | | | | | | | | | | |
| <input type="checkbox"/> Logical Framework | <input checked="" type="checkbox"/> PIO/C | | | | | | | | | | | | | |
| <input type="checkbox"/> Project Agreement | <input checked="" type="checkbox"/> PIO/P | | | | | | | | | | | | | |
| 10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT | | | | | | | | | | | | | | |
| A. <input type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input checked="" type="checkbox"/> Change Implementation Plan (some changes in details) C. <input type="checkbox"/> Discontinue Project | | | | | | | | | | | | | | |
| 11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles) | | | | | | | | | | | | | | |
| Linda Neuhauser, Project Mgr USAID Dr. Mohamed Mahmoud O/ Hacem, Nat'l Project Director, GRIM Mr. Antoin Ayoub, expert, EPI, World Health Organization, Mauritania | | | | | | | | | | | | | | |
| 12. Mission/AID/W Office Director Approval | | | | | | | | | | | | | | |
| Signature: <u>Peter Benedict</u> Typed Name: Peter Benedict Date: <u>24 August 82</u> | | | | | | | | | | | | | | |

Item 8 (continued)

3. Set up Health Education
commission to include
EPI component

MOH

Commission
began work
7/82.

4. Develop 5 year Plan for
continuation of EPI.

MOH
WHO
USAID
UNICEF

5 year
plan
developed
8/82.

PES

13. Summary:

Project is meeting its objectives, has met its stated goal and purpose and is continuing to solve problems and increase its impact. See also Section 7 of Evaluation Report for Summary of Project progress August 1981 - June, 1982. GIRM has developed a 5 - year plan for continuation of EPI 1983 - 1988.

14. Evaluation Methodology

This evaluation was undertaken to assess the overall progress of the Project, isolate major problems and plan for their resolution. The evaluation was carried out by a Mauritanian and multi-donor team (see list in annex). The evaluation methodology, described in Section 5 of the evaluation report, combined general program assessment, cost study and vaccination coverage surveys.

15. External Factors - no major changes in Project setting

16. Inputs: Inputs in original project have been slightly modified. The bulk of the vaccines which USAID was supposed to purchase have been donated by UNICEF. This money has been reallocated for the purchase of a vaccine warehouse, generator and other necessary commodities.

17. Outputs: Outputs in this project are on schedule with targets in current implementation plan which is identical to the implementation plan in the Project Paper with the exception of the deletion of the region of Tiris Zemmour. This region has been deleted because there is essentially no population there. The assumption that 70% of children would be reached by vaccination program is possibly over-ambitious, but this goal is maintained. Vaccination coverage studies needed to be increased to get a good coverage estimate.

18. Purpose:

"To reduce the incidence of communicable diseases among Mauritanian children below the age of six years".

Project has already achieved this purpose. The incidence of measles and pertussis, for example, has been markedly reduced in many areas where the vaccination program has been active. As coverage expands and project continues long-term activities, incidence of immunizable diseases should increasingly diminish.

19. Goal:

"To improve the health status of Mauritanian children aged 0-5 years".

The project, through its extensive vaccination coverage of Mauritanian children 0-5 years and the consequent reduction in incidence of immunizable diseases, has improved the health status of this target group. As the project continues to expand coverage, the impact will become more marked.

20. Beneficiaries:

The direct beneficiaries of the Project are Mauritanian children aged 0-5 years. In terms of section 102 (d) criteria, this project reduces infant mortality. The target group (all children 0-5 years) is estimated at 300,000 of which more than the majority have already been reached by the project.

21. Unplanned Effects:

One unplanned effect of this Project has been its influence on Ministry of Health (MCH) planning in the health sector. Because of the Project's successful implementation, the MCH has decided to use this model as its central vehicle for extension of other rural health services. The EPI will combine elements of certain current health projects (village health workers and traditional midwives) which currently waste money and personnel resources by doing parallel work in the same communities. Following this evaluation, the MCH decided to make the vaccination teams gradually multi-functional. The teams will add additional tasks such as tuberculosis and leprosy control, supervision of primary health care workers, delivery of health education sessions, and control of certain endemic diseases. Some teams have already begun TB and leprosy control. The addition of other activities mentioned will begin gradually in late 1982 after MCH has completed a more detailed implementation plan. In summary, the proven feasibility of the EPI has given the MCH a way to deliver multiple health services for which the eventual cost per beneficiary is projected to be very low, and the health impact high.

22. Lessons Learned:

This project has shown USAID and MCH that a national vaccination program is feasible despite major constraints. Major lessons learned:

-Be more aware of the problems of program integration at the outset.

-Where a specific technology exists such as immunization, it is possible to successfully implement it. Other health programs, such as health worker training, lack a proven technology and are much harder to implement.

-Management tools for surveillance and control of project activities need to be developed very early. Computerization of data should be considered during LOP.

-Rigorous central and regional control of vaccination activities is necessary for successful implementation.

-Epidemiological surveys (using WHO protocols) are extremely useful; on-going evaluations are a must.

.../...

-The timely resolution of problems brought out in evaluations is necessary for project progress. Willingness to solve problems (as evidenced by Mauritians) is the best evidence of country's interest in such a project.

-Mauritanian initiative and management of this Project using multi-donor resources is the key to its success relative to many traditionally "AID-managed" projects.

23. Special Comments or Remarks:

The implementation of a national EPI in Mauritania has many implications for similar projects in other W. African countries. At the outset of this Project, most outsiders were very pessimistic about its chances for success. As noted above, Mauritania's initiative and demonstrated persistence to improve and continue its EPI should encourage other countries and AID to consider the advisability of supporting EPI's. The problems encountered in implementing this EPI and their solutions should help other countries in their planning.

Annexes to this PES:

-Evaluation Report of July, 1981

-Evaluation Report Addendum giving Project up-date July, 1981 - July, 1982

EXECUTIVE SUMMARY (PBR STATE 81077)

Prepared by: Linda Neuhauser, USAID/Mauritania, Health Advisor

Date: August 1, 1982

Project: Expanded Programm of Immunization

Country: Mauritania

I. "What constraints does this project attempt to overcome and who does it constrain?"

This project attempts to overcome the developmental constraint of high infant mortality and morbidity due to immunizable diseases.

This project attempts to overcome the technical, managerial and logistical constraints inherent in setting up a national vaccination system in Mauritania.

II. "What technology does the project promote to relieve this constraint?"

The project promotes the transfer of technology in several areas:

- a. Improvement of technique of vaccination and cold chain systems.
- b. Improvement of managerial techniques to support EPI: including training of personnel in the areas of planning implementation, research and evaluation.
- c. Improvement of overall coordination between various ministerial activities such as maternal - child health and primary health care programs, to support EPI.

III. "What technology does the project attempt to replace?"

Project attempts to replace incorrect techniques of vaccination and vaccine storage; inaccurate vaccination record keeping and weak planning capability of the Ministry vis-a-vis this program.

.../...

IV. "Why do project planners believe that the intended beneficiaries will adopt the proposed technology?"

Project experience has shown that project personnel are learning and applying these new technologies. Ministerial EPI planners understand the beneficial effect of the new technologies of the program.

V. "What characteristics do the intended beneficiaries exhibit that have relevance to their adopting the new technology?"

Most of the EPI program implementors are interested in improving the EPI; they lack technical information and established management systems.

VI. "What adoption rate has this project or previous projects achieved in transferring the proposed technology".

Most EPI project personnel have been trained in and have adopted the fundamentals of the project technology, as shown by increasing rates of vaccination coverage generated by this project.

VII. "Will the project set in motion forces that will induce further exploration of the constraints and improvements to the technological package proposed to overcome it?"

The project is exploring ways of motivating personnel to improve current EPI technology through: personnel training, better reporting of project accomplishments and special remuneration by the GIRM of personnel with especially difficult tasks in the EPI (this latter aspect is under study). One technique used is the training of project personnel in refrigeration repair techniques. The personnel who perform other EPI tasks will receive extra pay for repairing EPI refrigeration equipment thus obviating the need to send such equipment to expensive repair workshops in the capital.

VIII. "Do private input suppliers have an incentive to examine the constraints addressed by the project and come up with solutions?"

The project has encouraged the participation of private suppliers especially in the area of cold chain improvement. Project has arranged for competitive bidding from companies selling refrigerators, freezers, electrical generators, vaccine monitoring devices and also vaccines. In addition project supports private institutions which do vaccine testing.

IX. "What delivery system does the project employ to transfer the new technology to intended beneficiaries?".

The project trains project employees, establishes central and regional project monitoring systems and conducts research which provide feedback to these employees.

X. "What training techniques does the project use to develop the delivery system?".

Training takes place through a series of regional seminars for project personnel. These seminars contain a one week curriculum which concentrates on developing skills in planning, management and evaluation. Standardized vaccination techniques are taught as well as cold chain management and repair. Other project personnel receive special training; central planners are trained in the various EPI courses in Africa; several project personnel are being trained in repair of refrigeration equipment. On-site training takes place through on-going supervision by central EPI directors. Finally training takes place (often with the assistance of outside advisors) through the on-going research/evaluation studies of the EPI.

Expanded Program of Immunization (625-0937.05)
Evaluation Report
(Summary of Original French Text)

1. Summary of Evaluation Observations:

The evaluation team concluded that the overall balance sheet of the Mauritanian EPI now operating for 1½ years is positive. Given the local constraints (extremely dispersed population, insufficient health infrastructure, difficult terrain and minimal financial resources), the evaluation team concluded that the current plan is particularly realistic. The team appreciated the integration of EPI in a large number of Maternal Child Health (MCH) centers where vaccinations are an integral part of the services furnished by these centers, permitting a vaccination coverage for cities and important centers without using a mobile strategy. The team noted that despite logistical difficulties, the mobile teams manage trimestrial visits to villages and that coverage in far-away rural areas is satisfactory. The team noted the seriousness and enthusiasm of the EPI managers and the high quality of the central vaccine warehouse.

Despite the overall positive assessment, the team considered that the EPI-MCH coordination was still insufficient at the central as well as regional levels concerning the cold chain, the team noted its insufficiency at regional and peripheral levels such that this compromises the success of the vaccinations. The team also noted that the epidemiological surveillance of target EPI diseases was still insufficient despite concerned efforts.

The team also noted details such as the insufficient regional stocks of injection material and vaccination cards, reutilization of disposable material and the insufficiency of personnel and material of the Nouakchott central organization.

Concerning vaccination coverage, the evaluation team made the following observations:

- The 5th district of Nouakchott and two rural regions, the Gorgol and the Brakna, were studied.
- The Gorgol has the best coverage with 85% BCG (anti-tuberculosis vaccine) coverage and 76% measles coverage. At Nouakchott, the coverage was average 70% BCG and only 42% for measles, but the percentage of children with the 3rd dose of DPT relative to the first dose is very good: 76%. In contrast, in the Assaba, the results were not as good.

(See addendum for progress made between August, 1981 and March 1982.)

2. Summary of Major Evaluation Recommendations:

- a. Better coordination between the MCH centers and EPI with the objective of having a single program with fixed and mobile components.
- b. Substantial improvement of cold chain at regional and peripheral (MCH) levels
- c. Better stocking of vaccines, reuseable injection material and vaccination cards at the regional level.
- d. Study the possibility of additional training for EPI personnel and possibility of an EPI mid-level course for 1982.
- e. Development of health education of the population regarding EPI by means of an separate GIRM health education department with sufficient resources, (as a supplement to EPI's own health education activities).
- f. Development of an epidemiological surveillance service through selection of sentinel posts which will furnish monthly reports on diseases. This method is indispensable to evaluate the real impact of the EPI.
- g. Improve the motivation of EPI personnel by looking into the possibility of GIRM paying travel per diem.
- h. Conduct a second evaluation with a national/international team in 2 years.

3. Background: Development of EPI in Mauritania

In the late 1970's Mauritania began planning for its EPI whose objective is to reduce the incidence of immunizable diseases which contribute significantly to the child mortality rate (especially measles and whooping cough) and cripple a portion of the adult working force (tuberculosis and polio). This situation has posed an important developmental constraint to Mauritania. Mauritania with the help of the World Health Organization, launched a pilot EPI in the Trarza region in 1977. In September 1978, Mauritania presented a draft proposal for a national EPI to the CILSS Human Resources Sector Mtg for donor funding. The U.S. expressed interest in this Project and assisted Mauritania in refining the proposal in 1980.

AID approved funding for the EPI Project 625-0937.05 which describes the overall EPI and contributes \$ 400,000 (35% of the approximate total of \$ 1,100,000 of which other donor contributions are provided by W.H.O., UNICEF, the Council of Arab Health Ministers and Libya). The goal of the global GIRM

EPI is to vaccinate 80% of Mauritanian children aged 0-5 yrs against measles, whooping cough, polio, tuberculosis, tetanus and diphtheria by 1985.

4. Program Strategy:

a. Current Plan: The Mauritanian EPI uses a combined strategy of mobile teams (1 per each of 12 regions plus Nouakchott) and fixed centers (the 25 MCH centers in Mauritania). The MCH centers vaccinate the population in an approximate radius of 10 kilometers and the mobile teams vaccinate the population living outside this radius. From November 1979 to May 1981 Mauritania gradually increased vaccination activities several regions at a time. Currently, about 90% of the country is covered, leaving only several small areas in the North of Mauritania. This strategy will continue with the following evolution:

- vaccination activities will be increasingly emphasized in fixed centers through retraining of personnel and improvement of cold chain.
- Mobile teams will gradually take on additional tasks; supervision of primary health workers, health education, control of endemic diseases. (This is part of an overall GIRM effort to integrate rural health activities and improve their cost effectiveness.

b. Future Planning: In the Spring of 1982 Mauritania will design a 5 year plan (1982-1987) for EPI operations (see addendum for further comments).

5. Terms of Reference and Scope of Work for Evaluation:

a. Objectives:

The evaluation concentrated on the following objectives:

- (1) Vaccination coverage,
- (2) Operational Effectiveness (program organisation, vaccine supply, cold chain and vaccination strategy.
- (3) Cost-effectiveness estimations.

b. Methods

(1) Vaccination Coverage Surveys:

The evaluation team composed of 7 outside evaluators, 3 Mauritians not working in the program and 7 persons working in the EPI, carried out the evaluation 12-30 June, 1981.

In addition to analyzing the existing documents concerning the project, the team was able to assess the vaccination coverage in Nouakchott and the regions of the Gorgol and the Assaba. (Nouakchott was chosen because of its important population and to judge vaccination in its MCH centers and PMIs; the Gorgol and Assaba were chosen to compare the work of mobile teams in two rural areas - Gorgol seemingly having a good program, Assaba seemingly a poorer program. Using the cluster sampling method as standardized by WHO for vaccine coverage, the vaccination coverage survey drew a sample of 30 blocks (one District in Nouakchott) and a total of 60 villages in the Assaba and the Gorgol Regions.

Note : Lack of good census data made it necessary to modify the standard protocol somewhat by making population estimations. The age group chosen for evaluation were children 12-47 months. Vaccinations were verified using vaccination card, scar (for BCG) and/or the mother's word about sites of injection and number of vaccinations performed (sites are standardized).

(2) Operational effectiveness:

The team analyzed EPI documents and made observations on site to assess program operations.

(3) Cost effectiveness estimation:

Basic cost data were gleaned from EPI documents at central and rural levels. In addition data were gathered during the vaccination coverage survey site visits.

(4) Measles vaccine effectiveness survey at the village of Legran in the Assaba region:

Although not part of the original evaluation objectives, a survey was carried out in this Assaba village which had recently had a measles epidemic, to check measles vaccine effectiveness. Half the children in the village were surveyed and the vaccine effectiveness was evaluated using the following standard formula.

Vaccine Effectiveness :
$$\frac{\text{Attack rate of non-vaccinated children} - \text{attack rate of vaccinated children}}{\text{Attack rate of non-vaccinated children}}$$

(children less than 6 months of age at the time of measles epidemic were excluded as well as those having had measles before the epidemic).

6. Results

a. Results of the Vaccination Coverage Surveys in 3 Mauritanian Regions

Table I : RESULTS OF VACCINE COVERAGE SURVEYS IN THREE MAURITANIAN ZONES

| | <u>Nouakchott</u> 5°arrondissement | <u>GORGOL</u> Rural Zone of Kaedi & Maghama | <u>ASSABA</u> Rural Zone of Kiffa & Boundeid |
|-----------------------|---------------------------------------|---|--|
| Vaccination Cards | 69.1 ° | 69.7 | 32.7++ |
| BCG | 70.4++ | 85.3 | 64.0° |
| Scar | 64.1++ | 79.8 | 49.5++ |
| BCG Scar | 91.1 ° | 93.5 | 77.3++ |
| Measles | 41.7+ | 75.7 | 53.1++ |
| DPT 1° | 64.6++ | 86.6 | 61.1° |
| DPT 2° | 54.3 ° | 60.5 | 40.0+ |
| DPT 3° | 48.9 | 34.8+ | 16.8++ |
| DPT 3/1 | 75.7 | 40.2++ | 27.5+ |
| Polio 1 | 56.1+ | 86.2 | 67.2++ |
| Polio 2 | 47.5+ | 58.7 | 39.5° |
| Polio 3 | 45.3 | 34.4+ | 16.0++ |
| Polio 3/1 | 80.8 | 39.9++ | 23.8+ |
| Completely Vaccinated | 27.4 ° | 29.4 | 13.6++ |
| Vaccination Cards/BCG | 98.2 | 81.7++ | 51.1++ |
| Number of Children | 223 | 218 | 220 |

Comparison of values by Chi Square test for each vaccination between regions (horizontal line);

++ Significant difference ($p < 0.001$) with the value immediately above

- + Significant difference ($p < 0.02$) with the value immediately above
- ° Difference not significant with the value above

Comments on Coverage Surveys:

(1) Nouakchott:

Concerning the continuity of vaccinations, the results are excellent. The percentage of children having received their first injection and returning for their 3rd injection is 76 to 81%. This indicates a good reception and a good level of health education. (In several other countries, this percentage is 30-40%)

- ° On the other hand, measles vaccination coverage is only 42%, too low to have a significant impact on the endemicity of measles.
- ° About 98% of the children had some sort of vaccination record card, but almost none had a real vaccination card. Many families had small vaccination note books (costing about 20¢), but because these are too fragile, many had replaced them once they became old or dirty, thus losing the information about previous vaccinations.
- ° The objective of the EPI is to completely vaccinate 80% of children before 1985, there is much work to do yet in the 5th Arrondissement where only 27.4% of children are now completely vaccinated

(2) Gorgol Region:

- ° Of the 3 regions studied, the Gorgol certainly has the best vaccination coverage. The goal of 80% has been significantly surpassed for BCG vaccination (85% as well as for the first DPT/Polio (86%) and nearly reached for measles (76%). Despite this good coverage, only 29% of children are completely vaccinated, this is due to the difficulty in attaining the 3rd DPT/Polio injection for which coverage is only 39%. Some mothers noted having missed one of the visits of the mobile teams to their village.
- ° Among the children vaccinated, 82% had their vaccination cards. These were not official cards, but rather many women had just small pieces of paper. At the beginning of vaccination activities, the mobile team had not yet received the official cards and had thus distributed the unofficial papers. Therefore, it is indispensable to replace these papers with real cards as soon as possible.

(3) Assaba Region:

- ° This region has the poorest vaccination coverage of the regions studied; only 14% of the children were completely vaccinated. Concerning measles, the coverage is better than Nouakchott (53%). On the other hand, coverage for the 2nd and 3rd DPT/Polio is very weak (40% and 16%).
- ° It appears that there are problems with the BCG vaccination technique. In the regions of Gorgol and Nouakchott, 92% of vaccinated children had scars, compared to only 77% in the Assaba. Statistically this difference is very significant ($p < .001$).
- ° Nomadic encampments were excluded from our survey; however they constitute 37% of the region's population. During the time of the survey - the dry season - these nomads had migrated to the south of the country; during the wet season they will come back to this region.
- ° To check on the effectiveness of measles vaccine in a village where there was a measles outbreak despite good vaccination coverage, the evaluation team conducted a special survey. In summary, the survey showed that the measles vaccine was ineffective (vaccine effectiveness was 30%) in this village due to the cold chain problems and use of non-heatstable measles vaccine prior to the epidemic. Only heat-stable measles vaccine is now used in Mauritania.

b. EPI Administration

(1) Organization:

° Central Office

Personnel at central office:

- National Program Director
- 2 Supervisors
- Warehouse Supervisor

(accounting and transport resources are shared under MOH as a whole)

- Nouakchott vaccinations are carried out in 5MCH centers. A mobile team was planned for use in peripheral areas, but not yet operational.

Comments: Team noted the insufficiency of personnel at the central level.

° Regional:

The regional Medical Directors oversee the regional EPI operations.

° Ground Level:

Mobile teams consist of these personnel:

- State Nurse, licensed practical nurse's aide, driver, orderly. MCH centers have variable personnel.

° Cold Chain:

In addition to the central vaccine warehouse, each mobile team has a freezer and refrigerator to stock vaccines at the regional level.

Coolers are used for vaccination trips. MCH centers have a refrigerator, sometimes a freezer also.

(2) Control and Supervision

Mobile teams submit monthly reports including:

- places visited
- number of children vaccinated
- doses of vaccine used
- vaccine inventory
- vaccine temperature control sheet
- kilometers covered
- financial report

MCH centers submit separate reports.

Mobile teams are visited by one of the 2 national supervisors every 3 months. The supervisors bring vaccines and other necessary material. Mobile teams deliver vaccines and cards to the MCH centers.

c. Cold Chain

- (1) Central Warehouse: The central vaccine warehouse located in Nouakchott is very well managed. The warehouse is furnished with 5 freezers, 21 refrigerators, and 2 cold chambers.

Comments: The team noted the very satisfactory organization and perfect management of the central warehouse. The warehouse supervisor was very competent and vaccine inventory well recorded.

The equipment is well maintained and temperatures recorded 2 times per day. The team noted that vaccine stocks were insufficient notably for polio, tetanus and BCG vaccines.

(2) Regional:

a. Gorgol (1 freezer and 3 refrigerators) the vaccine depot is perfectly maintained and cold chain satisfactory. Measles and BCG vaccines were lacking during this inspection.

° Assaba - Only 1 refrigerator (no freezer for polio and measles vaccines). Temperature recorded was +14°C which is explained by the high ambient temperature and the limits of performance of this refrigerator. Cold chain is inadequate at this depot.

° MCH Centers -(Nouakchott and Kaedi) have mediocre cold chain effectiveness because of electricity ruptures (NKTT) and lack of refrigerators (Kaedi).

° Transportation - Each mobile team has a 4 wheel drive vehicle, no truck available for equipment transport. Vehicle repair is expensive.

b. Vaccination Calendar and Techniques

° Calendar

BCG: one injection-birth to 5 yrs old.

Measles: one injection - 9 months to 5 yrs

DPT/Polio: 3 doses separated by intervals of at least month - 3 months to 5 yrs.

Tetanus Toxoid: 2 injections during pregnancy
(at MCH centers only)

Mobile teams - visit each area every 3 to 4 months

MCH centers; one or more vaccination sessions per week.

° Vaccination Techniques

BCG - intradermal (left forearm)

Measles - intramuscular (right upper arm)

DPT - scapular or buttocks

Polio - oral drops, sometimes on sugar cube

Disposable syringes are often reused; jet-injectors are not used.

Comments: vaccination calendar as well as standardized techniques must be understood by all personnel.

c. Vaccination Cards and Recording

Comments:

- vaccination cards often lacking
- MCH centers record detailed vaccination information for each child, requires much personnel time; should be simplified.

d. Disease Surveillance

Disease surveillance is the responsibility of the Division of Statistics and Documentation of the Service of Planning and Studies, this Division was created in 1978 and consists of 2 persons (the second arrived in early 1981). This Division receives reports from each region and MCH center. Despite limited means, the Division has published a report for 1980. Unfortunately the quality of these data and the percentage of reports submitted is uncertain because many health units do not send in reports regularly and others not at all.

A system of surveillance posts is needed for target diseases. Studies are needed to survey polio and neo-natal tetanus - not now considered important diseases in Mauritania, but data are sketchy.

7. Addendum to Evaluation

Following the evaluation results completed July, 1981, Mauritania began a systematic improvement of the EPI based on the evaluation recommendations. The following summarizes progress made in the 8 months following the evaluation:

a. Retraining of personnel, EPI - MCH Coordination:

Two seminars of one week each have been held for the EPI personnel (mobile team leaders, MCH staff and central staff) covering the following topics: EPI program and objectives, current and future activities, standardization of vaccination techniques, mobile team-MCH center cooperation, cold chain maintenance and EPI reporting. The first seminar was held in Kiffa in October, 1981 regrouping mobile team and MCH personnel from southern and eastern Mauritania; the second held in Nouakchott in March, 1982 regrouped remaining personnel. Both seminars were judged very effective in informing personnel and improving quality of EPI activities. (Many personnel, especially in

MCH centers, admitted they knew little about EPI before the seminar).

b. Epidemiological Surveillance

Mauritania has developed a standardized reporting system for health units. A seminar was held in Nouakchott, February, 1982 to introduce the system. Testing of the system will take place in health centers during this year. This reporting system includes a section on vaccinations.

c. Cold Chain

Seminar for personnel noted above included workshop on maintenance of cold chain material. Mauritania has identified 2 persons for advanced training in cold chain refrigeration repair and maintenance (central vaccine warehouse manager and chauffeur of central EPI supervisors). Training course is being planned with a refrigeration company for the summer or early Fall, 1982.

d. Health Education

Mauritania is setting up a multi-sectoral health education commission which will develop a national program including EPI information. Modest funds are available for this effort.

e. Surveys and Evaluation

Mauritania has developed a plan of studies and on-going evaluation (vaccine coverage, vaccine effectiveness, measles incidence, polio/TB, etc) for 1982. The first studies are in progress including a study of measles cases showing a dramatic reduction of measles cases since the EPI activities have begun. In August, 1982, regional OCCGE epidemiologist and African Counterpart will assist Mauritania with a polio/TB study. Following a post evaluation survey of refrigeration needs, the EPI has made a substantial equipment order (refrigerators and freezers).

f. Planning

With the help of the evaluation recommendations and suggestions by EPI personnel during the 2 seminars, Mauritania has begun redesign of its EPI. Five year planning for the EPI will be completed by July, 1982. In addition to other donors, USAID is participating in this redesign as part of its long-term planning of

its support to the health sector which includes design of a health sector support project for the Preventive Medicine Division. Completion of this design is expected in early FY 83.

At this stage, Mauritania wishes to make the mobile team "polyvalent" by having them perform a number of functions in addition to vaccinations, such as supervision of rural health workers, health education, endemic disease control, etc.

These functions are now carried out by a variety of discrete programs which generate unacceptably high costs and duplication of efforts. Mauritania's objective is to integrate the individual rural health activities so as to produce a cohesive program giving good coverage to rural areas at a minimal cost.

The following annexes
have been extracted
from the original French
text of the evaluation.
The term P.E.V. is
equivalent to the English

E.P.I.

Annexe 1 :LISTE DES MEMBRES DE L'EQUIPE MIXTE D'EVALUATION

| N O M | FONCTIONS | ADRESSE |
|---------------------------------------|---|---|
| -Dr. André DELAS (E) | Fonctionnaire de l'OMS Chef d'équipe de Surveillance épidémiologique et PEV pour l'Afrique de l'Ouest. | :B.P. 10.739 :NIAMEY (Niger) : : |
| -Mr. SANOH LAYES (E) | Assistant chercheur Université de R.C.I. - C I R E S | :08 BP 1295 :ABIDJAN 08 : |
| -Dr. SIDATT Mustapha (M.I.) | Directeur du CNH | :Centre National :d'Hygiène -Nouakchott : |
| - Dr. David C. SOKAL (E) | Epidémiologiste CDC - OCCGE Centers for Disease Control, Atlanta, détaché à l'OCCGE | :B.P. 153 :Bobo-Dioulasso : |
| -Dr. CONDE Aly Med (E) | DRS PITA Chargé du PEV/R.P.R. | :Guinée |
| -Dr. CAMARA Momo (E) | Chargé du PEV à Dalaba Rép. de Guinée | : Hopital de Dalaba : Dalaba - Guinée. : |
| -Dr. MARA Souleymane (E) | Chargé de Prévention à Mamau | :Hop. De Mamau-Guinée |
| -Mr. RABY Anthony (E) | Officier de liaison UNICEF | :B.P. 620 PNUD :Nouakchott : |
| -Mr. KANE Mahamadou (MI) | Sce de Planification | :Nouakchott BP 177 : |
| O-Mr. HAMDI Abderrahmane Ould (MI) | Chef de Sce Vaccination Internationale CNH | :Nouakchott : : |
| 1-Dr. HACEN Med Mahmoud (MPEV) | Chef Sce de Médecine Préventive | :Nouakchott BP.177 : : |
| 12-Mr. SENGHOTT Djibril (MPEV) | Superviseur du PEV | :Programme Elargi de :Vaccination BP. 177 : |
| 13-Mr. BEN ISSA Mohamed (MPEV) | Chef d'équipe PEV GORGOL | :Kaédi - Mauritanie |
| 14-Mr. SIDI Mohamed (MPEV) | Chef d'équipe PEV Nouakchott | : Mauritanie : |
| 15-Mr. ABDI Cheikh Ould (MPEV) | Chef d'équipe PEV Assaba | :Kiffa - MAURITANIE : |
| 16-Mlle Linda NEUHAUSER (CPEV) | Conseillère de Santé USAID | :BP.222 - Nouakchott : |
| 17-Mr. AYOUB Antoine (CPEV) | Technicien des Opérations de l'OMS Projet MAU PTR/PEV | :Nouakchott - Mauritanie : : |

(E) : Extérieur

(M.I.) : Mauritanien Indépendant

(M.P.E.V.) : Mauritanien Impliqué dans le PEV

(C.P.E.V.) : Coopérant Impliqué dans le PEV;

Annexe 1 = VACCINATIONS FAITES PAR LE P.E.V.
 EN REPUBLIQUE ISLAMIQUE DE MAURITANIE
 NOVEMBRE 1979 - DECEMBRE 1980

Annexe 4 -1 : Vaccinations faites par les P.M.I.

| LOCALISATION | D T C | | | POLIO | | | B.C.G. | ROUGEOLE |
|----------------------------|--------------|--------------|-------------|--------------|--------------|-------------|--------------|--------------|
| | 1° dose | 2° dose | 3° dose | 1° dose | 2° dose | 3° dose | | |
| ROSSO (TRARZA) | 5182 | 3235 | 2154 | 5182 | 3255 | 2154 | 3739 | 3344 |
| 5° ARDT (NKTT) | 4469 | 3082 | 1047 | 4532 | 3176 | 1280 | 3449 | 1182 |
| PILOTE (NKTT) | 1836 | 1200 | 872 | 1836 | 1200 | 872 | 1175 | 614 |
| ESAR (NKTT) | 1530 | 988 | 778 | 1477 | 943 | 715 | 911 | 651 |
| POLYCLIN (NKTT) | 1742 | 1011 | 661 | 1744 | 1015 | 663 | 1044 | 871 |
| ATAR (ADRAR) | 934 | 588 | 483 | 716 | 417 | 956 | 846 | 590 |
| AKJOUJT (INCHIRI) | 762 | 536 | 389 | 762 | 536 | 389 | 670 | 508 |
| KADI (GORGOL) | 705 | 415 | 209 | 705 | 415 | 209 | 318 | 208 |
| NGUDIB (DAKHLT) | 387 | 173 | 135 | 387 | 173 | 135 | 276 | 138 |
| KIBOUT (GORGOL) | 170 | 79 | 54 | 170 | 79 | 54 | 284 | 630 |
| SELIBAB (GUIDMA) | 335 | 49 | 32 | 335 | 49 | 32 | 290 | 236 |
| BOGHE (BRAKNA) | 121 | 792 | 31 | 121 | 792 | 31 | 139 | 118 |
| MAGHILA (GORGOL) | 167 | 217 | 30 | 167 | 217 | 30 | 15 | 29 |
| ALEG (ERAKNA) | 187 | 33 | 5 | 187 | 35 | 5 | 530 | 416 |
| 1° ARRONDT (NKTT) | 11 | 6 | 2 | 11 | 6 | 2 | 19 | 6 |
| BOUTILIMIT (TRARZA) | 46 | 14 | 0 | 46 | 14 | 0 | 45 | 737 |
| T O T A L U X | 18584 | 12420 | 6882 | 18378 | 12298 | 6927 | 14163 | 10475 |

VACCINATIONS FAITES PAR LES EQUIPES MOBILES
 EN REPUBLIQUE ISLAMIQUE DE MAURITANIE
 NOVEMBRE 1979 - DECEMBRE 1980

| REGION | B.C.G. | ROUGEOLE | D T C | | | POLIO | | | DOSE DTC + POLIO NON REPARTIES | NOMBRE DE MOIS D'ACTIVITE |
|---------------|--------|----------|-------|-------|-------|-------|-------|-------|-----------------------------------|------------------------------|
| | | | 1 | 2 | 3 | 1 | 2 | 3 | | |
| TRARZA | 7172 | 2699 | 1236 | 461 | 1660 | 1244 | 441 | 660 | 13281 | 10 mois |
| BRAKNA | 13051 | 9370 | 18160 | 9461 | 3427 | 18160 | 9461 | 3427 | 0 | 12 mois |
| ASSABA | 15837 | 13624 | 9439 | 9247 | 4959 | 8141 | 6639 | 4959 | 5205 | 10 mois |
| GORGOL | 19364 | 17575 | 20854 | 9148 | 3841 | 19725 | 9148 | 3841 | 0 | 9 mois |
| GUIDIKHA | 14624 | 13415 | 10604 | 661 | ? | 10604 | 661 | ? | 2108 | 10 mois |
| HODE GARBI | 5829 | 5630 | 5651 | X | 2 | 5651 | X | 2 | 0 | 4 mois |
| DISTRICT NKTT | 1663 | 1458 | 1963 | 978 | 221 | 1969 | 978 | 221 | 0 | 4 mois |
| <u>TOTAUX</u> | 77545 | 63771 | 67907 | 26956 | 13110 | 65484 | 27328 | 13110 | 20594 | |

TOTAL DES VACCINATIONS DANS DIX REGIONS
DE LA REPUBLIQUE ISLAMIQUE DE MAURITANIE
NOVEMBRE 1979 - DECEMBRE 1980

| REGIONS VACCINS | B.C.G. | ROUGEOLE | D.T.COQ | POLI0 | OBSERVATIONS |
|--------------------|--------|----------|---------|-------|---|
| DISTRICT | 8266 | 4982 | 3581 | 3753 | |
| TRARZA | 14880 | 8018 | 15264 | 15264 | |
| BRAKNA | 30204 | 14675 | 3463 | 3433 | |
| GORGOL | 19981 | 18442 | 4134 | 4134 | |
| GUIDIMAKHA | 14914 | 13651 | 32 | 32 | Les doses ne sont pas ré- parties |
| ASSABA | 10951 | 17169 | 4959 | 4959 | |
| INCHIRI | 670 | 505 | 389 | 389 | |
| ADRAR | 846 | 590 | 183 | 356 | |
| DARHLET NDBB | 276 | 138 | 135 | 135 | |
| HODH GHARBI | 5829 | 5630 | 2 | 2 | 1er passage |
| TOTAUX | 105817 | 83800 | 32442 | 32487 | |

الجمهورية الإسلامية الموريتانية
REPUBLICQUE ISLAMIQUE
DE MAURITANIE

بطاقة تطعيم
CARTE DE VACCINATION

Observations ملاحظات

Nom de l'enfant اسم الطفل

العمر أو تاريخ الولادة
Age ou date de naissance

الجنس ذكر أو انثى
Sexe F. ou M.

| المطاعيم VACCINATIONS | | تاريخ التطعيم DATE D'ADMINISTRATION | | |
|--------------------------|--------------------------------|--|----------------|----------------|
| VACCINS | المطاعيم Dose | اليوم Jour | السنين Mois | السنة Année |
| DT Coq et Pollo I | الأولى الثلاثي وسطل الأطفال | | | |
| DT Coq et Pollo II | ثانية ثلاثي وسطل الأطفال | | | |
| DT Coq et Pollo III | ثالثة ثلاثي وسطل الأطفال | | | |
| BCG I | أولى السل | | | |
| BCG II | ثانية السل (السعة) | | | |
| Rougeole | الحصبة (بجيمور) | | | |
| Variole | جددي | | | |
| Tétanos I | أولى الكزاز | | | |
| Tétanos II | ثانية الكزاز | | | |