B. PUBLIC SECTOR SURVEY AND PROGRAM RECOMMENDATIONS

Chapter 1

PUBLIC WORKS - HEADQUARTERS

The High Commissioner has on his staff a Director of Public Works whose office is in Saipan. The Director is charged with the responsibility of advising the High Commissioner on matters pertaining to construction, maintenance and operation of the Trust Territory government facilities. When a construction project has been developed and approved by the High Commissioner, the plans and a material list are prepared in the headquarters' Department of Public Works. When all necessary paper work has been completed and signed off, the Comptroller assigns a project number to the work order and all necessary information to do the job is sent to the district in which the project is located. From this point on, the job is the responsibility of the District Administrator who instructs his Public Works Officer to proceed. Changes which affect finance and design must be approved by headquarters before the district can incorporate them in the construction job.

On the staff of the Director of Public Works there is one general engineer, a young graduate who is of Saipanese birth. The one other engineering slot on the staff is vacant. There are no registered professional engineers on the Public Works staff. There is one technician, one draftsman and one draftsman-trainee to handle all the drawings and designs that headquarters wants to produce.

The central supply and repair depot also comes under the Director of Public Works. There is one technician on the headquarters staff in charge of the workshop and central supply. He has at his disposal a limited revolving fund for the purchase and repair of surplus equipment, which he purchases from any available source. He then sells the repaired equipment to the districts for what it costs the depot to obtain and repair it. From observation, it appears that the procurement, stocking and shipping of spare parts is the larger part of the operation; approximately $40,000 per month worth of spares are handled by the central depot. The handling of this operation plus the repair shops is a big job for one technician and does not allow close supervision to be given to the repair work. A few months ago a tractor was overhauled at a cost of about $5,000 and sent to the Palau airport job. Three days after it went into operation, it broke down, and another $3,500 worth of spares was ordered from the field. The Mission was informed that because of the lack of supervision the grease seals were put in backwards while in the central work shop, and several important parts were burned out.

District Public Works, General Survey

Public works offices in each of the six districts are charged with a multitude of responsibilities: the maintenance and operation of all public utilities; construction of new buildings and facilities; repair and overhaul of operational equipment for all other departments; and the ground support for air and ship transportation. These functions are carried out with a combined staff of Americans and Micronesians. Each

district employs from 100 to 150 Micronesians in its Public Works Department.

The major responsibility of the district public works staff is providing operational continuity for public utilities. In every district, except Saipan, the road system, the water supply and the power system are all in a marginal state of repair and require many hours of time and extra effort to keep them in some semblance of dependable operation.

Power and water are provided to the district center offices, schools, hospitals, hotels and homes of American employees. Where the utilities are available they are also provided to certain commercial establishments in the district centers. In very few instances have water and power been provided to the local Micronesian residences. The present systems require extensive repair, modification and expansion before it will be possible to provide service to the people in the villages near the district centers.

In addition to water and power, each public works office is responsible for the maintenance of the roads and streets in the district centers. Also from time to time they assist the municipalities in a specific maintenance job on roads outside the district center.

Upon the arrival of the logistic vessel or field trip ship, the public works office must assist the vessels to dock with the use of its "M" boat. Stevedores are employed and supervised by the public works office to offload and load the ships as required, and to transfer fuel oil from

ship to shore storage. The public works office must make a report on each ship which arrives or departs from the district. Aircraft ground handling and fire control is also the responsibility of the public works office, as well as the upkeep of the landing strip.

Motor vehicle and heavy equipment repair and overhaul is done in public works shops when spare parts are available. Often it is necessary to manufacture the part at several times the original cost because no spare is available. Power and outboard motor boats are operated and maintained by the motor shop. Carpentry, electric, and paint shops also provide services to the district centers.

In addition to the operating and maintenance responsibilities the public works office is charged with the task of conducting a full scale construction program. New construction is provided for U.S. employee housing, school buildings, hospitals, warehousing, power plants, water storage tanks and all other construction necessary to support a district center operation.

About 65% of public works time is spent on operation and maintenance and about 35% for construction. The same supervisory personnel required for "O and M" are also used to supervise construction. Frequently, these competing demands force the inefficient shifting of workers as well as supervisors between maintenance and construction functions. District construction is further complicated by delays in purchasing and shipping of critical construction supplies - all material and supplies for

construction in the districts are ordered by headquarters supply and shipped directly to the district by the supplier. Material required for the finishing of a project is often received before material for the foundation and structural walls arrive, thereby causing a serious warehousing problem. These are the major problems confronting Public Works in drawing up, and adhering to, construction schedules.

Public Works In The Marshalls

The Public Works Office in the Marshalls consists of an American District Public Works Officer and his staff of five technicians. During the time of the Mission's visit to the Marshalls District, the American staff was short two people. One man was on home leave, and the other position was unfilled. In addition to the American staff, the Public Works Office employs about 100 Micronesian workers. Some of these workers are capable of doing skilled work such as equipment operation and general mechanical work, but it was noticed that very few of them were used as foremen or in any position where responsibility for supervision was theirs.

The Majuro district center water system consists of a catchment area near the center of the government employees' housing area and a sump storage of about 500,000 gallons. The catchment area alone does not provide sufficient water. An additional supply is provided through shallow well pumping. The water taken from the shallow wells is high in salt content but when mixed with the catchment water the salinity is reduced sufficiently so that the clear water which is distributed is only slightly brackish. Two large ships buoys are installed with pressure

pumps to provide for pressure distribution throughout the district center. Another 500,000 gallon storage capacity is planned at the new high school site. The present water usage is about 600,000 gallons monthly. With the added storage capacity at the high school this usage should about double. So far no plans for distribution to the village of Rota which adjoins the district center have been developed. If safe drinking water is provided to those villagers, another 1 million gallons should be added to the monthly usage bringing the total usage to about 2.1 million gallons per month.

Power for the district center is provided by two 300 KW generators and one 60 KW generator. The third 300 KW generator is being installed and should be on the line by about November 1st. The peak load demand for the district center, the hospital and the new schools will just be met with the installation of the third 300 KW unit this year. This does not provide any power for lights or utility service to the village of Rota. An additional 500 KW unit would be required for this and other commercial uses which might be developed later.

In addition to operating the water and power system, the public works office is responsible for the upkeep of the roads in the district center which consists of approximately 5 miles of coral and dirt packed construction. No major work has been done on the roads during the last 5 years so that they are in a bad state of repair. Outside of the district center there is 2 1/2 miles of road in the village of Rota and 6 1/4 miles of road on "long island" beyond the airstrip toward Laura on

the southeastern end of Majuro island. From the western end of this road to the village of Laura, a distance of 18 1/4 miles, a community-built road has recently been completed which now links Laura with the district center by road during all tides. This roadway was hastily thrown up by using coral and dirt when available and shaped by hand and a bulldozer. The road is actually constructed over three isolated islets connected by hand-made coral causeways. The public works office assisted the people of Laura to construct this road by furnishing heavy equipment, technical advice and supervision. This first effort at a roadway between Laura and the district center is only a start on a passable permanent road. Much more time and money must be spent before this road can be used as an all weather means of communication. As soon as is possible additional crushed coral must be placed on the present base and reasonably good compaction achieved. The causeways will have to be strengthened and sea walls provided to keep them from breaking down and washing away at high tides. However, the public works office has assumed no responsibility for the upkeep and repair of the roads outside of the district center. Even within the district center the road is not really "maintained"; only large holes and breakups are repaired because of a serious lack of personnel, equipment and funds to do the work.

The operation and maintenance budget for the public works does not adequately provide funds for operational costs as well as preventive maintenance and repair. In the low atolls of the Marshall Islands, maintenance is a special problem, not only for housing and utilities but

for equipment and machines. The salt air spray which is continually present makes upkeep of equipment especially difficult. Little funds are available for preventative maintenance and barely enough to keep operations going. The one bulldozer in Majuro broke down in June while working on the road on Arno. It is still waiting for parts. The front-end loader in use is at least 10 years old, and the Public Works Office said that "it is in the shop three days a week to get two days operation out of it." The small crane in use at the crusher site broke while the survey Mission was there and parts are expected to take from three to six months to arrive. In the meantime, the shop must make do by trying to file down the broken gear and use it in limited service. But limited service will not supply the sand and aggregate required for the accelerated school construction program. Dump trucks are also needed to move the required material to the housing and school building location. The Majuro district sent to headquarters for the FY 1964 budget inclusion, a request for $120,000 to replace worn out equipment and to stock operating spares. They had not received any acknowledgment of their submission as of the 9th of July 1963. They further submitted another $200,000 for the same purpose for the FY 1965 budget. This amount includes $80,000 additional for equipment that will be needed to support the new construction program.

The survey Mission was shown a copy of a proposed master plan for construction and repair to the district center facilities, which was submitted in 1960 to headquarters. The Public Works Office said that they had not received any acknowledgment of the plan from headquarters. Given

these various problems, the major part of the public works activity is on an improvised basis, with little time or funds to do preventative maintenance or planned replacement.

The only public works activity on islands outside the district center is the community road project on Arno which is a 15 1/2 mile road and causeway similar to the Laura road. Again lack of funds and availability of equipment and materials has limited this kind of activity to one or two small efforts.

Priorities for the construction work in the Marshalls can be divided into two classifications, (1) project priorities and (2) program support priorities. (1) Project priority would be determined by the review and recommendation of the Program Division in headquarters. It would be hoped, upon the acceptance of the survey Mission's report that a clear distinction between project construction and program support construction will be established.

Project Construction

1. New Outer Island sub-centers. ($1,854,000)

The Mission recommends the development of two outer island sub-centers located at Jaluit and Wotje to serve as nuclei for the stimulation of economic activity and overall development of the Marshalls District. This would involve a substantial construction (high schools, hospitals, roads, power, etc.) with total cost estimated at $1,854,000. It is suggested that a team of 27 men, 2 U.S. supervisors and 25 Micronesians,

equipped with the necessary tools and machines, stay on one selected island doing the construction work necessary to develop the above listed buildings. After, or even during the building construction, roads could be constructed with the help of the local community. Land could also be cleared where it was possible to reach by bulldozer. Utilities would be provided for the center and a Micronesian technician could be left in charge. Total equipment cost would be about $240,000 including 15% operation spares for the first year. If the equipment is amortized over a five year period, the total yearly project cost should be about $155,000 including salaries and wages as well as providing a 5% contingency fund. The project could pay the central equipment fund the amortization costs on the equipment and the equipment would revert back to the headquarters depot upon completion of the project.

2. Airport Reconstruction & Water Catchment and Storage. ($1,450,000) This project would rebuild the 80 acre airfield with a more permanent subbase and base course than the existing ones of coconut tree trunks which are starting to rot and protrude in places. It is further suggested that during the design development for the airport, plans be made to use the landing strip for water catchment with drains and sumps on either side which will provide a source of over 114,000,000 gallons of water yearly. Pumps could be installed which would transfer the sump water into storage tanks for purification and distribution, and would provide water purification for almost unlimited expansion.

This project because of its size and nature, would require programming in three phases. Phase I would be a feasibility and engineering study which would provide the program division with necessary professional advice on the alternatives and possible costs. Phase II would be the design and specifications required to prepare exact costs and a construction schedule. Phase II would only be entered into after selection of the best alternative determined by phase I feasibility study. Phase III would be the final construction stage which would be completed from the design and specifications produced under phase II.

Because it is necessary for advance programming to project a cost figure prior to developing sound engineering data it must be understood that the following budget is for projection purposes only and may change drastically upon the development of more complete engineering data.

Phase I. Feasibility study, approximately ninety days and should produce exact information as to what the former construction consisted of. Development of at least three alternatives which would include the water requirement as well as the landing strip. Soils studies and preliminary designs and costs for the alternates. Costs: ($25,000)

Phase II. Design and specifications for landing strip and water catchment system as selected by Program Division. About 180 days -- costs $65,000 -- includes complete design and specifications. Material take off list and construction method. Preparation of all documents to allow for construction contract bidding.

Phase III. Construction -- should include complete job with equipment left at job site in "new used", condition by contractor, to be U.S. Government property. About 18 months.

Material	($650,000)
Labor	(710,000)
	($1,360,000)

3. Sewage and Water Systems on Majuro and Ebeye ($745,000)

Discussions have been under way for some time concerning the desperate need for an improved sewage and water system on the Island of Ebeyein the Kwajalein atoll. With approximately 4000 people crowded onto this small island, sanitary sewage disposal and potable drinking water is a serious problem.

In considering the sewage disposal problem strong consideration should be given to the use of a dilution plant and pumping system. As Ebeye is a low island and its highest elevation is only a few feet above sea level, the use of a gravity flow sewage system would appear very difficult. However, it is possible that a more careful engineering study of the need and possible alternatives would produce a less expensive method than the dilution plant. Without the benefit of such a study, however, preliminary planning should be on the basis of the most obvious method.

Engineering survey and preliminary plans -	($ 8,000)
Final plans and specifications -	(32,000)
Construction & equipment -	(110,000)
Total	($150,000)

An enlarged, more reliable central water catchment system for Ebeye to provide about 500,000 gallons of potable water will cost about $245,000.

A sewage system for the village of Rota on Majuro would be practical in the event the additional water catchment at the airport was constructed. It is estimated that prior to a complete engineering survey, a figure in the magnitude of $350,000 could be used as a planning estimate. This amount should provide for a complete survey as well as plans, specifications, labor and materials for a sanitary system in the village of Rota.

Program Support Construction

1.	Power expansion to provide power to Rota and Laura. (Move 60 KW generator to Laura when additional 500 KW generator installed for Rota.)	($ 60,000)
2.	Road improvement in district center as well as Laura road.	(70,000)
3.	Road maintenance.	(20,000)
4.	Replacement of worn out and unuseable equipment in public works.	(300,000)
5.	Addition of water filtration unit and automatic chlorination system.	(35,000)
6.	Modification of freezer unit to provide more freeze space.	(10,000)
7.	Employee housing construction to replace existing sub-standard housing.	(170,000)

The total capital requirements of these recommended program support priorities is estimated, following the usual guidelines, at $665,000.

Public Works in Ponape

The Public Works Office in Ponape consists of the officer in charge and a staff ceiling of five U.S. hire technicians with one position unfilled.

The water system on Ponape is provided solely by catchment. The system was originally built by the Japanese and had very little modification or improvement since. An abandoned fighter plane airstrip serves as the catchment area with an elaborate system of run off canals which brings the water from both ends and one side of the air-strip about 250 feet down the hill to a settling and storage area. There are four settling tanks and one clear water storage tank of 28,000 gallons. With such a small storage tank the water usage is much greater than the settling tanks can handle. Distributed water is cloudy with a very high silt content. Chlorination is by hand. The demand for safe drinking water is increasing. The people in the villages near the district center want water piped to their areas. There are six community stand pipes in Kolonia and a 2" line into Kapingi village. The new school construction program and additional U.S. personnel will require much more water than is being produced as clear potable water. Over 100 million gallons of water per year is collected by the catchment system but most of it is spilled away because of inadequate storage.

The power plant in Ponape is operated with two diesel driven generators of 200 KW each and one 267 KW generator. One of the 200 KW units was broken down waiting for spare parts. The plant is old and very near exhaustion. No expansion of power facilities within the district center can be planned until additional generators of larger capacity are installed.

The transmission is 2400 volts and in poor condition.

The road system in use throughout the district center was originally constructed by the Spanish, improved and expanded by the Germans and greatly extended by the Japanese. Much of the road system formerly in operation under other administrations has been allowed to deteriorate and in some cases have all but disappeared. There is approximately 60 miles of such road beds on Ponape of which less than 15 miles are in usable condition. About 9 miles of the 15 are located within the district center. Public works attempts some road maintenance but lack of equipment prevents any more than a token attempt.

The high island of Ponape does not have the same maintenance problem that is found in the low atolls of the Marshalls. The heavy rainfall (220-300 inches per year) keeps the salt from doing as much damage as it does in the lower islands, but humidity and continual rain cause other problems. Equipment in the public works district of Ponape is in a very marginal condition. Lack of funds for equipment replacement and adequate spare parts has required the public works district to operate

equipment that is unsafe and undependable. A D-7 Caterpillar which was dismantled 9 months before for repair is still waiting for the parts from headquarters. The road grader had just been put back into operation after several months of down time waiting for parts delivery. The Public Works Officer stated that the average time required for repairs to be completed on heavy equipment that breaks down is from 5 to 6 months because of the minimal district spare parts budget and the lengthy process required to purchase parts from the central repair depot on Saipan. Sand and gravel for the contractor constructed housing on Ponape is a critical item. The only rock crusher able to produce aggregate is broken down and if several months will be required to repair it, crushed stone for aggregate will not be delivered to the construction site in time to meet the construction schedule. Even if the crusher is repaired in time now its dependability is questionable. It is several years old, and has been assembled from several different manufactures and many critical parts are no longer manufactured as a standard item. When these parts break a great deal of time and expense is required to have them manufactured by hand and shipped to Ponape.

There is no public works activity on the outer islands. On the island of Kusaie, the Education department had an education and training specialist who assisted the people of the community of Malem to construct a school. However, he was removed by the DISTAD before the school was completed.

While the members of the survey Mission were in Kusaie the community leaders made a strong plea for public works assistance to help them

reclaim some of their roads, build a dock, build more schools and to develop a water system and a small power station. The survey Mission stayed overnight at the Fafunsak public elementary school where it was obvious that with just a little technical assistance and leadership great improvement could be made in utilities and roads. But lack of funds and program planning has prevented the district public works from extending the appropriate assistance to the outer islands.

PROJECT PRIORITIES FOR CONSTRUCTION

1. Landing Strip (estimated cost $1,585,000)

   Phase 1 - Feasibility study ($30,000)
   - a. Location
   - b. Type of construction
   - c. Alternatives
   - d. Soils available
   - e. Preliminary cost estimates

   Phase II - Engineering design and specifications ($55,000)
   - a. Construction method
   - b. Specification for construction method
   - c. Materials for take off
   - d. Firm cost estimate

   Phase III - Construction ($1,500,000)
   - a. Equipment - $375,000
   - b. Material - $225,000
   - c. Contract - $900,000

2. Road Improvement (estimated cost $1,000,000)

   Phase I - Location and alignment study ($20,000)
   - a. Miles to be done
   - b. Method of construction
   - c. Drainage
   - d. Elevation
   - e. Material source
   - f. Structures required and preliminary design
   - g. Preliminary cross section design
   - h. Cost estimate

Phase II - Construction ($30,000 per mile including structures)

The Mission estimates that slightly more than 30 miles of the road system in Ponape should be considered high priority to be included in the recommended program for FY '65 through FY '68.

3. Power plant replacement ($600,000)

   Phase I - Preliminary Survey - $6,000

   a. Plans and equipment list.

   Phase II - Installation - $594,000

   a. Power plant
   b. Transformers
   c. Primary-secondary distribution
   d. House drops and meters to nearby villages

4. Boat Channel Dredging and marking ($120,000)

   a. Use of dredge and barge to clear 100' wide channel for boats with 5' draft at low tide around the entire island would require about 15 miles of dredging.

   b. Day markers required to locate channel between reef.

   c. Coral dredged up could be used for road rehabilitation.

5. Water system rehabilitation ($285,000)

   a. 1,000,000 gallon storage tank (or 2 500,000 gallon tanks)
   b. Water mains to be replaced
   c. Distribution to be extended to all surrounding villages
   d. Automatic chlorination system
   e. System to be looped and automatic air bleeders installed
   f. Pressure pumps installed where required.

PROGRAM SUPPORT CONSTRUCTION

1. Technical assistance to Kusaie ($35,000)

   a. Assist in road rehabilitation
   b. Install 50 KW generator and freezer for fish
   c. Install small telephone with switchboard at radio shack to connect the four villages of Lelu, Tafunsak, Malum and Utwe
   d. Assist in the repair of existing causeway and build a new one between Lelu and Malum island.

2. Sewage system - $110,000

   Extend present system to serve villages next to district center

3. Equipment Replacement ($280,000)

PUBLIC WORKS IN TRUK

The Acting Head of Public Works in Truk has a staff of seven United States hire technicians and over 150 Micronesians. The large dock project recently completed on the island of Moen where the district center is located has served to strengthen the public works in this district since equipment and personnel which would not normally have been in Truk remained after the construction was completed. However, many of the same problems are present in Truk that are apparent in other districts.

The water system on Truk depends on run off for the main supply. During the rainy season run off is enough to supply all the water required and the two deep wells are not used. During the dry season which is about 4 months long, run off is not enough. The two deep wells provide only about 30 gallons per minute, and water rationing is necessary. The water distribution system is old and in poor

condition and is inadequate to meet new demands.

The road system on Moen is good. Public works has just completed a road rehabilitation program which has been very successful. There is still some work to be done on the South end of the island and the Xavier school road. No road work has been done or is contemplated on any of the outer islands.

Power for the district center is provided by 3 diesel generators of 300 KW each. They are very old and are a type no longer manufactured. Spare parts when available are very expensive and are difficult to find. The distribution system has a 240 volt primary and appears to be badly balanced between phases.

Construction in Truk is slow and difficult to keep on a schedule. The Acting Public Works Officer believes that construction time could be reduced by 50% if materials and supplies for the job arrived on time or even in the proper sequence.

Public Works equipment in Truk is in the same condition as was found in other districts; it is generally old, worn out and difficult to maintain, although there is more of it.

The airfield on Moen is being lengthened by about 700 feet, 400 feet on one end and 300 on the other. This is space which has been reclaimed from the lagoon by a gradual filling process of rubble from the work going on the island. This will be surfaced with coral,

compacted and will make the field that much more useful.

Priorities for construction work in the Truk district:

PROJECT CONSTRUCTION

1. Additional source of water and increase of storage ($350,000)

    a. Drill four deep wells about 100 to 120 feet/casing of Pump: ($120,000)

    b. Construct additional water storage of 1 million gallon ($150,000)

    c. Install new distribution system ($80,000)

There is a possibility that after the wells are drilled additional water storage will not be necessary. Test will have to be made to determine the firm water supply each well will delivery during the dry season. If it proves to be enough to meet the demand the storage tank will not be required.

2. Rebuild Power system	($184,500)
a. Survey to determine extent of work required	(4,500)
b. Installation of adequate power plants	(100,000)
c. Rework Primary and secondary system and extend to village areas near district center	(80,000)
3. Enlarge sewage system and extend to include adjacent villages	(65,000)
a. Survey to determine needs	(5,000)
b. Construction	(60,000)

PROGRAM SUPPORT - CONSTRUCTION

1. Replace 3,000 feet of fuel oil pumping line Boat Pool to public works area. Present line runs above ground and constitutes a safety hazard as well as blocks entry to private property.

   Total Cost ($35,000)

2. Complete the Xavier Catholic School road 13 miles, and extend the South field road past the new school. Improve the rest of the district center roads and streets - Total mileage of 32 miles ($10,000 per mile - $320,000)

3. Equipment Replacement ($420,000)

PUBLIC WORKS IN YAP

The Yap District Public Works Officer and a staff of three United States technicians supervise and direct the work of over 100 Micronesian employees. Although Yap is a small district the public works operation is an extensive one.

The water system depends on run off which is contained in an earth filled open reservoir from where it is pumped for settling and storage to tanks located on telegraph hill. From here the clear water is gravity fed to the end users. The quantity of water available on the island is adequate, but storage is minimal and there is no filteration system or automatic chlorination. A few years ago a 500,000 gallon storage tank was constructed near the dock, but due to some error the present pumping system will only pump down to the last six feet of water. According to the Public Works Officer there is

also a serious leak in the bottom of the tank caused by the concrete cracking.

The tank is not usable as it is, and has been standing dry for a long time. There is no water provided to adjoining villages.

The power plant and distribution system on Yap is small but in reasonable good shape. The diesel driven generators have a total capacity of 480 KW. There is a good supply of spare parts on hand for both the engines and the generators. There is not, however, surplus power to extend the distribution to the surrounding villages.

For such a small district the road system is fairly large. Approximately 24 miles of fair-to-good roads are now in use by the administration. Most of the roads other than those used to support the administration operation and the road to Giliman are in very bad shape.

The public works equipment in Yap is in very poor condition. The airport construction which has recently been terminated used one D-8 and one standby generator belonging to the district public works. The Public Works Officer said that both units are now worn out and there are no funds to repair or replace them. The rest of the equipment in the district is in very poor condition. The small rock crusher which is located on a quarry face near the Public Works Office is an outdated single pass crusher, still operating, but it is slow

and costly. The Public Works Officer stated that he has to keep his only road roller at the airport all the time to keep up on the heavy maintenance required. The high school construction also ties up several pieces of equipment as it is generally impossible to move the equipment in or out of the hillside location after a rain. During the past month a great deal of time was lost at the high school job site due to the inability to work the equipment on the side of the hill during wet weather. More seriously, time was also lost because the equipment could not be moved elsewhere because of the poor access road to the job site. There is on file in the District Administrator's Office a report on the down time of the equipment and the days lost for the month of June 15th - July 15th. The equipment time cost is considerable. The barge which was at Yap was sent to Koror for the airport job and the Koror barge was to have been returned to Yap. But as the Koror barge was being towed between Koror and Yap it sank; Yap is now without a barge and the only available sand must be barged in from one of the coral sand bars some distance out in the lagoon. Meeting the construction schedule is going to be difficult if not impossible without a barge. The rock crusher cannot produce sand.

PROJECT CONSTRUCTION

1. Completely redesign and reconstruct water system ($450,000)

   Phase I - Feasibility Study (15,000)

   1. 60 days. 2 men field work plus home office support
   2. System recommendations

(3) Proposed alternatives

(4) Estimated cost

(5) Preliminary drawings

Phase II - Engineering Design ($ 40,000)

(1) Final design and specifications

(2) Construction method

(3) Construction schedule

(4) Equipment list

(5) Material take off

Phase III - Construction ($395,000)

(1) Equipment (Government owned upon completion of Contract) ($150,000)

(2) Material ($90,000)

(3) Labor ($145,000)

2. Electric Power Extension to Village ($150,000)

A. Survey ($5,000)

B. Design and specification ($15,000)

C. Construction ($130,000)

3. Harbor for Deep Draft Ships ($1,300,000)

Phase I - Feasibility Study ($20,000)

(1) Alternatives

(2) Suggested location

(3) Types of design

(4) Preliminary drawings

Phase II - Engineering Design ($65,000)

(1) Complete design and Specification

(2) Material take off

(3) Type of Construction

(4) Construction schedule

Phase III - Construction ($1,215,000)

(1) Equipment (to remain in custody of Government) (except rental) ($515,000)

(2) Material ($200,000)

(3) Labor ($500,000)

4. Road Construction including $540,000 drainage, bridges and culverts. About 18 miles of new road required to connect all of the new schools to the district center ($30,000 per mile).

PROGRAM SUPPORT - CONSTRUCTION

1. Road improvement ($75,000). The existing 24 miles of road on the island of Yap should be re-shaped and drainage repaired. Surfacing of selected material should be applied - this could be carried out over a two year period by public works staff.

2. Telephone system installation ($30,000). There is a switch board in the warehouse at Yap to be installed. One technician is required plus additional material.

3. Enlargement and extension of sewage system ($35,000).

4. Equipment Replacement ($250,000).

PUBLIC WORKS IN PALAU

The public works staff in Koror is composed of a public works officer and a United States hire staff of seven. Also working in the area but not part of the field staff are six other United States hire employees who are assigned to headquarters and are working on the airport construction on Babelthuap Island. There are nearly 200 Micronesians employed in almost every skill capacity in the public works operation except supervision.

The water supply and distribution system for the district center and some of the adjoining Micronesian communities, is a very complex network of interlocking pumps and tanks. The main source of water comes from the Glimel River on Babelthuap Island and is brought from a small check dam in the river across the Toagel Channel with rubber pipe laid 120 feet deep on the bottom of the channel, to Koror. Additional water is taken from a "water cave" and pumped to the main water station near the district center. The water then passes through a system of surge tanks, settling tanks, sand filters and finally into clear water tanks from where it is distributed to the users. The system was installed by the Japanese and has been working for many years without any major change with the exception of installing new pumps on Babelthuap and at the water cave. The end result of all this is inadequate water supply to meet the present demand.

The power system on Koror is marginal. The three diesel generators are in fair condition and are well maintained but the distribution system both primary and secondary is in very poor condition. Headquarters is to be commended for the contract just entered into with an electrical engineering firm from Hawaii for a survey of the power needs in Koror. If the recommendations of the survey are implemented the power system should be greatly improved and the additional demands for power in both homes and commercial establishments will be partially met. Eventually there will need to be larger generators installed. The present survey is dealing only with the outside plant.

All the roads on Koror need major repair and maintenance. There are about ten miles of roads and streets in the district center used by the administration which are in immediate need of rebuilding. Drainage, realignment and grading will be required to save the sub-grade and sub-base from further damage. A proper surfacing with some impervious material is also indicated to reduce future maintenance. The private car population is larger in Koror than in any other district.

With the construction of the airport on Babelthuap about 4½ miles of road will be opened up from the old ferry dock to the airport site. Part of the road has been constructed but the major portion of it must wait for proper materials to arrive to construct the necessary bridges and drainage culverts. This will be the first road opened on Babelthuap. It is estimated that there is about 120 miles of old Japanese roads on

Babelthuap all of which has gone over to the jungle. To restore them now or even a part of them will be a costly job.

Construction conditions in the Palau District are somewhat different than in the previous districts by the presence of several local contractors who have shown some competence in simple building construction. The present school building program is being assisted by some of these contractors who have already started construction on some of the schools. This leaves the public works free to carry on its operation responsibility.

Under the direction of the headquarters public works division an airstrip is being constructed on Babelthuap Island. Separate funds and personnel are also assigned with only nominal support being given by the district public works. The supervisor of the construction was also supervisor of the Yap airfield.

Engineering plans and construction specifications which were shown the Survey Mission were very inadequate to construct such a major structure. No design or drawings for drainage was found at the job site. Compaction test records of the progressive lifts were also not in evidence. Neither were CBR (California Bearing Ratio) test standards for the soils being used, found. The Mission was told that the soils test equipment had been shipped back to Yap sometime ago and no further tests were being made at the job site.

Three of the four-eight tractors and bulldozers used on the job were down for major repair. The large #80 shovel which feeds the rock crusher was also disabled and had been for sometime. There were only four pieces of equipment working during the day long inspection made at the airfield. One caterpillar D-8, one pan and two road graders. The supervisor of the airport job stated that the dirt moving alone on the airstrip would cost $600,000 and that completion of the work had been scheduled for July of 1964 but that it was likely to take a little longer, perhaps to December 1964.

Most of the heavy equipment assigned to Koror is in the same condition as equipment found throughout the Trust Territory. It is old, worn out and undependable. Inadequate repair budgets and replacement programs has forced the district to repair the equipment at a very high cost to the operation budget.

PROJECT - CONSTRUCTION

1.	Water supply and storage	($ 500,000)
	(1) Study of existing surveys	($ 5,000)
	(2) Updating of existing surveys	
	(3) Recommendations based on existing updated survey	
	(4) Complete plans and specifications	($20,000)
	(5) Construction	($475,000)

2. Road Development on Babelthuap ($525,000)

Phase I - Location and Alignment Survey ($45,000)

(1) Location of road building material source

(2) Alignment of selected roads

(3) Drainage and bridges

(4) Types and quality of construction

(5) Alternatives

(6) Preliminary plans and center line plot

Phase II - Preparation of Plans and Specifications of selected roads and Type of Construction ($10,000)

(1) Material required

(2) Grade of material

(3) Test required

(4) Method of construction

(5) Suggested control

(6) Surfacing material

Phase III- Construction ($470,000)

(1) Special equipment

(2) Use as much local labor as possible

3. Landing strip - Babelthuap ($1,200,000)

Phase I - Engineering Survey ($10,000)

(1) Material being used

(2) Location of material supply if present material unusable

(3) Drainage requirement

(4) Compaction tests of present fill

(5) Alternatives

(6) Preliminary drawings to support alternatives

Phase II - Complete drawings and specifications ($25,000)

(1) Type material required

(2) Tests required for construction

(3) Drainage plans

(4) Inspection procedure

(5) Proposed construction schedule

(6) Equipment list

(7) Material list

Phase III - Construction (Contract) ($1,165,000)

(1) Resident Engineer (Contract)

PROGRAM SUPPORT - CONSTRUCTION

1. Sewage extension to adjacent villages ($35,000)
2. Road repair on Koror ($50,000)
3. Move petroleum, oil and lubrication storage yard ($40,000)
4. Public works facilities improvement ($25,000)
5. Equipment replacement program ($300,000)

PUBLIC WORKS - MARIANAS

The public works office on Saipan has a chief and three United States hire employees to supervise approximately 150 Micronesians none of whom are in supervision. The office on Saipan serves the other two islands of Rota and Tinian. There are six Micronesian public works employees permanently stationed on Tinian.

The entire facility on Saipan which comes under operation and maintenance of the public works office was constructed by the Navy and turned over intact to the Trust Territory Government. Therefore most of the roads, utilities and shops are in good condition. However, there is evidence already of the lack of an adequate maintenance budget. Some of the roads are beginning to unravel and jungle growth creeping in on the sides. One of the 700 KUA diesel generators is broken down and waiting for spare parts. This puts more of a load on the remaining machines.

The water system depends on six deep wells and two small springs. Storage capacity is about three million gallons which is about three days supply, estimated consumption being one million gallons per day.

Maintenance tools and equipment on Saipan are in the same condition as in the rest of the districts, that is, badly in need of replacement.

The Mission does not recommend any project type construction priorities for Saipan.

PROGRAM SUPPORT - CONSTRUCTION

1.	Overhaul #1 Engine at power plant	($63,000)
2.	Overhaul water cooling system at power plant	($35,000)
3.	Road maintenance and repair	($35,000)
4.	Equipment replacement	($85,000)

PROBLEMS OF THE PRESENT SYSTEM

Professional program planning is a tool which if effectively used can be the single most effective device for such an organization as the Trust Territory Government, especially in the Department of Public Works. Long range program plans are necessary to base reasonably accurate budget estimates as well as regulation and recruitment of labor forces and more effective use of special equipment.

It was noticed by the Survey Mission that the districts were often unable to complete plans for their yearly programs until after headquarters informed them of the amount of their appropriation. In many cases, this prevents the districts from exercising the most effective use of their time, manpower and funds, since there is then a tendency to use the money on requirements of the moment, letting the long range programs go.

The Public Works function in the Trust Territory breaks down into two main responsibilities: (1) The construction of, and the operation and maintenance of the Trust Territory Government facilities and employee housing. Providing all necessary utilities and their continuing upkeep.

With a few exceptions these offices appear to be staffed with personnel qualified to perform this operational and maintenance responsibility. These are men who have had a great deal of experience in similar occupations elsewhere in the world. Most of them originally came into their present jobs via work with the Navy in Guam or Saipan. It was further noticed that it was the rule rather than the exception to find that most of the public works personnel had more than five years of service with the Trust Territory. There is some danger in over long employment abroad but it is usually more critical in positions outside the district public works departments. The Mission was, however, impressed by one remarkably uniform characteristic of Public Works officials -- their high capacity for alcoholic beverages. (2) The second main responsibility is not so clearly a traditional function of public works. This responsibility is found in the Headquarters Office and includes planning, estimating, professional engineering services to the districts. In this function the Public Works Division is not as well provided with qualified personnel nor does it think of itself as a service agency to the district. Rather it emphasizes its supervisory function.

The Headquarters office has only one graduate engineer on the staff, and no professional engineers at all. The concept of a sound engineering approach to a major construction job does not appear as consistently as is desirable. The burden of this attitude is transferred to the district where they must supply the lack of proper support by trial and error and doing the best they can. But the most serious lack is in the area of

planning. A well staffed properly motivated engineering office can supply the program planning office with well prepared estimates and long range construction plans so as to make the planning operation realistic and meaningful. Budgets prepared from well supported planning documents have less trouble meeting questions and requirements in Washington. Also, and probably more important, well prepared planning documents takes a great burden off the field staff which is charged with the ultimate responsibility of completing any given project.

Good planning supported by professional engineering judgement must be supplied to the field by headquarters. This would place the responsibility on professionally qualified people for spending large sums of public funds which are required on major construction projects and would not force such responsibility upon a construction supervisor. No construction job of the magnitude of the Palau airport should be undertaken without plans and specifications signed and sealed by a professional engineer. This type of a construction project involves not only large sums of public funds (at least $600,000) but involves the safety of human beings who will use the landing strip when completed. The plans for this field, that were shown to the Survey Mission, was a one sheet original drawing prepared by the Land Title Officerin Palau (who is an engineer) and consists of a topographical survey of the proposed site and a suggested alignment. It also had some cross sectional views which were added by the Land Title Officer in his spare time. This sheet was sent to Headquarters where it was changed slightly, signed by the Chief Land Title

Officer (who is not a professional engineer) and then returned to the field where the construction superintendent is building the landing strip. It does not require a professional civil engineer to judge that this method of constructing an airport in the U.S. or any other place using U.S. public funds is less than desirable.

This type of operation is very likely to duplicate itself several times in the next few years if the system is not changed to prevent it. Prior to 1963 the maximum yearly construction budget for the Trust Territory was less than $1 million dollars. In the two years FY 1963-64 the combined construction budget has increased over 1000% or in excess of 10 million dollars. A 10 million dollar construction program should not be left to casual engineering.

RECOMMENDATIONS:

It is recommended that the office of the Director of Public Works be abolished and an Office of Engineering and Construction be established. The District Public Works office would remain under the District Administrator but with absolutely no supervisory control from headquarters except as inspectors, and examiners are sent out from headquarters.

The district public works office would remain a local administrative responsibility of the District Administration.

All support and backstop for the districts would come from the Engineering and Construction Division. This division would be handled by a qualified

registered engineer and would have professional engineers on his staff in the field of Civil (highways, airports - water) electrical, and mechanical. An office engineer would be in charge of the several draftsmen required and a construction supervisor would head up a staff of inspectors and contract supervisors.

It is further recommended that all major construction work be done under contract. Also that all major construction work be preceeded by an engineering feasibility study done by others, from which detailed plans may be completed by the Engineering and Construction Division or done by others.

No major construction work is to be performed by the district public works office. They will occupy themselves with maintenance and operation and with an occassional small construction job if equipment and men are available to do the job quickly and without jeopardizing the regular operation.

As a guide, any job $35,000 or under could be done by the district if agreed upon by the program office and the district administration. No job over $35,000 except in unusual circumstances would be done by the district public works. Any job between $35,000 and $75,000 can be done by a negotiated contract if the Program Office concurs and the Engineering and Construction Division has a qualified contract supervisor on its staff available to monitor the contract. This provision is not intended

to restrict the use of a bid if so desired. All contracts over $75,00 must be entered into on the basis of bidding unless a special waiver is granted by the Secretary of the Interior. Each contract of this nature must have a contract supervisor assigned by the contract officer who will familiarize himself with all aspects of the contract and interpret the views of the Trust Territory Government to the contractor during the life of the contract. This person can be a staff member or may be contracted for from an accepted engineering firm. The contract officer and the contract supervisor could, in some cases, be the same person but it is not desirable that this be done too often.

Chapter 2

SEA AND AIR TRANSPORTATION

SURFACE TRANSPORTATION IN THE TRUST TERRITORY

Surface transportation in the Trust Territory is provided in two ways: (1) Two logistics vessels make a circuit from Japan to all district headquarters and Guam. On the circuit, cargo from Japan and Guam is discharged and copra to be offloaded in Japan is picked up. The logistics vessels are also used for interdistrict transportation of passengers and cargo. Logistics vessels operate on a 70 day turnaround basis which ideally provides 35 day service to each district headquarters. (2) Surface transportation within each district is provided by field trip vessels which make the rounds of the outlying islands providing administrative governmental services, copra pickup service and trade goods delivery service. Field trip vessels operate on schedules set up by each District Administration (DISTAD) and they provide service to the outer islands which varies from 30 days to 180 days depending on the situation existing in each district.

Both the logistics vessels and the field trip vessels are well run ships and provide the best service they can considering the finanacial limitations under which they operate. All of the ships except two field trip vessels are old, having been built during World War II. They are relatively expensive to operate. Because of these high operating and maintenance costs and the limited budget of the Trust Territory, new

construction replacement ships except for the two field trip vessels have not been possible.

Operational Management

The operational management of the logistics vessels and the field trip vessels is done by the Pacific Micronesian Line (PML), a subsidiary of the Pacific Far East Line on a cost plus fixed fee basis. PML provides officers and crews for the vessels, handles all of the logistics services required by the vessels and in coordination with the High Commissioner, issues the schedules for the vessels. PML assigns the field trip vessels to the DISTADS for field trip operations.

Logistics Vessel Problem Areas

The logistic vessel operations present relatively few problems. The seventy day turn around with two ships schedule provides adequate service to the districts. During the first phase long range program through fiscal '68 when scheduling problems are solved, the two ships will call at each port every 35 days. Delays in loading caused by rain, and delays enroute caused by storms, are facts which must be accepted in any shipping operation. One problem area in scheduling, however, should be mentioned. In Koror the frozen fish industry is getting started. The reefer storage capacity in Koror is 25,000 lbs. now and will shortly increase to 75,000 lbs. At present, the frozen fish is loaded into both logistics vessels in the space vacated by the frozen imports into Koror on the outbound voyage. On the return

voyage, the GUNNERS KNOT usually returns to Guam from Truk, bypassing Koror. The PACIFIC ISLANDER, however, does call at Koror on its return voyage and picks up frozen cargo. As the frozen cargo capacity of Koror increases, it may be necessary to divert GUNNERS KNOT to Koror to provide additional frozen cargo space.

General Field Trip Problem Areas

Although each district has problems peculiar to itself, all districts have certain problems in common such as:

a. Lack of communication to the outer islands. Since copra is the main cash crop in the outer islands, the producers must know well in advance when the field trip vessel will call to pick up the copra. Copra does not store too well in the field and the producers will make it only when they feel sure it will be picked up. They must have a way of being notified of the field trip vessels schedule. This problem is solved in those districts having a broadcast station in District Headquarters. Broadcast stations should be installed in those District Headquarters which do not now have them. The stations should be of sufficient power to reach the outlying islands.

b. Lack of navigational aids in the outlying atolls. Navigational aids in the harbors of the District Centers, installed and maintained by the Coast Guard, are adequate for daytime use and navigation in these harbors presents no problem to the masters of the Trust Territory vessels. However, in the outlying atolls the Coast Guard does not install or

maintain navaids. The vessels must pass through the reef and navigate within the atoll strictly by seaman's eye, depending on the sun to help the master identify the shoal areas. Much time is lost waiting for the sun to be in the right position to make navigation possible. The low number of groundings to date while operating under these extremely difficult conditions certainly speaks well of the professional qualifications of the masters employed by PML. Navaids have been installed by the people of some of the atolls under the direction of the ship masters but this has been done in very few of the atolls because of the lack of time available to the masters due to tight scheduling.

c. The necessity to employ field trip vessels in tasks which detract from their field trip operations. These tasks include among others; student-teacher lifts during the summer months, judicial lifts which require moving the district judge to an island to hold court and congressional lifts which require picking up and returning congressmen from the district congress meetings.

d. Combining field trip operations and commercial trading operations on the same field trip vessel. A conflict often occurs between the desire of the field trip personnel (medical, dental, sanitary and administrative) to spend more time in the outlying islands and the desire of the copra buyer and trade goods sellers to get the trip over with as quickly as possible. To the field trip personnel time means the ability to do more for the local people but to the commercial

personnel time is money and they desire to consumate their business as quickly as possible and get to the next island full of customers. The obvious solution to this problem would be to have a field trip vessel for commercial operations and a field trip vessel for field trip operations. However, the cost of such a solution would be prohibitive. The Mission feels that if the additional field trip vessels, as mentioned later in this report, are provided, then the interval between field trip visits to the outlying islands would be reduced and therefore it would be practical to leave some of the field trip personnel ashore on the islands to be picked up on the next trip.

e. The necessity to provide more frequent field trip service. One of the most frequent complaints heard by the Mission was that the field trip vessel didn't visit often enough. It was found that the average community in the outlying islands produces enough copra to buy enough trade goods to last for approximately six weeks. Although more copra could be produced, it was not done because of the spoilage caused by too few pickups and inadequate shoreside storage space.

Specific Field Trip and Boating Problem Areas

a. Marshall Islands District. The Marshalls produce the greatest amount of copra in the Trust Territory. The problem is to pick it up at six week intervals on a dependable, scheduled basis. The presently assigned field trip vessels (ROQUE, RAN ANNIM and privately owned MIECO QUEEN) are not sufficient even though they are being operated to their limits, to provide this service.

b. Ponape District. Field trip service provided by KASELEHLIA to the outer islands is excellent. On the island of Ponape, however, road transportation is practically non existent to those areas which are adjacent to the perimeter lagoon. Four cooperative copra warehouses and trading goods stores are either proposed or in operation adjacent to the lagoon. The problem is to provide water transportation to these co-ops to the extent that the Mission's over-all priorities do not call in near future for road construction to these areas. This is possible now only at high tide since at low tide, many areas are impassable for the type of boats required for this operation.

c. Truk District. The Truk District has the largest population of all the districts, and the problem here is moving people rather than cargo. The field trip vessel, MILITOBI, serves the islands outside the Truk lagoon, MILITOBI has a large cargo carrying capacity which is only partially utilized and a limited amount of passenger space which is not capable of meeting the passenger lift demand. Within the Truk Lagoon there are private boats providing passenger and cargo transportation but this is not adequate to meet the needs of the area. Also within the Truk Lagoon there is no means of providing rapid, dependable, emergency, all weather boat transportation for medical and police emergencies.

d. Yap District. Field trip service in the Yap District is provided by the ERROL. ERROL is also used for shuttle service between Saipan and Guam, for certain Saipan District field trips and for the

Palau District field trips. As a result the field trip service to the outer islands in the Yap District is not frequent enough.

e. Palau District. As noted above, field trip service to the four outer islands of the Palau District is provided by ERROL. Although the DISTAD tries to schedule service to these islands every three months, service in the past year has averaged every six months. Ferry service to connect Koror and Babelthuap is needed. Ferry service from Anguar to Koror is provided by a 50 foot passenger ferry owned and operated by the Anguar municipality. The boat is two years old and is in good shape. Ferry service between Pelelieu and Koror is provided by two decrepit, converted, Navy 50 foot motor launches. Although they are still operating, their life expectancy is rather short. The harbor channel at Anguar needs to be cleaned out.

f. Saipan. As noted above, Saipan District is served by ERROL (when needed and available) and by the FOUR WINDS, a wooden hull, 543 ton vessel, privately owned by the Saipan Shipping Company. Preference is always given to the FOUR WINDS in order to encourage private enterprise in this district. Field trip service to the northern islands is provided once every three months. The break-water in the port of Tinian is deteriorating and will not last much longer. The harbor at Rota needs cleaning out.

Port Facility Problem Areas

In general the pier facilities at each district headquarters are adequate to meet the needs of the district except for Yap, Truk and Ponape. In Yap, the existing pier will handle only the field trip vessel. The logistics vessel must anchor in the harbor and cargo must be lightered to and from the pier. The geographical layout of the existing pier area precludes its expansion. To build a pier large enough to handle the logistics vessel will require relocation of the pier to an adjacent area. In Truk the newly constructed pier is too high for the field trip vessel to use its booms to handle cargo. Cargo handling is accomplished by using shoreside cranes. In Ponape the pier facilities are adequate but the pier is located on an island which has no road connection with the main island. The cargo must therefore be lightered to and from the main islands.

Cargo warehousing presents more problems. In Truk the trans-shipment warehouse is an old quonset hut which has outlived its usefulness and is too small to handle the amount of cargo received. In Yap, the copra warehouse is also a quonset hut which will handle only the copra collected on the "short" field trip. When the field trip vessel returns from the "long" field trip, the copra in the copra warehouse is back-loaded into the vessel and shipped to Palau where a larger amount of storage space is available. In Koror, although the warehouses are in excellent shape, they are too small to handle the ever increasing tonnages being shipped into Koror. Lighterage is adequate in Ponape but in Yap

the cargo lighter has been sent to Palau to assist in the airfield project. The lighter which Palau sent to Yap to replace it sank at sea. Because of this unexpected calamity, Yap must lighter cargo to and from the logistic vessel on a diesel oil barge which has pipes, valves, and raised scuttles on its deck which makes cargo handling difficult. Throughout the territory the LCM's which are assigned to public works and which act as tugs for the logistics vessels were apparently in satisfactory condition and they are maintained by the District Public Works Department boatmen.

RECOMMENDATIONS:

a. Marshall Islands District. (1) Transfer MILITOBI to Marshalls to provide increased shipping capacity. (2) Establish copra storage warehouses and trade goods stores in the heavy copra producing atolls to act as a collecting point for the copra and to reduce the number of stops within the atoll. (See Economic Division Section of Mission's report on suggested measures of implementation.) (3) Provide small boats (21 ft.) powered by a diesel outboard for intra-atoll copra shipping. (4) Install daymarkers in the atoll lagoons to improve navigation and speed up operations within the lagoon. The daymarkers can be manufactured by the district public works machineshop out of reinforcing rods and sheet steel as a rainy day project. The daymarkers can be installed by the local municipality under the supervision of the Peace Corps Volunteer in the location picked by the master of the field trip vessel. This manufacture and installation procedure applies to the other districts also.

b. Ponape District. (1) Leave KASELEHLIA assigned to Ponape. (2) Dredge channels in the Ponape perimeter lagoon to provide low tide boat transportation to the copra co-ops. (3) Provide a boat which would be capable of carrying passengers and cargo to provide boat service in the perimeter lagoon. Boat should be 40-50 ft. long with a draft not to exceed 4 feet. Boat could be operated by DISTAD and turned over to private ownership after an initial period. (4) Install navaids in the atolls which do not now have them (Captain Blanc in Ponape has made progress in this respect so far). (5) Install a radio broadcast station whose over-all priority is justified by other considerations (see section II-B-3 of this report), which among other things could broadcast field trip information to outer islands.

c. Truk District. (1) Replace MILITOBI with the field trip vessel to be constructed in FY '64. Modify this vessel to provide a twin screw engineering plant to increase its maneuverability in the restricted waters of the atoll lagoons. Install booms capable of working cargo at the Moen pier. Increase the passenger carrying capacity of the new ship as much as practicable by redesigning the TATAMI passenger cabins and using Coast Guard approved inflatable life boats in place of wooden boats. (2) Set up a ferry boat service within Truk lagoon to provide daily service to the islands south of Moen and west of Moen. This could be done by using two 50 ft. motor launches and utilizing existing Japanese pier facilities in the islands. A minimal amount of dredging would be required. The ferry service could be set up and

operated by DISTAD during an initial period and turned over to private ownership after the operation was established. (3) Provide a 15-20 knot radar equipped boat to be operated by DISTAD for day and night medical and police services within the Truk lagoon. This would also make unnecessary, in the Mission's judgement, the proposed construction of the field hospital at Toll, one hour away from the District Center hospital at Moen. This would require the installation of additional navaids some of which should be equipped with radar reflectors. (4) Replace the trans-shipment warehouse in Moen.

d. Yap District. (1) Move ERROL to Saipan. (2) Construct a new vessel similar to the one in the 1964 shipbuilding program and assign it to Yap. Operate it on a 30 day field trip service to the outer islands in the Yap District. Every three months send it to Palau for field trip service to the southwest islands. (3) Increase the size of the copra storage warehouse. (4) Provide an adequate lighter to handle the cargo from the logistics vessel. (5) Install navaids in Elato atoll lagoon. (6) Install a broadcast radio station, justified by other priorities, which could broadcast field trip information to the outlying islands. (7) Build a new pier and port facility which could be located on the east side of Donitch Island at the edge of the reef. Donitch Island could be cleared and used for warehouse area. A causeway would connect Donitch to main island.

e. Palau District. (1) As the frozen fish industry in Palau increases, schedule both logistics vessels into Koror on their return trip to increase the amount of frozen exports from Koror. (2) Provide a car and passenger ferry between Koror and Babelthuap. The Trust Territory has plans for a ferry which would be adequate. Additional terminal facilities would be required on the end of the existing causeways. The design of these terminal facilities should be closely coordinated with the design of the ferry to insure compatibility due to the six foot rise and fall of the tide in the channel between Koror and Babelthuap. (3) Increase the size of the trans-shipment warehouse in Koror.

f. Saipan District. (1) Move ERROL to Saipan. Continue to use FOUR WINDS to provide field trip services to northern Marianas Islands. Use ERROL for this field trip service and shuttle runs between Saipan, Tinian, Rota, and Guam when FOUR WINDS is not available due to other committments. Also use ERROL as a replacement vessel for other field trip vessels during their annual overhaul. This replacement service would use up about 40 weeks per year. Use ERROL to assist other districts in their special lift requirements such as student-teacher lifts during the summer months.

Note on Recommendations:

a. A new Ponape dock is not high priority enough in the Mission's judgement to include in the program of fiscal '68. Also, the replacement of the World War II built field trip vessels, the ROQUE, RAN ANNIM, and

ERROL can be deferred until after 1968. They should be replaced by MILITOBI class vessels because of their large cargo carrying capacity. The horsepower of these ships should be increased to provide a cruising speed of 12 knots (as compared to 9½ knots now possible in MILITOBI) in order to permit night time transits between atolls 140 - 160 miles apart.

b. Certain harbors, passes, and channels in various islands and atolls not mentioned specifically above require dredging and/or blasting to improve field trip and small boat operation. An extensive territory wide survey should be made to determine the extent of what is required and the recommendations of this survey should be implemented as funds become available.

Capital Requirements of Recommendations

Note: All cost figures are, of course, rough estimates and are subject to modification as more accurate information becomes available.

a. Marshall Island District

Copra Warehouses in atolls 20 concrete block bldgs. @ $11,000	$220,000
21 foot atoll boats (24@ $1500)	36,000
Navaids	10,000
	$266,000

b. Ponape District

Perimeter Channel Dredging	$ 120,000
Co-op Servicing Boat	20,000
Navaids	5,000
	$ 145,000

c. Truk District

Field Trip Vessel	$ 150,000
Ferry service for Truk Lagoon (2 boats @ $20,000 each)	40,000
Minimal ferry pier dredging	10,000
Radar equipped emergency boat	30,000
Navaids	5,000
Trans-shipment Warehouse	60,000
	$ 295,000

d. Yap District

Field Trip Vessel	$ 150,000
Cargo lighter	50,000
Copra storage warehouse	30,000
Navaids	1,000
	$ 231,000

e. Palau District

Vehicle, passenger and cargo ferry	$ 60,000
Terminal facilities	200,000
Trans-shipment warehouse	60,000
	$320,000
TOTAL	$1,257,000

Private Operation of Field Trip Vessels

All of the recommendations made in this paper concerning the field trip operations were based on the assumption that the Trust Territory (and PML) would continue to operate the field trip vessels. However, it is understood that the shipping company controlled by Carols Etscheit in Ponape is negotiating with Trust Territory to take over the field trip operations in the Ponape District and later on in the Truk District. In the Ponape District this would involve using the TUNGARU, owned by Etscheit, and the KASELEHLIA. KASELEHLIA would be operated by Etscheit using Micronesian personnel. This would lower the operating costs of the ship considerably since the salaries of the Micronesian master and chief engineer would be about one-third that paid the Americans now doing the job. It is understood that the agreement has not been finalized as yet and therefore the details are not known. However, it is felt that if proper field trip operations can be provided under private operation, the private operators should be given a chance. It is understood that the KASELEHLIA would be subsidized and therefore would operate as a common carrier with equal rights given to all traders (including the

Etscheit's trading competitors). However, the Trust Territory will have to insure that proper field trip service at a proper interval is given to all outlying islands, not just those which have the highest commercial potential. The field trip service in the Ponape District has been excellent (albeit expensive) in the past. The Trust Territory will have to monitor and control the field trip operations very closely in the future if it goes to private operation to insure that the same high standards are maintained.

Future Surface Transportation Improvements

The Trust Territory has prepared a long range construction program which, among other things, provides for the construction of ships to be used in the Trust Territory. The total cost of this program is $600,000 and it covers the period FY '63-68. In FY 1963, $74,000 was provided for the construction of a small ship to service the islands of the Truk lagoon. The ship has not been ordered as yet and the funds could be used for the two boats recommended for the Truk lagoon ferry service in paragraph 7c of this report costing approximately $40,000. The remainder could be used for the radar equipped emergency boat also recommended for Truk lagoon service in paragraph 7c. In FY 1964, the Trust Territory budget includes an item for $150,000 for the construction of a field trip vessel. This could be used to build a vessel to service the Truk District. On its delivery, MILITOBI could then be moved to the Marshall Islands District as recommended in paragraph 7a. There is also an item for $50,000 in the FY 1964 budget for

small boats. Since the cost of the field trip vessel is expected to be about $130,000, the funds remaining could be added to the $50,000 to provide the ferry boat to be operated between Palau and Babelthuap as recommended in paragraph 7e. In FY 1965, $150,000 is planned to cover the cost of another field trip vessel. Upon delivery, this vessel could be assigned to Yap releasing ERROL for assignment to Saipan District as recommended in paragraphs 7d and 7f. In the period FY 1966-1968, $226,000 is programmed for unspecified purposes. This estimate should be replaced by approximately $1,400,000 to finance the capital investment priorities of surface transportation outlined in this section up through FY 1968.

Estimated Operating Costs

The estimated gross operating cost of the surface transportation services for FY 1964 is $1,380,000. Assuming that the field trip vessel to be built in FY 1964 is in operation in FY 1965, the estimated operating cost for FY 1965 should be about $1,500,000. Assuming that the field trip vessel to be built in FY 1965 is in operation in FY 1966, the estimated operating cost for FY 1966 should be about $1,650,000. For FY 1967 and 1968 when the new vessels to replace the ROGUE, RAN ANNIM, and ERROL should be operating, the gross operating costs would run about the same or slightly less than FY 1966. Anticipated cash revenues for FY 1964 is $600,000. For FY 1965 cash revenues are estimated to be $800,000 and for FY 1966, $1,000,000. For FY 1967 and 1968 the revenues will probably increase at a slower rate since the

number of vessels will remain constant and the increase in copra production arising from more transportation facilities would have been realized by then. Therefore the cash operating deficits to be financed from the Trust Territory Government operations budget services over the next five years are estimated roughly as follows:

FY 1964	$ 780,000
FY 1965	700,000
FY 1966	630,000
FY 1967	630,000
FY 1968	630,000

However, in accordance with correct accounting practices and the general recommendations of Part III of this report, the shipping business of the Trust Territory Government should be handled separately from its general accounts. Government passengers and government cargo should pay appropriate rates rather than be transported free so that the amount of profit or loss is clear to everyone concerned.

AIR TRANSPORTATION IN THE TRUST TERRITORY

The Trust Territory has one DC-4 and two SA-16 aircraft which provide airline service to all of the district centers plus Guam, Rota and Kwajalein. The airline is operated by Pan American on a contract basis. The contract calls for Pan American to fly 360,000 miles per year. The rate is $2.3057 per mile for the DC-4 and $1.861 per mile for the SA-16 for up to 29,700 miles per month. If the mileage exceeds this figure,

the rate per mile decreases to $1.9348 for the DC-4 and $1.4901 for the SA-16. However, a premium of $2,830 is charged for each increment of up to 5,600 miles flown over 29,700 miles per calendar month. This increment covers the cost of additional crews which must be brought in to fly the additional miles. Service is provided from Guam to Yap, Palau, Truk, Ponape, Kwajalein, and Majuro on a weekly basis using SA-16 aircraft. Service from Guam to Rota and Saipan is provided thrice weekly using the DC-4. All places served by the airline have airfields except Ponape and Palau which require water landings. An airfield is being constructed in Babelthuap which will service Palau District. The completion date of this airfield is indefinite. An airfield is being considered for Ponape but as yet the site has not been approved. When the airfields are completed the SA-16 aircraft will be phased out since they are expensive to operate and the spare parts problem is getting worse. The DC-4 seems to be the logical replacement for the SA-16.

Problem Areas

The DC-4 service between Guam, Rota and Saipan presents no problems. The flights are short and the passengers and cargo are transported expeditiously. When additional flights are required because of additonal demand, more flights are scheduled with a minimum of fuss. Since the DC-4 carries 39 passengers and 2000 lbs. of cargo, sufficient space is available to meet the needs of the area served. However, the SA-16 flights to the areas southwest and southeast of Guam do not run so

smoothly. The SA-16 aircraft is small. It can carry only nine to twelve passengers and has a much smaller cargo capacity than the DC-4. As a result the demand for space usually exceeds the supply. Passengers and cargo must wait in the districts while higher priority passengers and cargo get the space. Although the priority system is fair and is being properly administered generally, there have been isolated instances where it has been abused. However, no priority system can overcome the handicaps of insufficient aircraft space and therefore passengers are subjected to expensive delays in the districts while waiting to proceed onward.

RECOMMENDATIONS:

The Mission recommends that airline service in the Trust Territory be increased as follows:

1. Five DC-4 flights per week from Guam to Rota and Saipan instead of three now being made.

2. Two SA-16 flights per week from Guam to Koror and Yap instead of one now being made.

3. One DC-4 flight per week from Guam to Truk, Kwajalein, and Majuro instead of none now scheduled.

4. Since Ponape will be bypassed by the DC-4 because of lack of airfield facilities, the Mission recommends that an SA-16 be based at Ponape to run a shuttle service between Ponape and Truk and Ponape and

Kwajalein. If a need for air service between Kusaie and Kwajalein should develop, the SA-16 could stop at Kusaie on its way to Kwajalein since the trip is only 80 miles further. However, if stops at Kusaie are made, a seaplane ramp and fueling facility would be required.

5. The present contract with Pan American should be renegotiated as is the intention of the Trust Territory Government, but that the Civil Aeronautics Board be brought in to assist the Trust Territory in the renegotiations. The present contract with Pan American is for 360,000 miles. The recommended schedule requires 480,000 miles per year to be flown. Since the utilization rate for the aircraft would be better under the recommended schedule the costs per mile should be lower than they are in the present contract.

Private Commercial Operation of the Trust Territory Airline

Pan American has been surveying the airline situation in the Trust Territory to determine whether it is feasible for them or a subsidiary to take over the operation on a commercial basis. Their survey is not complete and many problems concerning, among others, subsidy, tariffs, communications, navaids, and flight crew personnel would have to be resolved. The recommended schedule listed above was a tentative one prepared by the Pan American representative with which the Mission was in agreement. In addition to the possibility of a satisfactory arrangement with Pan American, the Mission understands that the Federal Aviation Agency might be interested in operating the Trust Territory airline. Both of these possibilities should be explored further by the Office of Territories

and by the Trust Territory Government.

Present System of Operation Versus Commercial Operation

As to the merits of the present system of operation versus commercial operation, it boils down to the service furnished and the cost to both the customer and the Trust Territory. Pan American is undoubtedly making money on its contract or it would not be so anxious to renew, but the Trust Territory Government has no way of knowing if it is excessive under the present arrangement. It is clear that although the present cargo and passenger rates are high (except on the Guam - Saipan run) some subsidy by the government will be necessary under any system of operations. The Mission recommends that if the Trust Territory airline is operated commercially by a private organization, that the services of the Civil Aeronautics Board (CAB) be utilized both in writing the original contract and for regulatory purposes. The CAB would determine the size of the subsidy and the form it should take. If after a certain period of operation, it was determined that the airline profits were excessive, the CAB would have the power to establish lower rates, reduce the subsidy or both. These recommendations naturally assume that only one airline would be permitted to operate in the Trust Territory. A possible alternative to a Pan American contract negotiated with the aid of CAB is the operation of the Trust Territory airline on a cost basis by the Federal Aviation Agency. The FAA does operate certain air routes now and there seems to be the possibility of an arrangement. The Mission recommends exploratory consultation talks in Washington with CAB and FAA.

Cost of the Recommended Schedule

The present schedule provides three DC-4 flights per week from Guam to Saipan, whereas the recommended schedule provides five. The present schedule provides one SA-16 flight per week from Guam to Koror, whereas the recommended schedule provides two. The present schedule provides one SA-16 flight per week from Guam to Majuro, whereas the recommended schedule provides one DC-4 flight from Guam to Majuro plus one SA-16 flight per week from Ponape to Truk and Ponape to Kwajalein. For FY 1964 the budgeted gross cost of airline operation is $695,000. Figured over a twelve month period, the estimated cost of the recommended schedule is approximately $1,080,000. This figure was calculated using the cost and penalty figures in the existing contract with Pan American. As mentioned before, the contract with Pan American should be renegotiated to provide a lower annual cost. Although the cost of operation of the recommended schedule is about 50% greater than the FY 1964 budgeted gross cost, the carrying capacity of the airline would be greatly increased because of the more extensive use of the DC-4 in place of the SA-16. The operation can be carried out using the existing three aircraft but they would fly more hours. The increased service should result in tangible economic benefits and intangible political benefits to the Trust Territory.

Long Term Recommendations

a. When the airfield at Babelthuap is completed, it is recommended that one SA-16 be phased out and that a DC-4 be acquired to replace it.

This would provide DC-4 transportation for the Guam to Palau run.

b. When the airfield at Ponape is completed, the DC-4 on the Guam to Majuro run would stop at Ponape thus deleting the need for the remaining SA-16 to make shuttle runs between Ponape and Truk and Ponape and Kwajalein. However, if the need for air transportation to Kusaie becomes a reality, the SA-16 would have to be retained because of the need for a water landing at Kusaie since there are no airfields on the island. For the purpose of this report however, the Mission recommends that the SA-16 to be based on Ponape be phased out when the airfield is completed.

Costs of the Long-Term Recommendations

a. Capital Cost

(1) Purchase one DC-4 $200,000 (HICOM est.)

b. Gross operating cost per year assuming continued Trust Territory operation of airline under the excessively high estimates of present contract prices.

(1) When Babelthuap airfield is completed and SA-16 service to Palau is replaced by DC-4 service. $1,150,000

(2) When Ponape airfield is completed and all SA-16's are phased out. $ 928,212

Revenues

No attempt has been made to estimate the revenues which would be received if the short term and long term recommendations were implemented. It is pointed out, however, that the FY 1963 revenues were about $180,000 and that the anticipated revenues for FY 1964 are calculated by the Trust Territory Government in the neighborhood of $200,000 under the present operating schedule. The revenues under the recommended schedules would certainly increase due to the greater carrying capacity of the airline and substantial savings can be made through the new contract arrangement but the air service subsidy that will be needed may still exceed that of the surface transportation subsidy.

Mercy Flights

Aero-medical evacuations and mercy flights are done by the Navy SAR units based in Kwajalein and Guam and by Coast Guard logistics aircraft which service the loran stations in the Yap and Palau Districts. The service has been excellent and is much appreciated by the people of the Trust Territory. The Mission recommends that these services be continued, both for humanitarian reasons and for the very favorable political impact among the Micronesians of this image of the U.S. military.

Chapter 3

COMMUNICATIONS

District Stations

Small radio stations were established in each Trust Territory District Center by the Navy in 1946. These centers were: Majuro, Marshall Islands; Saipan, Mariana Islands; Ponape, Truk, Yap and Palau, Caroline Islands. Equipment used was wartime, manual operated, Bureau of Ships type. All equipment - transmitting, receiving and including radio beacons - was housed under one roof. These stations were intended to handle a light internal traffice load and to provide an intermittent beacon service.

The radio stations were transferred to Interior in 1951. The facilities were entirely adequate at the time. Slowly additional equipment has been acquired to meet changing and increasing requirements. Much of this equipment has been procured from excess sources and is now well worn and difficult to maintain. Some replacement is required.

The addition of equipment has resulted in overcrowded radio stations. Most transmitters should be removed for relocation to separate buildings. This relocation would improve operating efficiency by removing the interference caused by operating of transmitters in close proximity to receivers, and would permit erection of improved receiving antennas through removal of the transmitting antennas.

District radio station improvements, including erection of small cement block transmitter buildings and equipment replacement can be met with modest expenditures.

Relay and Control Station

By 1959, message traffic from District Stations had increased to the point where the single manual radiotelegraph circuit into the Navy Communications Station, Guam, was over-loaded. This increase largely resulted from an expanded Weather Bureau observational program. In an effort to relieve this congestion of traffic, a Central Relay and Control Station was established at Truk. This was accomplished by removing all transmitting equipment from the radio station for relocation to a separate building near the airport. Additional and higher powered transmitting equipment was secured from excess sources and installed. The radio station was converted to a "receive only" station and additional receiving and teletype equipment was received from excess sources and installed. The removing of transmitters and some additional equipment enabled a Truk-Guam radioteletype circuit to be established. Other Trust Territory stations then forwarded traffic to Truk over separate manual radiotelegraph circuits for onward relay to Guam via radioteletype. This greatly expedited movement of traffic.

Plans are underway to move the Control and Relay Station from Truk to Saipan. This will serve to bring the Headquarters function under more direct supervision; greatly expedite the flow of District message traffic

to the High Commissioner's Office; and eliminate, by virtue of the short distance, delays in Guam traffic due to poor signal conditions.

Expenditures

The communication allotment for Fiscal Year 1963 was $251,000; the proposed communication allotment for Fiscal Year 1964 is $375,000. This compares with an average allocation of $127,000 for the previous eight years. In order to improve and maintain the District radio stations in a satisfactory manner a $1.2 million dollar capital budget is proposed for the next four years as follows:

District Stations New Equipment & Supplies $200,000/yr -			$800,000.00
Broadcast Stations (Including Buildings)			$160,000.00
Marshalls	$ 14,900		
Truk	32,800		
Palau	21,800		
Yap	25,500		
Ponape	18,500		
Marianas	46,000		
	$160,000		
Out Islands Stations 57, plus Spares			$140,000.00
Marshalls	20 Units @ $1,800.00	$ 36,000	
Ponape	6 Units	10,800	
Yap	6 Units	10,800	
Marianas	3 Units	5,400	
Truk	10 Units	18,000	
Palau	5 Units	9,000	
Spares		20,000	
		$ 110,000	
57 Generators @ $400		$ 22,800	
Spares		7,200	
		$ 30,000	
Moving the Control and Relay Station from Truk to Saipan			$100,000.00
		TOTAL	$1,200,000.00

If, however, we are to meet U.S. Weather Bureau demands for "within minutes" relay of weather traffic, greatly increased equipment expenditures will be required. The Weather Bureau persists in comparing Trust Territory traffic handling times against Federal Aviation Agency multi-million dollar semi-automatic systems. The present system adequately meets Trust Territory Government requirements and cannot be compared with a system established to handle great volumes of time-critical traffic.

Weather Bureau traffic presently accounts for 40% of all the Trust Territory message traffic. The Trust Territory Government is reimbursed to the extent of $25,000 per year for this service. This sum does not meet increased expenses and is to be reconsidered in the near future. However, short of a very substantial initial sum, equipment to meet Weather Bureau requests cannot be provided under the above budget.

Maximum Program

To provide this "within minutes" relay of weather traffic, additional equipment and buildings would be required in the magnitude of $1.5 million. This would bring the Communication budget to a total of $2.7 million through 1968.

Chapter 4

AGRICULTURE

Field and Functions of the Agricultural Program in the Trust Territory

Program

The present agricultural program of the Trust Territory Government is based on two broad lines of development:

1. Subsistence Agriculture, involving certain basic crops, livestock, poultry and soil improvement and conservation. Present basic crops in the area are coconuts, breadfruit, pandanus, taro, yams, sweet potatoes, bananas, citrus, and tapioca.

2. Cash crops, involving the improvement of the local economy by developing cash crops for export to other districts and outside the Trust Territory. This includes work on coconuts, cacao, black pepper, ramie, coffee, forest products, and fisheries. Only cacao is in an advanced state of commercial development, with ramie and pepper still in the initial stages.

There are also special projects of particular interest and importance:

1. Entomology Program:

This involves territory-wide insect and disease control -- control of plant pests prevalent in the area and a Quarantine Service whose function is to control and regulate the movement of plants and animals.

2. Academic and Practical Training Program:

a. Farm Institute:

This is a large government plantation operated to give the agricultural agents and students academic training and practical field experience, with the strong emphasis on the practical side.

b. Agricultural Scholarships:

These are designed to select people for advanced agricultural training in the Philippines and Hawaii either for a degree or for specialized training, such as forestry, animal husbandry, crops, etc.

Staffing Structure:

Under the present administrative structure of the Trust Territory, the Director of Agriculture serves in a staff position on the High Commissioner level. He has no direct authority over the district agriculturists nor their programs. Instead, the district agriculturists are responsible to the district administrators. Each agriculturist determines his own program for agricultural development.

All the American staff are graduate agriculturists holding B. S. degrees. In Yap, Truk, Ponape, and the Marianas, the district agriculturist is called the "Island Development Officer". This work consumes 75% or more of the agriculturist's day, keeping him out of the actual agricultural field, for as development officer, he is expected to organize and manage cooperatives, credit unions, develop small businesses, etc.

The 164 Micronesians at the district level serve a variety of functions, i.e., agricultural extension agents, assistant agricultural extension agents, junior agricultural extension agents, foresters, horticulturists, animal husbandmen, agricultural trainees, maintenance men, farm foremen, and farm laborers. The educational level and technical competence of these agriculturists leave much to be desired. Two have B. S. degrees; one has two years' special study in the Philippines and Hawaii; two have one year's study in the forestry school in Fiji. Presently, there are ten applicants studying for a degree at the University of the Philippines in community development, general agriculture, poultry husbandry, animal husbandry, entomology, and forestry. From performance records to date, approximately five will complete their degrees.

The Education Department of the Trust Territory has three students studying for degrees in food technology. These people, upon their return, will apparently be used in the vocational agriculture programs in the local high schools.

MARSHALLS DISTRICT:

Staff:

A new American District Agricultural Officer arrived for the Marshalls District during the Mission's survey; the Micronesian Assistant District Agricultural Officer was acting chief during the visit. Two Americans and 23 Micronesians are presently available to operate the District Agricultural Department. Fifteen of the Micronesians are Agricultural Extension Agents and eight are Agricultural Station employees. Eight of the Agricultural Extension Agents are stationed in the outer islands; the remainder work in the district center at Majuro.

Budget:

The budget for FY '63 was $39,000. Of this, 2/3 went for salaries; the remaining 1/3 went for construction materials, POL, travel, seeds, feeds, and fertilizer.

A request of $52,000 has been submitted for FY '64 and $96,000 for FY '65; the breakdown of the budget remains basically the same.

Facilities:

The present facilities consist of an Agricultural Station containing approximately two acres of land on which are located one office-warehouse combination, one tool room, one lath house for plant propagation, one set of hog pens, one poultry house, one small coconut seed bed.

The District is in the process of moving the District Agricultural Station to Ejit Island and rehabilitating the existing station. The present facility and location is entirely unsatisfactory. Being located in the center of town, it presents a poor picture of the Agricultural Department and its activities.

Subsistence Crops:

The Agricultural Staff concentrates the major part of their efforts in advising the local people on coconut rehabilitation of debilitated and typhoon-damaged islands. A small percentage of time is spent on development of subsistence crops such as breadfruit, pandanus, taro, bananas, vegetables, fishing, poultry and swine production.

Cash Crops:

Work in this field of development is almost non-existent in the Marshalls District except for the coconut rehabilitation of several atolls. The rehabilitation of the coconut groves on Jaluit and Namorik demonstrates the work that can be accomplished when properly supported with budget and personnel. From 1960 to the present 2,484 acres on these atolls have been replanted with selected seed-nuts. Pre-typhoon copra production on Jaluit, for example, was 1,293,076 lbs. After the concerted effort of the Trust Territory Government and District Agriculturist, copra production for FY '63 on Jaluit was reported at 221,593.5 lbs. As the new trees come into bearing over the next four years the tonnage of copra will rise and is expected to increase by 50% over pre-typhoon production.

The Marshalls District is presently producing approximately 40% of the Trust Territory copra. The FY '63 level of 9,951,938.5 lbs. of copra represented a decrease from the FY '62 level of 10,591,051.5 lbs.

It is estimated by the District Agriculturist that with the existing number of trees in the Marshalls and with improved transportation that copra production could be increased by 40% to 50%. It is proposed that with more frequent and pre-announced arrivals of field trip ships, work would increase by 30% and spoilage would be cut by 20%.

To further support this estimate of the need for more frequent field trips to increase copra production, the District Administrator reports that in 1961 there were only 43 field trips. These ships purchased 2,710,248 lbs. of copra. In 1962 they had 77 field trips purchasing 4,850,310 lbs. These were purchases by the field trip ships only and do not account for the total copra production which was brought in by other means.

Further, on Majuro atoll a road was recently completed linking the atoll by means of trucks. Since the completion of this road copra production on Majuro atoll has increased by ½ million lbs. or 30%. (For further details on the Mission's recommendations on meeting this problem and the cost involved, see the Transportation section of this report.)

Another of the major problems affecting copra production is the fact that present Marshallese coconut groves are composed of trees of varying age, generally unplanted (volunteer growth), uncultivated, irregularly spaced and crowded to such an extent that the yields per acre are seriously reduced. It has been demonstrated that copra production could increase by ½ ton per acre if these faults were corrected. To convince the people that 55 trees per acre will produce more than 150 trees per acre, and additionally to prove the positive action that would result from clearing competing brush, using fertilizers, etc., is a job for the Agricultural Agent, and an important one.

Additionally, rats are causing considerable damage, not only in the Marshalls but in other Districts as well. Since the actual population of the rats is unknown, it is difficult to estimate the dollar loss from their activity. Animal control biologists have estimated that each rat will cause $10 damage per year; observations of the destruction caused by rats tends to verify this figure.

RECOMMENDATIONS:

1. The coconut is the principal economic plant of the area and almost the sole source of income for the people. The coconut, besides being the main commercial crop of the area, also provides for the people food and ingredients for cooking. It provides a source of feed for swine and poultry. The sap drained from the flowers is used as a

milk substitute for babies. Green nuts supply the best drinking liquids of the atolls. The leaves make baskets, hats, mats, sides for houses, and sometimes thatch for roofs. The husks and shells are used as fuel. Rope and twine are also made from the husks, and the trunks are used in construction. Because of the geography, soil, and climate, the Marshallese economy is and will be based in the future on plants, and the coconut tree will continue to be the principal one.

Because of the importance of the coconut palm to the District, the recommendation is made to establish a coconut grant or subsidy of $100,000 spread over a period of four years, alloting $25,000per year. This will enable the Agricultural Extension Service, through a cash payment of $.25 per tree to plant a maximum of 100,000 seed nuts. For the farmers to qualify, they must plant a minimum of 50 trees under the supervision of the Agricultural Extension Service using the principles laid down by Mr. Pieris, the Ceylonese coconut specialist previously contracted by the Trust Territory Government to formulate a plan for coconut rehabilitation. Mr. Pieris spent three years in the Territory formulating said plan.

To further increase the supply of copra, the subsidy should also extend to the planting of dwarf varieties of coconuts for home consumption. This plan would save annually more than 30 million coconuts, which is equivalent to approximately 7,500 tons of copra.

With an input of $100,000 from the subsidy over the next four years the farmers at this point should understand and appreciate the fact that 55 to 60 trees per acre can produce more coconuts per acre than 150 trees per acre, and that better husbandry pays off. If the program is successful, this would mean 400,000 new trees planted scientifically that would increase the dollar income of the farmers in the District by over one million dollars when the trees come into bearing.

2. To further increase the dollar yield per acre it is recommended that the District Agricultural Office extend through the Agricultural Agents castor bean seeds for interplanting among the coconuts. This practice will promote more efficient use of the land and can work well with the coconut plantings. To start this program it is recommended that the Agricultural Agent give the seeds to the farmer and teach him how to handle and harvest the crop. The Department of Agriculture should guarantee a market for the seeds. According to present market prices of $.05 a lb. and expected yields of 800 lbs. per acre, this could add $40 per acre per year to the farmer's income.

3. Vegetables are presently grown with considerable difficulty in the District due to high winds and salt sprays that sweep the islands. The need for vegetables, particularly in view of the high starch diet, cannot be argued. In order to promote the growing of vegetables for family use it is recommended that the Agricultural Department establish a program for the planting of trees that will afford protection from

the winds and spray. The following trees are selected with the consideration of the needs of the area for fire wood and construction material, besides affording the needed protection for the cultivation of vegetables: Cupressus Macrocapa, Pinus thunberjii, Eucalyptus gomphoelho, Leptospermum laevigatum and Casuarina eguisetifolia. These breaks will aid not only vegetables but other crops such as fruits that have a low salt tolerance. Funds would come from the proposed Forestry program of the agricultural budget.

4. Citrus, particularly limes, grow extensively on the Marshall Islands. Observation of these trees reveals that they are quite heavily infected with Xanthomonas citri. With this disease the fruit will never be allowed into the export market. Species and varieties of citrus should be introduced and treated to cleanse them of the viable citrus canker. A small grove for demonstration purposes and bud wood should be established at the Ejit station.

5. Success of any agricultural program is dependent upon the competence of the District Agricultural Extension Service and the proper placement of these agents throughout the District to carry the program and to give the leadership necessary to affect agricultural improvement in the District.

It is recommended that a minimum of five agents be sent annually to the Farm Institute in Ponape for a year's study with strong emphasis on practical training.

It is further recommended that exceptional agents or students be offered scholarships for study abroad.

To insure the continuity of the District Agricultural Service objectives, it is recommended that an annual conference of the agents be held at the main agricultural station.

The need for incentives must be firmly established in the Service. Exact staff positions should be clarified. Grade or pay raises for scholastic training or "job-well-done" must be an integral part of this program.

The use of young people will present a problem because of the Micronesian deference accorded age and experience. Therefore, the young agent will be effective only if given the technical competence and professional stature needed in the community.

6. Agricultural facilities will be an integral part of the program for providing training of the Agricultural Agents in specific crops, training and demonstration to the farmers, and providing sufficient quantities of planting stocks and animals for effective work in the District.

To help compensate for the distance between atolls and to insure an effective program of agricultural development, it is recommended that the District establish two sub-stations, one in Woji and one in Jaluit,

with the main agricultural station at Majuro. This would also be in accordance with the Mission's over-all recommendations for building up these two islands as sub-centers in the District.

It is recommended that the agricultural station on Ejit in the Majuro atoll be completed and put to use with dispatch. The present facility is entirely inadequate, considering the seed beds necessary for 100,000 seed nuts per year.

These stations should be so designed that the farmers can imitate the procedures and methods used. In addition to propagating planting materials for distribution they should be heavily used for the training of the Agricultural Agents. The agents should be expected to perform the major portion of the labor involved. Additionally, short courses should be set up for the local farmers, and at least one field day a year held at the stations to discuss with the people the objectives of the work and the resulting benefits. Care should be taken to refrain from pure research; the stations' use is for propagation, teaching, and demonstration of known techniques for the area, such as soil conservation, composting, planting methods and caring of commodities.

The sub-stations should be small units and serve merely as a base of operations and for propagation of seed stocks. The main effort of these stations should be for the rejuvenation and rehabilitation of the coconut groves.

For maximum effectiveness it would be desirable to have three American agriculturists on the staff. This would give one American for each station and sub-station to give guidance to the program.

The Micronesian staff should be increased by eight for the Agricultural Extension Service. No increase is indicated for the farm hands.

MARIANAS DISTRICT

Staff:

The existing agricultural staff consists of two Americans (one Island Development Officer and one Agriculturist) and a fairly complete staff of 37 Micronesians.

Budget:

The budget for operations for FY '63 amounted to $124,130; the budget request for FY '64 operations amounts to $113,500. The dollar decrease results from the transfer of personnel from the agricultural staff.

Cash Crops:

The main emphasis on agricultural development in the Marianas District for the past decade has been on truck crop farming and beef cattle production. This work was begun by the Navy. One year ago the Trust Territory assumed the administration of these islands and has attempted to continue the work.

Vegetable exports to Guam, a major market, amounted to $11,000 in FY '62. The meat produced was sold locally. In FY '62 beef production amounted to 182,248 lbs., and fresh pork production, 24,900 lbs.

The vegetable program is quite disorganized -- the growing, harvesting, handling, grading, packing, shipping, and marketing, inclusive. Farmers are presently unaware of market demands and the need for variety. For example, if one farmer realizes an admirable profit from watermelons one

year, everyone the following year follows suit; consequently, the market is glutted with watermelons and the price naturally does down. To correct this situation an effective system for production and marketing is urgently needed.

Plans call for the building of an animal industry station to cover poultry, hogs and cattle which would serve as a central supply of stock to all the Trust Territory districts.

Copra was formerly the largest source of agricultural income for the District until the Brontispa beetle invaded the area; because of this infestation copra was then displaced by cattle and truck crops as the foremost money-maker. The 1962 copra production level was down considerably; only 141,915.5 lbs. were marketed. FY '63 saw an increase to 272,234 lbs. due to the scolia wasp being introduced to parasitize the beetle grubs. Mariana District is presently producing only 2.16% of the Trust Territory copra. Most of the copra is produced in the northern islands, an area which has little agricultural potential for anything else.

RECOMMENDATIONS:

1. The establishment of a cattle ranch under auspices of the Development Fund on Tinian. (See Agricultural Business Ventures for details.)

2. The establishment of a truck crop farm under auspices of the Development Fund on Rota. (See Agricultural Business Ventures for details.)

3. The Agriculture Department should develop a poultry and livestock feed program.

4. The Agriculture Department should establish a forestry and conservation program.

5. The Agricultural Extension Service should direct efforts to coffee production in the District and to increased copra production in the small northern islands.

6. If the Development Fund's feasibility study of papain production should be favorable, papaya cultivation should be stimulated.

7. The development of a dairy herd program on Saipan is recommended.

8. It is recommended that the experimentation with so many breeds of stock cease. From the climatic conditions of the area, cattle should have a preponderance of Brahman blood. Berkshire and Yorkshire hogs are well established and producing excellent results in the Philippines and other neighboring islands. Plymouth Rock and Rhode Island Red hens would be quite adequate for the area, producing sufficient quantities of eggs and meat.

9. Efforts should be directed toward producing needed foods and decreasing large imports of such commodities as rice, coffee, and sugar. With proper staffing and budgeting the Marianas have the best potential for progress with the least amount of investigative work.

10. No increase in the Micronesian staff is indicated. A program for improving technical competence should be followed as described in previous districts.

11. For maximum efficiency of the District Agricultural Department, a total of four American agriculturists is recommended, and as previously described for other districts, the District Agricultural Officer should be relieved of the duties of Island Development Officer.

PONAPE DISTRICT

Staff:

There is one American on the agricultural staff, the Island Development Officer, who also serves as the District Agricultural Officer; and twenty-one Micronesians -- one Assistant Agricultural Officer, nine Extension Agents, and eleven station hands.

Budget:

The operational budget for FY '63 for the Ponape Agricultural Department was $42,000. An additional $28,000 was allocated from the Headquarters' special budget for the cacao development project.

The FY '64 budget requests for operational expenses amounted to $54,000. Special allocations from Headquarters for FY '64 amount to $52,000 for developmental work in the District: $26,000 for cacao development; $10,000 for pepper development; and $16,000 for a pilot rice development project.

Facilities:

In this District are found two agricultural stations. The main station is on the island of Ponape in Kolonia, and the sub-station is in Kusaie. The main station consists of approximately 23 acres of land. This is a former Japanese Tropical Research Station and most of the buildings here were constructed by the Japanese. The main building has been declared unsafe by the Public Works Officer; funds have been requested, but to date no action has been taken and the building is still being occupied by the Agricultural Department and several other offices of

the District government. Tool sheds, a garage for mechanical equipment, swine and poultry houses, resident housing for the Agricultural Officer, and a lath house for propagation are the main structures on the station. In the port area the Agricultural Department was given a building for the construction of a cacao fermentary. This is in operation, but will be inadequate for the increasing production of cacao.

The Kusaie station is a small facility; its use is for the propagation of planting materials for distribution to local farmers. It includes resident housing for the agent, a small fermentary, and seed beds for citrus, cacao, coconuts, and vegetable crops. This station is well located and quite adequate for the area.

Copra:

Copra production is the principal export and commercial activity of the area. Ponape District presently produces 25.6% of the Trust Territory's copra. Production figures for FY '63 totalled 6,582,496.5 lbs. This was down 17,698.5 lbs. from FY '62's production. The age of the trees appears to be the principal cause for the decline, the 4,377,000 trees in the District averaging 35 years of age. There are 23,512 acres planted to coconuts in the District. It is reported that of the total land available, only 1/3, or 37,000 acres, is suitable for coconut production.

The major work of the Extension Service is the rejuvenation and rehabilitation of the existing groves. To encourage the farmers toward this goal the government has established a subsidy for planting and caring for trees in a prescribed manner, as laid down by Mr. Pieris, the coconut specialist from Ceylon. Increased yields of $\frac{1}{2}$ ton per acre, or nearly 100%, have been experienced when the procedures are followed.

In FY '62 a subsidy of $14,000 was allocated from the Trust Territory's Government to support the program. 90,000 trees were planted as a result of that subsidy in 1962. All told, under the subsidy a total of 190,000 trees have been planted. With a continued subsidy and the diligent working of the Extension Service it is reasonable to expect a noticeable increase in copra production for the District.

Cacao:

In 1958 cacao was introduced on the island of Ponape. There are presently 294,635 trees. Approximately 575 farmers have cacao with an average acre planting of 512 trees. To encourage farmers to plant cacao, a subsidy was established by the Trust Territory and has continued each year. During the harvest season the Agricultural Department provides a boat for the collection of beans and pods. They purchase wet beans from the farmers for $.06 per pound and/or six pods at $.05. Farmers who sell at the fermentary receive $.07 per pound for wet beans and $.01 for pods. Present yields are averaging 600 lbs. per acre or

1.2 lbs. per tree annually. (This is rather low; after a few years' experience, it should approach 5 lbs. per tree.) In FY '63 the Agricultural Department initiated a grading system for the purchasing of beans, paying $.07 for #1; $.06 for #2; and $.05 for #3. Marked improvement in the quality of beans sold to the fermentary was reported.

The following presents a resume of the typical cost of production for one acre of cacao. Labor is the only investment the farmer need make given the subsidy:

Labor		Capital Investment	
Breaking, clearing and planting; 4 men, 12 days @ $1.50/da/man	$ 72.	Tools	$10.
Nursery, potting, etc. 2 men, 6 days @ $1.50/da/man	18.	Seeds	1.
Maintenance to bearing: brushing every 2 mo; 30 man da/yr @ $1.50/da for 4 yrs, or 120 man days	140.		
TOTAL	$ 230.	TOTAL	$11.

With an average of 300 trees per acre yielding 30 pods per tree, in the first yield, 15 pods equaling one pound dried, the yield will be 600 lbs. of dried beans per acre.

It is necessary in the growing of cacao to provide shade to afford protection from the drying winds. For this purpose cacao plantings in the Trust Territory are recommended as interplantings with coconuts.

Actually, the major portion of the labor costs is work that normally should be performed on the coconuts alone. With the combination of two crops the farmer is working more efficiently and in the first years will be realizing nearly $150/acre profit vs. $90/acre from coconuts alone. As the cacao matures, and proper husbandry is practiced the yields per acre will rise. The price of cacao will probably stay high enough to justify the use of imported fertilizer. With care the trees should produce without any appreciable decline for 40 years.

Forestry:

Test plantings of mahogany and aurucaria have been initiated at the Agricultural Station. Every effort should be made to step-up the forestry work throughout the District using not only introduced species, but many of the indigenous species. Strict rules should be established to control cuttings and provide for replanting.

Pepper:

Over the past several years an effort has been made to establish pepper as an economic crop for the Trust Territory. Initially lack of funds and first-hand knowledge of the crop produced poor results. With an increased knowledge, diligent work, and a considerable outlay of cash and labor, it now is possible to grow peppers successfully in Ponape. From a 1/3 acre test plot at the Agricultural Station, the first harvest yielded 1,158 lbs. of processed pepper valued at $604.80. Expenses, according to records, were $110 for fertilizer

and labor, and $138 for picking and processing, leaving a balance of $366. Figures were based at $.50 per pound. This first crop was sold to a gourmet market, accounting for the high price. Pepper on the New York market sells for $.28 to $.30 per pound for black and $.30 to $.35 per pound for white.

With a revolving government subsidy to get the project started, the Agricultural Department is encouraging the farmers to plant 100 stands of pepper. An assistance loan of $200 (to provide fertilizer, posts, bags, and plants) is given, this to be repaid over a four-year period.

The present intention is to capture a gourmet market with the yield produced. The United States' demand is currently running 25 million pounds per annum. The Director of Agriculture estimates there are 500 acres of land suitable for pepper culture in Ponape. This would be 250,000 plants, total, and expected yields would be in the 1000-ton size.

This is to be a supplemental crop, and one of small scale. The latter should be an advantage because of the ease in controlling the quality. With a small yield, quality will be all-important for sales. Ability to get a premium price for extra-quality pepper seems indispensable to the successful development of pepper cultivation in the Trust Territory.

Although additional work is being done with citrus, bananas, vegetables, cattle, swine, and poultry, the aforementioned crops are the outstanding

possibilities for the area. Papaya, sweet potatoes, taro (upland), and rice development also present a future potential, as does hibicus fibers. World Wide Trading Company of Japan has already expressed interest in this last product, and a test shipment to Japan will be made in August.

RECOMMENDATIONS:

1. The coconut tree planting subsidy should be continued until the estimated limit of 37,000 acres that are appropriate for coconut trees is reached.

2. The planting subsidy for cacao should be discontinued at the end of FY '64. More intensive work by the District Agricultural Extension Service needs to be instituted to insure proper management of the trees and training for the farmers. Laxity in this matter will probably result in disaster for the project considering the present unskilled level of the farmers.

3. A livestock and poultry feed program should be developed with the introduction of grasses and legumes, making the fullest use of those already present. Legumes will be an excellent addition to the coconut-cacao plantings, adding considerable green manure to the soil.

4. The program for black pepper should be expanded modestly; from the results to date it is deemed advisable to try the crop with local farmers. This project should proceed slowly with selected farmers;

these farmers initially should not plant more than 100 standards. Loans should be provided to initiate the crop and carry it to harvest; repayments should begin with the harvesting of the crop, the rates being set by the District Agricultural Officer.

5. A forestry and conservation program should be established with dispatch under an American forester to be shared with the Truk District.

6. The feasibility of establishing a banana market and increasing banana production should be further investigated by a U.S. firm as previously recommended for the Palau District.

7. The Trust Territory Government should be asked to do a feasibility study of rice cultivation in the Ponape district, but bearing in mind the special problems of using Micronesian labor. This should specify what machinery would be used.

8. As in the other districts, the shortage of both technically qualified American and Micronesian agricultural staff employees is hampering the movement of the work. Recommendations made for the personnel in preceding districts also apply to the Ponape District.

The minimum American staff calls for a District Agriculturist aside from the forester previously mentioned.

9. Because of the condition of the building at the main station, it will be necessary to construct a new facility. The plans should bear in mind the need for teaching and demonstration facilities for agents and

farmers alike. Considering the fertilizer needs of the area, it would be advisable to have a small soils testing laboratory included.

YAP DISTRICT

Staff:

The agricultural staff for the Yap District consists of one American who is titled "Island Development Officer" and who has duties additional to those involved with agriculture; and 19 Micronesians, six of whom are Agricultural Extension Agents and the rest laborers. The entire staff is located on Yap proper. Staffing requests for FY '64 call for two Micronesian extension agents to attend the Farm Institute and one Micronesian to take a specialized course in fishing.

Budget:

The agricultural budget for FY '63 was $28,000 for operating costs and allocated as follows: American salaries, $8,300; Micronesian salaries, $16,500; and supplies, $3,500. Additionally, $2,500 was allocated from Trust Territory Headquarters for the Ulithi typhoon rehabilitation, and $30,000 capital costs was assigned for Agricultural Station construction, of which only $16,000 was used; the remainder reverted to Headquarters.

Requests for budget in FY '64 amount to $38,000, all for operations.

Facilities:

The facilities at Gaanelay (outside of Colonia) consist of 6½ acres of which approximately 2½ acres are in use. The remaining 4 acres are expected to be completed by the end of FY '64, this being dependent upon funds and ordered equipment. Construction of this station has

been going on since 1959. The major energy of the Agricultural Departemtn has been going into this facility leaving little time for more productive work. Two buildings have been constructed on the site, consisting of an office and warehouse respectively.

Cash Crops:

The principal cash crop of the Yap District is copra. In FY '63 the District sold 947,587 lbs. to the United States and 155,386 lbs. to Japan, for a total of 1,102,973 lbs. with a value of $49,690.73. This is double FY '62's copra production for the area. Rehabilitated groves on the outer islands accounted for the increase. The Yap nuts are exceptionally good, and annually many are sold for seeds to the other Districts. For FY '63, these sales amounted to $3,000 revenue for the Yap District.

Cacao is being extended in the Yap District as a cash crop. To date, 20,000 trees have been planted. It will be two years before production starts, however. The Agricultural Department, to keep abreast, has purchased cacao processing equipment amounting to $7,500.

The Yap Trading Company is presently buying Trochus shell for $.05/lb., on a 20,000 lb. order to Japan. If quality proves good enough, the Trochus gatherers may receive an additional bonus payment from the Japanese purchasers and the Yap Trading Company. The Trochus was formerly a valuable commodity. With the advent of the plastics industry, there is very little demand for Trochus now.

The Agricultural Department has fostered a "Farmers' Market" in Yaptown for the sale of locally produced vegetables, fruits, handicraft, etc. The Yap Congress pays the wages for 16 agents who, among other duties, operate the market. This is not a large operation, but it is a beginning to meet the needs of the residents of Colonia, the Yap District Center.

RECOMMENDATIONS:

1. From conversations with some of the older inhabitants in the area, it seems that the forests of Yap proper were formerly quite extensive and productive. Due to indiscriminate cutting and the lack of any plan for replanting, the forest lands have reverted to a rather scrubby condition. A reforestation program is definitely recommended for the area. Because of the extent of this program, a forester to be shared with the Palau District is recommended to guide the development of this program and the training of the Yapese in the care and use of the forest lands.

2. Due to problems of land ownership, many outsiders living in Yap cannot own land and are therefore dependent upon the local market for fruits, vegetables, fish and meats. Presently the supply of these commodities to the markets is rather sporadic. To alleviate this situation, it is recommended that the Agricultural Department establish and operate a truck farm. It is anticipated that this farm, within a period of five years, could convert to a vegetable producers' cooperative. In setting up the farm the work procedures should be of a nature that could be easily imitated by the local farmers and that would create little operating difficulty for the Yapese after the conversion.

This farm should also be used extensively for training Agricultural Agents and providing short courses for the local farmers. The agents would extend this information and practice to the outer islands.

These outer islands would also need the wind breaks as recommended for the Marshalls District.

3. The Japanese intensively farmed many acres on Yap proper. Through their methods the soil was depleted of what little fertility it possessed and now lies in waste. It is recommended that the Agricultural Department commence a program for rebuilding these soils.

Presently this land is composed of rough grasses and scrub pandanus. By seeding these soils with soil building plants it is felt that they can be brought back into productive use over a period of years, with a potential for cattle production. This soil building program should be part of a District program for the development of livestock feeds.

4. To increase the meat supply of the District it is recommended that the Agricultural Department import pure-bred swine for the upgrading of local stock. This program could be operated similarly to 4-H Club "pig-chains" in this country whereby a pure-bred hog is given to the farmer by the Agricultural Department; upon farrowing, one of the pigs is then selected by the Agricultural Department for further distribution or sale, as the merit of the pig dictates.

5. The main Agricultural Station at Gaanelay on Yap proper should be completed as quickly as possible and brought into use as a teaching, propagation, and demonstration farm for the Agricultural Agents and farmers alike. This station should operate as that described for the Marshalls District.

6. The establishment of a sub-station on Ulithi atoll is additionally recommended in order that the Agricultural Department might commence a more effective program of agricultural extension in the area. Agricultural development in the Yap District, as was described for the Marshalls, is dependent on a strong, competent Agricultural Extension Service, and the same general recommendations with reference to the station's operations, objectives, and program apply to the Yap District.

7. It is recommended that the Yap Extension staff be increased by five. These five agents should be sent to the Farm Institute in Ponape for one year's study and practical training, while the present agents should be shown how to improve their effectiveness with the Yapese farmers by the District Agriculturist.

8. Presently the District Agricultural Officer has the title and responsibilities of "Island Development Officer". It is recommended that he be relieved of these additional duties, i.e., formation of cooperatives, credit unions, creation of small businesses in the islands, etc. The position of Agriculturist is sufficiently demanding that the individual needs to devote his full time and attention to this task. Most

of these non-agricultural duties could be handled by a Cooperative Specialist in each District, as recommended in the Mission's report.

9. For maximum impact the American staff of the Agricultural Department should be increased by two, one extension horticulturist and one forester. It is proposed and recommended that the forester have dual responsibility for two districts, Yap and Palau.

PALAU DISTRICT

Staff:

One American Agricultural Officer and 35 Palauans comprise the existing agricultural staff. Of the Micronesians, six work on the Agricultural Extension staff, three are agricultural technicians, two are agricultural trainees, and 24 are Agricultural Station hands.

Budget:

In FY '63, $35,000 was appropriated for operations. An additional capital investment appropriation of $14,000 from Headquarters was used for ramie development. Budget requests for FY '64 total $49,000 for operations plus an additional capital investment of $23,00 for ramie.

The entire budget of $23,000 for the ramie development project will be spent to purchase production items for ramie growers only. Twenty decorticators will be purchased and sold to farmers on a two to three year repayment basis. Each decorticator costs $620. CIF Guam. Other materials (fertilizers and insecticides) will be distributed to growers as a subsidy for the initial year only.

Facilities:

The facilities afforded for operations, testing, introduction, teaching, and demonstration consist of two stations. The main station in Koror, at present an estimated seven acres, is being used for cash crop development, improvement of existing subsistence crops and fruits with new

variety introductions, and the testing of new species of plants and trees. Poultry, carabao, and hogs (all of improved breeding) are also raised and the progeny sold to local farmers for the upgrading of local stocks.

The second station is located on Babelthaup at Nekken. The total acreage of this unit, a former Japanese plantation, is 1500 acres. Presently, approximately 15 acres are under development. The station is working on cacao, mahogany, coconuts, fruits, ramie, and pastures. Further plans call for the building of a second Farm Institute for the Trust Territory on this site.

For Palau these stations are essential. Every effort is being put forth to develop new crops for the area due to the devastation caused to the coconuts by the coconut Rhinoceros Beetle. Despite the lack of sufficiently trained personnel, the work is progressing smoothly, and one new crop (ramie) is ready for large scale plantings.

Cash Crops:

Prior to World War II, the Oryctes Rhinoceros L. (Coconut Rhinoceros Beetle) was accidentally introduced from New Guinea. The coconut trees of the District were devastated (see Entomology Report). Today in the District, the reported coconut tree count is 180,000 trees. Over 100,000 trees were planted during the last three years. 70,000 Yap seed nuts were imported, and 30,000 seeds from selected Palauan palms.

In 1962, 1,358,080 lbs. of copra were produced and in 1963, 1,460,518.5 lbs. This amounts to 102,438.5 lbs. increase. The movement of this rehabilitation is sound and very impressive to the local populace. A good deal of extension work needs to be done yet to keep the areas clean and clear of possible breeding sites for the beetle along with improving the curing methods of copra.

One of the most promising cash crops being developed to date is ramie (Boehemeria Nivea, L.). This is a fiber plant for which world demand is growing. The fiber is used for dress fabrics, millinery and trimmings, thread for fine embroidery and laces, upholstery fabrics, webbing, canvas, rope for mountain climbing, belting, milk filters, and shoe thread. It has a tensile strength eight times that of cotton and seven times that of silk, and the tensile strength increases by 60% - 70% when wet. Buyers in Japan are very interested in developing the crop in the Trust Territory and have even suggested giving a 500 ton quota to the Trust Territory. Japan is presently importing 5,000 to 6,000 tons of ramie annually. The agricultural officer heading the project has an eventual goal of 220 acres in ramie. Test cuttings sent by the station to Japan were favorably received by the market. If this quality is maintained, $.24 to $.25/lb. should be received.

Estimated out-of-pocket costs for a farmer to plant one acre of ramie, of which all but $130 is capital investment:

Labor	Family	Plow	$15 - $20
Fertilizer	$100/ton (need 1300# of 10-5-2)	Carabao . . .	80
		Decordicator .	700 (will handle 3-5 acres)
Insecticides	30 (BCH-Mal.)		
TOTAL, Operations - $130.		TOTAL, Cap. Invest. - $800.	

Five cuttings in the first year, with an average yield of 800 lbs. per cutting and sold at $.25/lb., would yield the farmer $1,000 gross per year per acre. The initial planting is good for three years before a decline in the yield. It is therefore recommended that he replant every fourth year.

From 1952 to 1956, 10,000 cacao trees were planted on Babelthaup at Nekken. Today, approximately 1,000 trees of this planting are surviving. The site was poorly selected, and this error was compounded by poor management. From the existing trees which now are suffering from Black Pod disease and a lack of adequate care, a total yield of only 1200 lbs. of dried beans per year is being made. Present plans call for introducing the Jeterango variety. This is a hybrid variety and is disease resistant. The Agricultural Station expects to put out approximately 1500 of these hybrid trees. After observing the soil conditions and the existing trees, however, it is felt that a cacao project for the Palau District should be eliminated.

Forestry work at the moment is just beginning. Some work, particularly with mahogany, has been done. Two separate plantings on Babelthuap were observed and appeared very favorable. The District Agriculturist made the plantings on a three foot spacing. The trees in a period of 18 months have grown to approximately 20' in height and measure 3" in diameter. Due to the closeness lateral branching has been retarded. Plans call for cutting every other tree in five years and utilizing this lumber for boat planks, furniture, etc. Being free of knots, it will be of exceptional quality. A second cutting is made five years after the first, and cuttings continue at five-year intervals until the 20th year when the trees are then at the desired spacing of 30' intervals. Rather than waiting for the normal growth on a 30' basis, this scheme, therefore, will provide a valuable commodity every five years.

Forestry can play a very important part in the long range development of Palau. At present one Micronesian with one year's training in Fiji at the Forestry School is on the staff. There are eleven private saw mills in the district, and no control is exercised over cuttings despite the fact that there is a district ordinance on size; there is presently no one to enforce the order. After cutting by the private mills, no replanting is attempted. Reports state that 20,000 board feet per year are cut in Koror for housing; 7,000 board feet for canoes and boats, etc. If the existing stands are to be preserved and new plantings made, a forester and staff are definitely needed.

Test plantings of pepper, rice, castor beans, sugar cane, coffee, taro, rozelle, citrus, rambutan, macadamia, papaya, bananas, pandanus, truck crops, and several fruit trees are being carried on at the station and receive good care. They look healthy and show vigorous growth, and some can be distributed for production. Because of a limited staff, however, this work is moving slowly.

Carabao have been introduced and are being bred for draft purposes on a small scale. Results are good and the demand is greater than the supply.

RECOMMENDATIONS:

This district, in over-all, has perhaps the best potential for agricultural development. There is sufficient suitable public domain so that the Trust Territory Government could assume the initiative and the initial financial burden of establishing various plantations to be turned over to the local farmers at a later time when the projects are operating successfully.

1. It is recommended that the Trust Territory Government establish and operate a 200 acre ramie plantation. (See Agricultural Business Ventures for details.)

2. A long-range forestry and soil conservation program should be initiated immediately. Further expansion of Swietenia microplyla (mahogany) plantings should continue on the 3x3 basis. Introductions of Ptercarpus indicus, Eucaliptus deglupta, Auracaria excelsa, and the

expansion of local hardwoods should be accomplished. A forester is essential for preparing and managing the program in addition to duties involving the establishment of conservation regulations.

3. A livestock feed program should be developed. This is essential for any expansion of the livestock and poultry industry for the district.

4. Further extension of cacao for the area should cease.

5. Plantings of coconuts should be increased, for this is again showing promise as a cash crop for the area. This expansion should be closely coordinated with the staff entomologist.

6. Castor beans, nut and fruit tree production should be pushed to the fullest extent, particularly on the outlying coralline islands.

7. Development work on subsistence crops should be intensified at the Agricultural Station.

8. From the results shown of carabao introduction, this program should be expanded. This is an excellent program for the Palauan farmers; maximum use of the buffalo in cultivation work will be far superior to mechanical equipment in conserving the thin soils.

9. It is recommended that a U.S. firm be invited to make a study of the export possibilities of Palauan bananas for the Far Eastern market, although the development of the banana industry involved certain logistic problems that make this a lower priority.

10. Some of the best soils on the islands are in the mangrove swamps; these should be brought into crop production.

11. The Japanese spent 30 years in the area and conducted an expansive tropical research program. Some of the records of this work were found and saved, but nothing substantial exists. The former director of Tropical Agricultural Research now resides in Tokyo and he has in his possession extensive volumes detailing the research conducted during the years of Japanese occupation. These documents could be of tremendous value and could save considerable time and expenditure. He should be contacted and these documents procured:

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12. For maximum effectiveness a total of $3\frac{1}{2}$ American technicians is recommended: 1 District Agricultural Officer, 1 animal husbandman, 1 horticulturist, and 1 forester to be shared with the Yap District.

One of the major problems confronting the Agricultural Department is the lack of sufficiently qualified technical people to carry out the programs, both American and Micronesian. Crop failures such as that with the cacao plantings on Babelthuap cause the people to be wary of the sound work that is being done. This can be overcome with a strong, technically qualified Extension staff. Palau District presently has four Micronesians studying for degrees at the University of the Philippines. These

opportunities for advanced study should definitely be encouraged and continued; but, correspondingly, it is essential to have a slot for the man to return to after he has developed and augmented his technical competence. Similarly, pay must be in accordance with his professional achievement. Neither should the practical side of the training for Agricultural Extension Agents be overlooked; they should be required to handle the major portion of the daily station chores.

13. The facilities at Koror should be maintained and necessary equipment added to handle the fiber program and cattle expansion. A soils testing laboratory should be installed. This will be essential for the ramie growing program in order to insure the efficient and economical use of soil amendments used in the program.

TRUK DISTRICT

Staff:

There is one American on the Agricultural staff, the Island Development Officer, who also serves as the District Agricultural Officer; and 28 Micronesians, serving in the following capacities: Assistant District Agricultural Officer, Agricultural Agents, Cottage Industry Specialists, Fisheries agents and farm hands. Duties and responsibilities include advising farmers on proper and more productive methods of planting and tending coconuts, cacao, pepper; fisheries; development of cottage industries; small businesses; industrial development; formation of cooperatives; management; credit unions; farm-to-market transportation; and quarantine inspection service.

Budget:

For FY '63 the Truk agricultural budget was $54,000, all operational. Budget requests for FY '64 total $64,000 for operational costs.

Facilities:

The Agricultural Department currently operates two stations. The Truk Agricultural Station includes five acres. The land area is being used for agricultural buildings, nurseries, taro introduction beds, poultry and livestock facilities, fish reefer, boat and engine repairs, permanent tree crop and plant introductions, and for a general headquarters for the promotion of the Agricultural Extension Program. The main Agricultural Station serves as a test center for the low island agricultural development.

The agricultural sub-station on Moen caters to the high islands agricultural development. It encompasses 7½ acres which are used for the development of tree crops and provides an area where plant introductions can be made and tested for disease and insect resistance. In general, the sub-station serves three purposes: (1) to develop crops found in the area, (2) to introduce new species, (3) to train agricultural extension agents in the work of propagation and cultivation of these various crops.

The sub-station is in very poor condition; it is poorly located, and is unattended; and the plantings are scattered in such a manner so as to be extremely difficult to ascertain what one is observing. The Agricultural Officer newly arrived on post is attempting to rectify the existing situation, and it may be stated that this is no small chore. The "farm" contains plantings of cacao, coffee, pepper, acerola cherry, citrus, nutmeg, mango, rambutan, taro, and macadamia nuts.

Cash Crops

Truk District produces approximately 13% of the Trust Territory's copra. In FY '62, 5,430,748.5 lbs. were sold; in FY '63, 5,426,298.0. Truk District appears to be unique in respect to the number of field trip ships. Here, apparently, increasing the trips does not increase copra yield, whereas elsewhere the copra production is increased repeatedly in anticipation of a ship arrival. This seems tied to the population density of the area. Local consumption per day of nuts is quite heavy.

For an average family of five, ten nuts per day are consumed -- or 3,650 nuts per family per year. This is equivalent to about 1200 lbs. of copra per year per family.

It appears that an increase will come only with more intensive and effective work by the Agricultural Extension Service in persuading the people to adopt the recommended procedures of coconut production. To aid and encourage this work, the local Congress pays $.05 for each nut planted.

Truk has the second largest cacao plantings in the Trust Territory. There are presently planted 200,000 trees in the District, with 75% of these plantings on Toll. About 46,000 trees should begin to bear next season. To date 4,600 lbs. of beans have been cured. Ten thousand dollars has been requested for the cacao plant for FY '64; this includes building a 20' x 40', 1700 lb. dryer and sun racks to be erected at the Agricultural Station.

Truk District, particularly in the lagoon area, has a real potential for forests. This needs developing, not only for cash, but as a means of conservation, both water and soil. The Agricultural Station has 1½ acres planted with Swietenia microphyla, Auracaria excelsa, and Pteracarpus indica. As in other districts, there is indiscriminant cutting of timber by the people without regard to size or replanting. On Toll a group of farmers have formed a cooperative to harvest the abundant breadfruit trees.

The Agricultural Department is renting the group a portable saw mill to harvest this supply of timber. With selective and controlled cutting this supply will last for some time, but the Agricultural Department has neither program nor personnel to enforce this policy.

The Agricultural Station maintains a purebred Berkshire herd and a flock of White Leghorns and Hampshire hens for reproduction, the progeny of which are sold to farmers.

RECOMMENDATIONS:

1. A forestry and conservation program should be established under the direction of an American forester to be shared with the Ponape District.

2. An immediate feed production program should be initiated to strengthen the poultry and swine program.

3. The Agricultural Service should direct considerable attention to the rejuvenation and rehabilitation of the district coconut groves through the aid of the planting subsidy program.

4. The Agricultural Department should establish a new sub-station on the Island of Dublon, and the existing sub-station on Moen should be eliminated. The work and purpose of this station should be as that described for the Marshalls District.

5. One large scale cacao fermentary should be set up now, but as part of a planned program for additional cacao fermentaries over the future.

6. Aid the Vegetable Producers' Cooperative to increase the scale of its operations.

7. As in the other districts, the weakness of an agricultural program is a poorly qualified staff. Efforts for strengthening the Agricultural Department should follow the same pattern previously mentioned. Additionally, the recommendations for the Island Development Officers' positions should follow the recommendations made for the Yap District.

HEADQUARTERS

The Office of the Director of Agriculture is located on Saipan in the Office of the High Commissioner of the Trust Territory. The Director acts in an advisory capacity on agricultural matters to the High Commissioner and has charge of the entomology and Farm Institute operations and special agricultural development projects such as the cacao subsidy, ramie development, etc.

The Director of Agriculture does not have direct authority over the District Agriculturist; the District Agriculturist answers to the District Administrator, and the District Administrator to the High Commissioner. The High Commissioner then consults with the Director of Agriculture, or the Director with the High Commissioner. This is a very awkward and cumbersome system causing considerable frustration to a department that in many instances cannot afford the delay created while waiting for the proper channels to function.

Except in matters of policy it is recommended that this system be eliminated and that the Director of Agriculture have the authority to act on matters of an agricultural nature and that the District Agriculturist be able to confer with the Director of Agriculture without first having to go through the District Administrator. This recommendation is in keeping with the general administrative recommendations of Part III of the Mission's report.

The position of Agriculture Extension Specialist was recently approved for addition to the Agricultural Headquarters staff. To this new staff position will also be delegated the duties of Deputy of the Agricultural Department.

The staff budget for FY '63 amounted to $129,000. This was disbursed for operations and special projects generated from Headquarters, i.e., livestock replacement, coconut subsidy, and boat-building projects. In addition, $122,500 was allocated for territory-wide projects, i.e., fisheries school, beetle control, subsistence fisheries, ramie development, coir fiber development, cacao development, and the Farm Institute.

The request for budget funds in FY '64 amounts to $305,000:

U.S. Personnel	$ 90,000
Micronesian Personnel	8,000
Travel, per diem	5,000
Special equipment and supplies	57,000
Agricultural development projects	145,000
TOTAL	$305,000

The need often arises for specialists to handle specific problems. Rather than taking on specialists as permanent staff, it might be advisable to establish a fund to recruit specialists on a short term basis as the need arises.

FARM INSTITUTE AT PONAPE

The Farm Institute, a former Japanese plantation and research station, is located on Ponape in the Metalanim municipality. In August 1962, an institute for the training of Micronesians in the skills of agriculture

was established. Presently, all districts are authorized to enroll two trainees each, for a total of 12 students at the institute. The graduates of this school will become agricultural extension agents, vocational agriculture teachers, and private farmers.

Trainees are taught all aspects of tropical agriculture, i.e., botany, soils, horticulture, entomology, animal and poultry husbandry, farm management, arithmetic, truck crops, subsistence crops and cash crops. Emphasis in training is on the practical side; the students raise the crops and process them. Approximately two-thirds of the students' time is spent in the field and the remainder in the classroom.

The physical plant consists of approximately 500 acres, most of which is planted with coconuts. A section within the coconut area is fenced off for cattle grazing purposes, and there are forty head of cattle therein. There is a ten acre cacao planting for experiment, demonstration, and teaching purposes. Other plantings consist of macadamia nut, dwarf pepper, forest and citrus. There are plant propagating nurseries, a cacao fermentary, a copra drier, dormitories and staff housing, classrooms, a mess hall, and miscellaneous sheds for tool and machinery storage.

The staff for the Farm Institute consists of one American superintendent and eight Micronesians to supervise and manage the many operations of the farm.

$28,000 was allotted in FY '63 for the operation of the Institute. A request for $32,000 has been submitted for FY '64. The American superintendent's salary is not included in the Trust Territory budget, but is accounted for in the Agricultural Headquarters budget.

It is recommended that the facilities of the farm be expanded to handle fifty students per year and an increase of one American on the staff be made to handle the additional student load.

As has been indicated, agricultural training in all the districts is sadly lacking. The Institute can handle practical training, but exceptional students should be selected and sent abroad for more advanced academic training. The Trust Territory Government presently has $15,000 allotted for this purpose in the annual budget. Each district is allotted two scholarships annually, but they should, of course, be transferrable if a district cannot fill its quota.

ENTOMOLOGY AND QUARANTINE SERVICE

Headquarters for this project is located in Koror, Palau District. This site was selected because of the great variety of flora and fauna and because of the infestation of the coconut Rhinoceros beetle which had devastated the coconut trees in this district.

The staff for this operation consists of one American, three entomology assistants, one laboratory employee, and a ten man beetle crew.

Statistics regarding actual dollar losses from destructive insects have not been compiled, but judging from the known presence of harmful insects and observing the damage they cause, the loss is extensive. The U.S. Department of Agriculture which recently conducted a research project to eliminate the Melon fly on the Island of Rota, estimated the damage to the crops on Rota from that one insect was $50,000 per annum. There are over a hundred known pernicious insects in the Territory -- such as scale insects, banana root borers, and fruit flies. Additionally, the islands suffer great loss from the activities of rats and snails.

To expect one entomologist to effectively establish a control program for the entire Trust Territory is unrealistic. In order to strengthen the program, it is recommended that two American technicians be added to the staff, one to be stationed in the Marianas District and one in the Marshalls. In addition to establishing an effective program and enforcing controls, the three technicians will be expected to conduct intensive training programs for agents and farmers alike.

Special training is urgently needed for the Micronesian District Agricultural Agents charged with enforcing the quarantine regulations of the Territory. These men must understand the need for quarantine regulations; they must be able to identify the harmful insects of the Territory, Hawaii, and Guam for both plants and animals alike. It is recommended that the Director of Agriculture establish funds for this initial training course and successive refresher courses.

In reference to quarantine enforcement, serious leaks in the present system now exist in Kwajalein and Guam. Tons of fresh vegetables and fruits enter these ports monthly and leave the entire area vulnerable to infestations from many pests. Already a cottony cushion scale was introduced through the Kwajalein port. This scale was stopped in Majuro several hundreds of miles from Kwajalein. This particular pest could have devastated the breadfruit crop, an essential in the diet of the people.

To close the quarantine leaks in Kwajalein and Guam it is recommended that the United States Quarantine Service be contacted to establish a permanent United States officer at these ports of entry to operate a quarantine service. Considering the particular nature of the Guamanian and Kwajalein facilities it is not felt that a Mirconesian quarantine officer would be able to command the respect necessary to perform the job satisfactorily at either of these posts, especially Kwajalein.

AGRICULTURAL BUSINESS VENTURES

1. Small Loan Fund (Estimated Capital Requirements) $ 250,000

Throughout the islands many farmers have accepted many of the principles being taught by the Agricultural Department. Instigation of most of these plans calls for an outlay of cash, i.e., to purchase a carabao for draft and plowing, plows, seeds, fertilizers, fencing, purebred swine and poultry, etc. To encourage farmers to take the initiative, it is recommended that the Director of Agriculture establish a Small Loan Fund for the use of Micronesian farmers. To initiate this on a pilot basis $250,000 is recommended. After observation of the use and effectiveness of the fund, the amount needed could be adjusted accordingly.

The District Agriculturist will take the requests for loans in his district and assess the advisability and feasibility of the request. The maximum loan on a pilot basis should not exceed $1,000. Care must be exercised not to encourage the farmer to burden himself with a debt he cannot repay. Repayment of the loan will depend on the crop or situation for which the loan was made. It is also recommended that a low interest rate be charged and repayment time not to exceed three years.

2. Equipment Pool $ 60,000

It is recommended that the District Agriculturist establish an equipment pool of farm machinery. The rental cost to the farmer borrowing the

equipment shall be just for the operator and fuel in the initial years of the equipment pool.

3. Beef Cattle Program $1,900,000

There is presently on Guam and in the districts a large market for fresh beef. (See Table in Section A of Part II.) It is recommended that a commercial beef raising operation be established on 2,000 acres in Tinian in the Marianas group. As one of the promising economic development projects in the area, its organization and financing would be handled by the proposed Programming and Development Unit and the Development Fund.

On Tinian there are approximately 15,000 acres of unused land suitable for cattle production and grain growing. There is presently on the island a legumenous plant (Leucanena glauca) that runs rampant. This plant in nutritive value is equal to alfalfa, and if brought under control for grazing with grass, an acre of land should support one cow.

The operation should commence with 1,000 head of cross-bred cows and 40 head of bulls. To produce the grade of meat the Guam market calls for and to insure that cattle can thrive in the area, the cows should be of Brahma stock crossed with English blood. Such cattle are available in the southeastern portion of the United States where the climatic conditions resemble those existing in Tinian. Bulls should be pure and held to two breeds, Brahma and English type. It would be desirable to have the manager make the selection of the English breed to be used.

Considerable investment and employment will be generated before the introduction of the cattle can take place -- purchasing equipment, land clearing, pasture establishment, fence building, pen and corral construction, housing for staff and ranch hands, road improvement, water systems, barns, feed storage, machinery, sheds, etc.

It is recommended that the Department of Agriculture contract for the managerial services of the ranch. This would include an American manager, herdsman and two assistant herdsmen. Each should have a five year contract, salary and a percentage of the sales. It is felt that with a salary, percentage of the sales or production, plus travel from and return to the States and housing, top quality people who have the ability, not only to raise cattle but additionally to teach Micronesians this art, can be secured.

It is further recommended that in the fifth year of operation the surplus heifers and cows be sold to Micronesians in the area who will homestead a minimum of 100 acres. This will mean changing the present homesteading limit of five hectares which is suitable only for subsistence farming.

It is recommended that about the tenth year the ranch be spun off to a private corporation or cooperative, depending on conditions at that time.

The gross return after seven years should in theory be at $300,000 annually from the sale of 927,500 lbs. of beef at $.30/lb. in Guam and the net profit would be in the neighborhood of a 15% return on the investment.

In order to capture the Navy market for beef on Guam, it will be necessary to build a slaughterhouse conforming to U.S.D.A. requirements. This commercial project whose capital requirement is estimated at $90,000 would also be sponsored by the Development Fund.

4. Ramie Plantation $ 180,000

The District Agriculturist of Palau has proven that ramie can be successfully grown in that district, and intends to develop the crop with small scale farmers. In addition, the Mission recommends that the Programming and Development Unit investigate the feasibility of a 200 acre ramie plantation on a commercial basis in Palau. The chief problem could be using Micronesian labor on a disciplined basis.

The site for the operation should be chosen by the District Agriculturist. Management should be handled by a contract. The manager should receive a salary and a percentage of the sales and workers paid on the basis of work actually done. Housing will be needed for staff and workers, machinery to handle the land and for decordicating the fibers, balers, miscellaneous hand tools, etc.

Rough estimates of costs of production and return from the 200 acres would be a capital investment of $120,000, with an annual operations budget of $60,000.

With an estimated initial production of fiber at one ton per acre per year, or 200 tons per year selling at an average price CIF Japan of $.20/lb., this in theory would equal an $80,000 gross return and a $20,000 net return or over 16% on the investment.

It is recommended that by the end of seven years arrangements should be made to phase out the government management to a private corporation or producers' cooperative, depending upon conditions at that time.

5. Truck Crop Farm $ 200,000

There are few places in the Trust Territory where truck crops thrive as successfully as on Rota. The soil, the climate, and the rainfall are almost optimum. The geographic proximity of Rota to Guam also gives it special significance for an expanded commercial truck crop operation, for tons of vegetables are shipped monthly from the U.S. for Guam. Despite these optimum conditions and the closeness of a ready market, the vegetable production situation on Rota is presently in dire need of assistance. The assistance needed ranges from production through marketing. The farmers on Rota, although willing, are insufficiently aware of the specific market needs for Guam or of their own potential for production, that the demands on Guam are

constant, that a variety is essential, that quality must be foremost in order to capture this market.

A commercial truck farm sponsored by the Development Fund would implant methods of production, harvesting, packing, and marketing among the farmers on Rota so that after a few years the project could be "spun off" as a cooperative or a private corporation.

With the farm it will also be necessary to establish packing house facilities for the grading and proper handling of the produce.

It is recommended that local producers be encouraged to make use of the farm's packing house, and that all vegetables passing through the house be graded and paid accordingly. This would be an excellent method with which to start a producers' cooperative. After the third year, each producer using the services would be paid only 90% of the net price received in Guam for his produce sold. The 10% would be retained in a fund, and when he had accumulated $50 credit, he would then be a full-fledged member of the vegetable producers' cooperative. If this begins in the third year of operation, and 100 farmers were to become members, the government could easily phase out to a complete Micronesian operation, and the cooperative would have $5,000 working capital, plus the farm set-up to carry on.

Sufficient figures are not available for exact computations, but it is estimated that a 10% return on the investment will be received.

This estimation was made by the Director of Agriculture.

6. Carabao Program $ 60,000

Babelthuap Island in the Palau District comprises the largest land mass in the Trust Territory. The Japanese used this land extensively, but efficient use of the land since World War II has been practically non-existent, for the Palauans, preferring to migrate to Koror, eschewed the Herculean task of clearing and maintaining the land by hand, particularly so when returns to the farmer were so slight. With the cash crops that are being developed, such as ramie, and the returns now being much more inviting, the Palauan farmer is still, however, confronted with the back-breaking job of putting the land to production.

In addition to other built-in subsidies to entice the farmer back to the soil, thus relieving conditions in Koror and helping to make sounder use of the real economic potential of the area and the more efficient utilization of labor, it is further recommended that the Trust Territory Government, through the Department of Agriculture, establish a fund for the purchasing and importation of carabao into the area. It is recommended that 200 head be purchased; one hundred of these, being of superior stock and including four outstanding bulls, should be maintained in Palau for reproduction and sale to the farmers in Palau and in other districts. The other 100 head are to be sold immediately to the farmers. The farmer, if in need of funds for the purchase of these animals, can make use of the Development Loan Fund.

RESEARCH:

1. Tropical Agricultural Research Station

It is recommended that the Trust Territory Government arrange a contract with the University of Hawaii to establish a Tropical Research Station in the Trust Territory to engage in applied research. It is recommended that a three man survey team from the University of Hawaii be selected to inspect the area and determine the scope and nature of the research to be carried on. The anticipated capital investment of such a research station along with housing for American personnel would be under $175,000. This must be a long range program to be of any significance; the University contract should not be expected to solve the day to day agricultural problems of the territory.

2. Specialists:

In order to handle the many emergency agricultural problems that arise in the Trust Territory, it is advisable to have an emergency appropriation for quickly securing specialists. For example, no funds were available to secure a plant pathologist when disease struck the cacao trees in Ponape which caused the loss of many trees in the area. The Entomology Service has many needs for specialists. Presently, someone is needed to travel to Indonesia to collect a species of Scolia wasps that prey on the Oryctes rhinoceros and Brontispa mariana beetles. This requires a specialist who can identify the insect, collect and transport

it back to the Trust Territory in a live condition. Several recent imports of predacious insects arrived dead because of poor handling. Work is urgently needed to effect control of the giant African snail that infests most of the Territory. It is recommended that the calling in of specialists be coordinated with the research program conducted under the University contract.

Chapter 5

EDUCATION

Education in the Trust Territory of the Pacific Islands is beset with a multiplicity of complicated problems and pitfalls. Some of the problems of the schools are shared with other territorial services and activities, such as those imposed by the geography of Micronesia, poor communcations and transportation facilities, the long absence of positive policies and directives from the United States Government with respect to the Trust Territory, and the inadequacy of its budgets over a period of years. Other problems of the schools are organizational and administrative in nature; still others are inherent in the unavoidable use of an alien educational system and language.

It is a truism that education does not function in a vacuum. Those who administer the affairs of the territory do so in the light of the policies accepted for the Trust Territory. Over the years, the public schools have reflected the policies of the national government then in vogue. Now the schools must be looked at in the light of new major policy decisions from Washington. The first of these was the decision "to bring the inhabitants of the island complex into the orbit of 20th century living as rapidly as possible while at the same time exercising the necessary precautions to avoid the social dangers inherent in rapid advancement."* The second was the decision to accelerate an overall plan of social, economic and

* See Task Force Report on Education, 1961.

political development. Additionally, it was decided that "political knowledge and the development of political skills are desirable in terms of the future relationships (of Micronesians) to the United States."* These goals, of course, constitute a major reversal of the old policy, prevalent in the early years of the United Nations, of "protecting" trusteeship people. It is a policy which calls for careful treading because it proposes to disturb, if not destroy, patterns of life that have "served" Micronesians for centuries. Insofar as education is concerned, the revised policy places the schools, more than any other public institution and agency, in the vanguard of a deliberate program of cultural change.

Already, in the light of the new policies toward Micronesia, the Trust Territory government has taken some major steps. The budget for education has been increased substantially. The elementary schools, which in years past were financed and maintained almost exclusively by the districts and municipalities in which they were located, are now being financed jointly by the districts and the Trust Territory government, with the latter taking on a major share of the burden. The minimum compulsory age for education has been theoretically lowered from eight to seven; and in Saipan, the Legislature had made it theoretically possible for youngsters to enroll between six and seven years of age. An expanding secondary education program throughout the six districts of Micronesia promises to bring high school education within the reach of many times the number of elementary school graduates now in high school. In an important step forward,

* See Task Force Report on Education, 1961.

English will replace the local vernacular as the language of instruction in the primary grades, and some commendable first steps have been taken to assure a measure of success. Plans are being formulated for a post-secondary vocational school in Palau. In a major drive to improve school facilities and instruction, the Trust Territory has embarked on an accelerated 3-year program of building 488 new elementary classrooms by 1965 and employing 271 American teachers by September 1966 to partially staff elementary schools throughout the Territory and to give the teaching of English an essential boost. The survey Mission took note of these and other strides since public education was established under American auspices almost two decades ago. It took note, too, of the dedication of many educators and the efforts they exerted to keep schools going under some of the most trying conditions.

During the visit by the Mission, criticisms were levelled at the schools by both educators and lay observers because they do not move fast enough nor educate well enough, and because they have not taken all the steps necessary to achieve better educational results. Some of the criticisms were healthy; some express a sense of urgency; others reflect a desire for a great deal more action after all these past years of neglect. Major steps have been taken, but some of those who hold the latter view want overnight success. Of course, there is not going to be any overnight success because the process of revamping education doesn't work that way. There are, however, vital steps which must be taken immediately to assure that the new interest and the increased budget for education are not

wasted on the same old system which over the years has, admittedly, not done much of an educational job.

There is no doubt that the new policy of change and the proposed plans for accelerated economic, social and political development in the Trust Territory will impose greatly increased responsibilities on education. In the final analysis, the basic educational level of the people of Micronesia will determine largely at how high a plane they can operate and, hence, how productive the proposed total economic, social and political enterprise can be. Because of these considerations, it is essential that the quality of education be substantially improved in the years ahead. In developing, and subsequently maintaining, a higher economic, social and political life for Micronesians, there is no substitute for good schools which must train the needed manpower for increased economic activities and, most important of all, provide the educated citizenry which is the essential ingredient of self-government.

The Trust Territory is faced with a tremendous task of revamping and redirecting its educational enterprise. The present system is ill-equipped in many respects to provide the kind of education essential for Micronesia at its present stage of development. The series of recommendations to follow offer some solutions to the problems.

RECOMMENDATIONS:

1. To assure good schools throughout Micronesia, the Trust Territory government should assume full and complete responsibility for the

financial support, maintenance and operation of education from elementary through high school and beyond under a unified school system.

It has been evident for a long time that because of its limited resources, Micronesia can not support good schools. Although local support of education is a worthy goal, its pursuit has been detrimental to education. The responsibility for intermediate (junior high) and secondary education is now in the hands of the Trust Territory government. This recommendation extends centralized finance and control to the elementary schools now financed jointly by local, territorial and United States funds. The small revenues from the districts heretofore devoted to elementary education could well be diverted to other public service activities or public works projects which would benefit the schools indirectly. (The data are given in II-B-8 of the report on Taxation policy). The assumption of financial responsibility for the maintenance and operation of elementary schools by the Trust Territory government will assure every child of an equal opportunity for an adequate education program. In accepting this, the Trust Territory government and the United States Government should be prepared to face the financial implications of the policy. Preliminary estimates indicate that an annual operations budget of about ten million dollars will be needed to operate all schools from elementary through high school by 1968.

2. To effect a single unified school system, the Territorial Department of Education should assume operational responsibility for education

throughout Micronesia, as well as such functions as educational guidance and leadership, supervision, service, research, planning and development, and the administration of rules, regulations and laws pertaining to education.

Through its department of education, it is the Territory's obligation to guide the destiny of the local school systems at all times. The educational interests of the children as well as those of the Territory must be protected against localism, petty or otherwise. This requires that the territorial department of education must be strengthened not only to guide the local district schools through leadership, service and research, but also so that the department, through wise administration, can act to avert local controversies, minimize jealousies, and prevent parochial interests from jeopardizing the educational interests of the children, the district community, and the Territory. The machinery of administration must expedite and not impede instruction.

This recommendation concurs with the 1961 Task Force recommendation for a single school system and the more specific administrative recommendations of Part III of this Report regarding the need for the professional content of territorial programs to be administered by the territorial departments at headquarters. A unified school system for Micronesia, administered and directed by a central department of education has two great advantages over the present organization of quasi-independent school districts administered by the district administrator through a district education officer. Among them: (1) A unified system will

place authority and responsibility for education in one department rather than in six district administrators; (2) it places the responsibility and authority for education in the hands of professional educators under the leadership of an educator who heads the department of education as director of education. Under a unified system, district school administrators will be responsible to the director of education for the conduct of the schools in their districts.

Probably the greatest movement toward the attainment of quality in the education of Micronesia will come through leadership, service, research, planning and development at the territorial level. Educational leadership at the top level of government based on sound scholarship and principles will provide Micronesia with something it lacks now -- a sense of direction. The quality of leadership emanating from the territorial department of education, however, must be such that the High Commissioner, the people of Micronesia in general, the school administrators and teachers in the district will have confidence not only in the advice, suggestions and direction that come from the territorial level but also in the scholarship and ability of the individual members of the department. It is most essential for effective leadership that the contribution of the territorial department be accepted on the basis of its own worth. With this in mind, the qualifications and competencies of the educators at the territorial department take on a major significance.

In order to operate on the professional level and serve Micronesia best, the central education authority should be vested with a high degree of administrative independence. In this respect, the Code of the Trust Territory should contain provisions which will insulate the education function in the Trust Territory from administrative interference and harrassment, from partisan politics, and from the radical changes that may follow on the heels of elections.

This proposal is a radical departure from the present set-up. Education, like all phases of the Trust Territory government, is the final responsibility of the High Commissioner. No change in this is being proposed. The schools are today operated for the High Commissioner by six district administrators through their district educational officers. District education officials are responsible only to the district administrators. Under this proposal, the district education administrators will be responsible for all professional matters to the territorial director of education who in turn will be responsible only to the High Commissioner for the conduct of the educational program. The maintenance of school buildings, housing of teachers and other employees, and other non-professional administrative, logistic and service functions remain with the district administrators. The planning of school plant construction would follow the procedures recommended in the Public Works section of this Report (II-B-1) but in consultation with the Department of Education. Educators, however, will be fully responsible for professional education matters. Under this arrangement, creating and sustaining operational

procedures that call forth and use the full creative capacities of all personnel in and out of education in the attainment of educational goals is a prime responsibility of the High Commissioner and of the director of education. By its very nature, this calls for common understanding, mutual respect, and a full measure of confidence among all who work in the schools and all who serve in the districts and at headquarters.

3. Lay-Micronesian Advisory Boards of Education Should Be Established at Both the Territorial and District Levels.

The combination of a lay board of control and professional administration of the school system is an American process that has stood the test of time. Micronesia should eventually have a lay board of education with real powers and control over educational policies. For the immediate future, and until such time as the level of sophistication of the people is considered adequate for this purpose, it is recommended that an advisory board be established at the territorial level to advise the High Commissioner and the director of education on such matters as educational policies, programs, rules and regulations, and at the district level to advise the district educational administrator on local educational matters.

For the present, there is no territorial board of education. Some districts have school boards with a varying degree of effectiveness. District education officers and district administrators have veto power over them.

An advisory board of education will serve some useful purposes: Members of the board will have a chance to work with educators on school matters thus giving them an opportunity to raise their levels of sophistication concerning this important service. It affords an opportunity for the High Commissioner and educators as well to sound out opinions of members on educational matters before deciding on major policies and embarking on major activities. Micronesian board members can serve as liaison officers between the school and the community. Finally, they can serve as lay "evaluators" of the success of the educational processes.

Lay advisory boards of Micronesian membership can be the forerunners of future boards of education which will have real powers and control over the educational enterprise.

4. The Territorial Director of Education Should Be Designated by The High Commissioner as the Chief Executive Officer for Education And All Executive Powers And Authority Pertaining to Education Should Be Delegated to Him as Head of The Territorial Department Of Education.

This is a corollary of recommendation number two. If the territorial department of education is to assume the responsibility for education across Micronesia, it is essential and necessary to strengthen the hands of the director of education, who now serves primarily as educational advisor to the High Commissioner and other officials, including district educational officers. The High Commissioner will continue to retain ultimate power of control over education, but he should delegate his powers to the director of education for operational

and administrative purposes. Aside from the directorship being a professional educator's job, the High Commissioner just does not have the time, amongst his many other duties, to operate and administer the affairs of the school system. Under his delegated authority, the director should serve as the chief representative of the High Commissioner on all matters of education and he should work immediately and directly under and be responsible only to the High Commissioner. The importance of the educational enterprise to the success of the Trust Territory administration makes it imperative that the director have direct access to the High Commissioner -- certainly not through a program officer or any other official in the Office of the High Commissioner. The director of education should be the administrative head of the territorial department of education and the chief administrative officer of the Trust Territory for executing the laws, rules, and regulations relating to education which arise under the United Nations Charter, the laws of the United States pertaining to the Trust Territory, the Code of the Trust Territory, or policies of the High Commissioner. This line authority rather than exercising a staff function is a general recommendation of the Mission for certain other department heads at Headquarters. (See Part III, Section C).

The director of education should be a professional educator and a professional school administrator capable of providing bold, imaginative and dynamic leadership. Anything which weakens his effectiveness in any of these roles will utlimately weaken the schools.

5. To Carry Out the Functions Proposed For It, The Department of Education Should Be Reorganized to Fit Its New Role.

The ultimate test of sound reorganization is the extent to which it will result in the improvement of education. It is essential, therefore, that the department of education provide for an organizational pattern best suited to efficient, economical, and effective operation. The size of the department and the size and number of its activities are decisive factors in organization.

For the educational task and other services it is called upon to perform, the department should have among its headquarters personnel the following key positions:

Director of Education - GS 15 level position.

Assistant Director.

Staff specialists in Elementary Education, in Secondary, Adult and Higher Education, in Curriculum Development and Research, in Library Service and in Nonpublic School Coordination.

These are top-level bureaus because they are expected to carry on top level activities under top-level professional administrators. All bureau activities are self-explanatory except perhaps for activities of the Bureau of Nonpublic Schools and Cooperating Agencies. The first part of the title refers to the neglected task of providing leadership and assistance to nonpublic schools. The second part refers to agencies which provide instructional services, such as health departments and health education, political affairs departments and political education and others. In the best interest of all educational programs, close

collaboration between other agencies and the department of education is essential.

At the district level, it will not be necessary to duplicate the territorial organization, but provisions should be made for the continuation of the Office of the District Educational Administrator at the GS 12 level, an elementary education section under a Superintendent of Elementary Schools at GS 9 or 10 level, a section which combines the other services under a superintendent, plus perhaps a section for business management, personnel, buildings and auxiliary services under a supervisor at GS 9 or 10 level. The organization at the district level should be big enough to do the job.

6. It Is Essential That The Departments Of Education At Both The Territorial And The District Levels Be Provided With Adequate Personnel.

The provision of adequate personnel is essential to any enterprise. The territorial department of education is grossly understaffed even for its present limited role. In line with earlier proposals to strengthen the department of education and to give it full authority and responsibility for education across Micronesia, additional professional and non-professional personnel will be required at both the territorial and the district levels.

At the territorial level, the department at Saipan has provisions now for only five professional positions: director of education, assistant director (vacant), coordinator of Accelerated Elementary School Program,

construction Supervisor of English, Supervisor of Libraries. The following personnel positions are recommended to conform to the organizational pattern proposed in recommendation no. 5:

Director of Education -- GS 14 or 15 level.

Special Assistant to the director -- GS 9 or 11 level position.

Assistant Director of Education -- GS 13 or 14 level.

Director of Curriculum and Research -- GS 12 or 13 level.

Director of Elementary Education -- GS 12 level.

Director of Secondary, Adult and Higher Education -- GS 12 level.

Director of Adult Education and Information -- GS 12 level.

Director of Nonpublic Schools -- GS 11 or 12 level (see rec. no. 13).

Director of Library and Information Services and Curriculum Materials Center -- GS 10 and 11 level.

Director of Auxiliary Services -- GS 11 level.

Director of Business Management and Personnel -- GS 11 level.

Director of Pupil Personnel Service -- GS 10 level.

In addition to these professional positions, an adequate number of clerical, secretarial and administrative personnel is essential to permit these high-level-professional personnel to devote as much time to their professional tasks as possible. The department of education is presently so short of clerical, secretarial and administrative help that educational services are actually impeded. Specialists in English and other professional areas will also be needed to staff the bureaus.

At the district level, the departments of education are unevenly staffed. Each district department should have a staff of positions as follows:

District Educational Administration (GS 12 level)

Assistant to the district administrator (GS 7 to 9 level)

Superintendent of Elementary Education (GS 9 or 11 level)

Supervisor of Secondary Adult Education and Information (GS 9 level)

Specialist in the teaching of English as a second language (GS 9 level)

Supervisor of Business Management, Personnel, Buildings and Auxiliary Services (GS 9 or 11 level)

Supervisors of instruction (GS 7 to 9 level) - approximately one to each 25 to 30 teachers or portions thereof

In addition to the professional positions, adequate number of clerical, secretarial and administrative personnel should be provided. All district school personnel should be responsible to the district educational administrator.

The need for an adequate number of instructional supervisors is greater in Micronesia than in any other place under United States jurisdiction. The low level of training of Micronesian teachers makes it essential that they be given constant supervision from qualified supervisors. American teachers, too, will require supervision, especially because they will be teaching in an entirely different type of environment. It might be pointed out that even in the best of school systems, classroom supervision is an essential part of school operation. The goal to shoot at as the ratio of teacher and supervisor should be about 25 or 30 to 1, but the

speed with which the required number of positions is filled must depend upon the development of adequate transportation facilities throughout Micronesia. Supervisors should be expected to live close to the schools to which they are assigned but they must be provided with adequate means to get around.

7. The Trust Territory Should Develop A Program And A Structure Of Education Unique To Micronesia At Its Present Stage of Development.

Micronesia requires the development of an educational structure and instructional program unique to the special conditions in these islands. This is a real challenge for those who shape education. For some time now, it has been demonstrated that the American-type school with its graded level of structure and its subject-centered, academically oriented curriculum has had very limited success and with only a small percentage of students at that. The chief reason for this is that the present level of cultural sophistication of the children of Micronesia, in the American cultural sense of the term, is just not yet at the point where they can profit from the kind of educational programs which American schools offer. Both stateside and Micronesian school officials in the districts estimated that not more than twenty-five percent of the total instructional materials suggested in the elementary curriculum guides have any real meaning to Micronesian children even when well taught. And with poorly trained Micronesian teachers, whose knowledge about America and the things they teach in schools is practically nil, the level of accomplishment is closer to zero. The best that can come out of the present schools - even after six years of attendance - are

children who can not communicate well in English and often parrot a few English words and phrases without really understanding the meaning behind them. The ability to absorb other subject-matter materials offered by the school is, of course, impaired. Micronesian children of each grade level are worlds apart from American children in the same grades. To expect that their level of ability and IQ will be comparable, taking cultural factors into consideration, is one thing; to expect that both groups would have the same level of achievement grade by grade using the same textbooks and teaching techniques is to expect something quite unrealistic. This is an educational fact of life that Micronesian educators and Washington policy formulators must face.

As a first order of business, Micronesia should begin to conduct research and experimentation on the best way to structure its educational program. At the elementary level, the grade structure and graded subject-matter curriculum developed for Americans have their shortcomings. Ungraded structure and locally oriented curriculum offer some possibilities. Under an ungraded structure children can be grouped without any reference to "grade level" and made to proceed through a sequential program of their own individual rate of speed. This, of course, calls for a school curriculum, courses of study and instructional materials designed for limited and very specific purposes. It will be well for the Trust Territory to contract for a year or so with a mainland university which could provide a team of experts in curriculum design to draw up a sequential course of study for Micronesia's children. This curriculum

should be close to Micronesia, but it should also have provisions for those who need to go beyond Micronesia for technical and professional training beyond the secondary level.

A. Suggested Program for Elementary School.

For the present generation of students and perhaps for a few generations to follow, the majority of students will not go beyond six years, or, at best, eight years of schooling. This means that the elementary schools must educate Micronesians to take their place in their own backyards, at the same time giving them some skills necessary in the modern world and in their future relationship with the United States. The program of the schools should be something as follows:

There should be a strong emphasis on teaching of English - all through elementary school. During the first "ungraded years" of approximately one to two years duration, depending on the ability of the child, emphasis will be placed on ORAL English needed for communication at their own age level. Once students master a minimum level of "communication English", then reading and writing may be started. Again, reading and writing should be related for the most part to the life of the children in Micronesia. For the great majority of students who do not go beyond elementary school the emphasis should be on reading and writing for communication and information rather than the finer points of writing and reading poetry and the higher levels of literature. These finer things should be left to the few who can profit from them

as they proceed further in their studies. For the elementary schools, it would only be necessary that they produce a mass of people who could communicate in English -- speak, read and write in a manner and at a level sufficient for all normal needs of human intercourse. If the elementary schools can succeed in this task with the majority of students who would end their schooling with them, they would be doing an essential public service. Providing more than this for the academically able students is an important but a much easier task.

There are established procedures based on research and experimentation on how best to teach English to non-English speaking people. Already some measures have been taken by the territorial department of education under a specialist in the teaching of English as a second language to acquaint teacher-trainers and teachers with the techniques of teaching English, in English, to Micronesians. More needs to be done and the single specialist can not perform the task all by himself. Since English is the most important single subject in the schools, an adequate supervisory staff is of prime importance. Given the language and culture differences among the districts, each district should have at least one specialist in English to assist the territorial specialist in the experimental and flexible formulation of English-teaching policies and in assisting teachers and supervisors to do a better job in this area. American teachers need supervision and special instruction in the teaching of English in English to Micronesians since they are usually untrained in this field. Since English has been adopted as the language

of instruction, the children's competence in English will determine how successful they can be in school and how far they can go in the academic world.

The elementary schools should also prescribe a deliberate program of teaching about the United States throughout the elementary school years. As the administering authority, it is only proper that Micronesian children know about the United States, its history, government, people and its way of life. In addition to an expanded program of formal class instruction, United States ideals and principles should be deliberately fostered through such activities as flag-raising ceremonies, singing of American patriotic songs, and celebrating or commemorating important American holidays. This is a radical departure from the present policy of studying the United States only as a subject in the fifth grade and practically ignoring its existence the rest of the time.

There are other vital subject areas such as arithmetic, science, especially life science, and health which properly belong in elementary schools after the students acquired a certain level of competencies in English. These subjects, again, should emphasize the preparation of students for the lives they must live when they drop out of school. Among these, the schools should teach health and hygiene not from the academic side but from the practical point of view. To perform this task, the schools themselves must be made clean, neat and healthy places. Most schools in Micronesia are unsightly, dirty and unhealthy. The power of good example

is a great one. The schools, both teachers and students, must take the lead in making Micronesia a clean and healthy place to live. It has been done effectively in many communities. It can be done in Micronesia if it is made a part of school life and activity as a deliberate policy.

The schools, too, must develop in their students a healthy attitude toward labor. Education has been "oversold" to Micronesians. Many see the school as the way to escape from doing hard physical labor. During the later years of elementary schools, community development projects and such vital activities as industrial arts and agriculture should be fostered as a deliberate method of keeping students close to the work they would be performing when they end school. The elementary schools should bring the students closer to the heart of the community by preparing them to make positive contributions to their own lives as well as those of their neighbors. These things are more than just book learning. If the elementary schools of Micronesia produce students who can communicate well in English, read and write adequately, appreciate in general terms the 20th century world in which they live, know their own history and culture, and that of the United States as well as the United Nations, and can return to the soil and the life of their community with a positive attitude towards helping its growth and development, then they will have done a good job of teaching.

B. Program for Secondary Schools

Micronesia has embarked on a program to expand secondary schools throughout the Territory. Unfortunately, the expansion program started without a

meeting of the minds on the scope, structure and goals of secondary schools. The result is that the high schools now are moving in an unplanned and unsystematic fashion.

Secondary schools in Micronesia should have a double function: (1) it must expand the knowledges and skills acquired by the students in the elementary schools and (2) at the same time, explore the potentialities of the students to the end of channeling them toward the vocation which best suits their abilities. The secondary schools of Micronesia should offer a stiff academic program for those who must go to college to prepare for a profession, but at the same time they must not ignore the academic and vocational needs of those who can not or will not go beyond high school. Every high school should offer a good program to train the hundreds of clerks, secretaries, bookkeepers and workers in these categories needed by the government and by business firms. Every high school should offer basic courses in agriculture - the heart of the Micronesian economy. They should be able to offer courses to train enough mechanics for both land vehicles and boats to satisfy the needs of the islands. All these as well as programs in the teaching of masonry, carpentry and simple electricity can be offered without any large capital outlay. To be more effective, however, the vocational program of the schools must be tied in with practical work experience outside the schools. The emphasis here is the practical rather than the theoretical. The aim of the secondary school vocational program should be to enable qualified students to obtain useful employment

after high school and to give those who wish and are qualified to go on to further technical or professional training enough of a foundation to proceed with some promise of success. The Trust Territory for the present - if ever at all - can not afford to offer only an academic high school which does not prepare students for useful work in their home communities.

As in the elementary schools, Micronesia, again, offers the imaginative educator an excellent opportunity to devise an educational program which gives each student a solid program of English instruction adequate for his purpose, be it preparation for college or for a clerical position. It must provide knowledge about 20th century living and the place of Micronesia in it, a genuine understanding and appreciation of the United States as well as the United Nations and the rest of the world, a wealth of knowledge about his own community and Micronesia as a whole, and a positive attitude towards community improvement and development. Micronesia can offer an excellent high school program for Micronesians that can be the equal of any American high school without making an exact duplicate of it. The real test of Micronesian schools is not how close they are to copying American schools in their structure, curriculum, subject-matter and form, but rather how effective they are in producing good and useful citizens.

C. Vocational School in Palau

Plans are currently underway to develop a post-secondary vocational school in Palau to service all six districts in the Trust Territory. In

addition to this a second school might be developed in the Marshall districts. The employment opportunities for vocationally trained Micronesians at Kwajalein should make such a vocational school desirable in the eastern part of Micronesia. With activities likely to be generated through an expanded economic program Micronesia will need more trained manpower that only good vocational schools can produce. It is often said that the vocational school is the dumping ground for educational misfits. This should not be so. The vocational-industrial programs beyond secondary school should be available only for qualified students. The learning of technical and skilled trades requires the application of the ability to read and, in many trades areas, the application of a knowledge of mathematics and science. Strict screening procedures and adherence to high standards for admission to post-secondary trade programs should produce savings through providing training for those students who will be able to profit by the training.

D. Adult Education

Adult education should be an integral part of the total educational program. For the most part, this has been a neglected area of education. Too often, the adult educators are totally unqualified for the job needed to be done. Like other phases of education, Adult education requires competent leadership if it is to mean anything to the community.

The need for an effective adult education program in Micronesia is readily apparent. Bringing Micronesia into the orbit of 20th century living

requires adult participation if it is to be realized within the lifetime of the present generation. The attitude of the adults of the territory will determine the future relationship of Micronesia with the United States. Even if the elementary and secondary schools were effective in the tasks assigned to them, changes in Micronesian thought and patterns of life must come from adults.

The adult education program should provide the following:

1. A foundation education which would combat adult illiteracy in simple English.
2. A program of family life and parent education, such as care of home and children, health and sanitation, etc.
3. Citizenship education through such media as discussion programs, forums, films and lectures.
4. Informational programs on the United States, the United Nations, and problems of our times.
5. Programs designed to help orient and integrate Micronesians into a form of relationship with the United States.
6. Leadership training and development for service in adult and community programs.
7. Vocational training and re-training programs for those preparing for employment or already employed.

Educators have the tendency to think of adult education always in terms of classroom activities. Adult education as conceived herein is more than classroom work. It is community development in the best sense of

the term. It means having the teacher play a significant role in the community. It involves radio programs, group discussions, printed and spoken words, movies and slides, and all the techniques of the mass media of communication. It involves health education, political education, economic and social education. In short it is a practical program of community improvement and development.

The execution of the adult education program should not be confined to the Department of Education but should involve, as well, the district Information or Public Affairs Officers proposed in Part I and the Peace Corps Volunteers implementing the Community Action Program proposed for the outlying islands in Part II, Section B, Chapter 7.

8. Every Classroom Throughout The Trust Territory Should Be Provided With Well-Trained And Competent Teachers As Rapidly As Possible

The key to good education is the good teacher. It is imperative, therefore, that every classroom in Micronesia have a professionally qualified and competent teacher. If the schools are to provide the caliber of education essential for both individual and territorial well-being, the Trust Territory government must first provide, as rapidly as possible, a corps of qualified teachers. The quality, more so than the number of teachers, reflects the caliber of the school system. With a ratio of twenty students to one teacher, the Trust Territory has one of the lowest pupil-teacher ratios under the American flag and certainly the best among the territories. The favorable pupil-teacher ratio, however, is offset by the excessive number of

undertrained teachers. The problem is especially acute in the public elementary schools where slightly over 65% of the teachers barely satisfied the minimum Trust Territory certification requirement of a ninth grade education. Close to 10% had less than ninth grade training. Both stateside and Micronesian school administrators estimated that anywhere from 40% to 65% of their elementary teachers are, in varying degrees, ineffective in their teaching. The presence of so many unqualified teachers means that thousands of children receive an education that is inadequate. This continued employment of a great number of poorly trained teachers means, too, that a large part of a generation of Micronesian children may be irreparably handicapped.

Some steps have been taken by the Trust Territory to solve the problem. A new certification regulation was adopted, raising the minimum to completion of junior high school. American teachers are being employed as rapidly as time, money and facilities for housing can be obtained to replace those who are considered low in teaching competence and low in potential for higher certification. In increasing numbers each year Micronesian teachers with high competence in teaching and high potential for higher certification and teachers with low teaching competence and high potential for training are being provided scholarships and leave with pay for either high school training, special teachers institutes as well as for college education.

The schools of Micronesia face a serious problem of attracting competent Micronesians into the teaching profession and keeping those already in

teaching. One of the chief reasons for this is that the increasing demands for college trained personnel in virtually every facet of life in the Trust Territory makes it more difficult for the schools to attract and hold every college trained teacher. With the proposed accelerated economic and political activities, the public school system can be expected to lose some of its better teachers, especially those who have college training.

Teaching does not have the same high prestige that other government positions enjoy, especially for those with college education. This is particularly true for teaching in the elementary schools where it has not been necessary to have much of an education to be able to get a job as a teacher. It will take a deliberate program of upgrading the teaching staff to change the present status of the teacher. A major contribution can be made to this end by providing teachers not only with good classrooms and adequate working tools, but by raising the requirements for teaching and providing them with high enough salaries to attract the most competent and to provide incentives to the good career teacher to stay in teaching. Unlike other government positions, teaching offers very little in the way of promotion. Public employees enter one position and most often retire with another. Most teachers remain as teachers until retirement. There is a great need in Micronesia to embark on a deliberate program to professionalize teaching. One of the first requirements is adequate professional training.

The present minimum, ninth grade graduation, is too low. As rapidly as possible, the minimum entry requirement for teaching in the Trust Territory should be raised to graduation from high school and then to two-years of college. The requirement of at least a high school graduation should be established as early as 1966 when some 240 youngsters are expected to graduate from the twelfth grade. A teacher-training program should be devised in all senior high schools to prepare graduating seniors to teach. With some 360 students expected to graduate in 1967 and about 450 to graduate in 1968, the minimum entry requirement for teaching in elementary schools could be raised to two-years of college as early as 1969 or 1970 and most certainly by 1973. In the meantime every effort must be exerted to get new qualified teachers, be they Americans or Micronesians, and to improve the teaching competence of those already in the system, both by expanding the present MTEC training program at Ponape (Micronesia Teacher Education Center), and by sending the younger and more promising teachers to the College of Guam for the two-year Certified Teacher program. The Trust Territory should release from teaching all those who are incompetent and can not be substantially improved. Micronesia has passed the time when they can afford this dubious luxury.

The second requirement for professionalizing teachers is compensation equal to service and training. The present Micronesian Pay Plan for teachers is low. For example, teachers with Bachelor's degrees are

now paid between $1,851 and $2,911, Schedule C-1 in the Micronesian Pay Plan. After four years of college, a teacher should be able to receive no less than $300 a month or $3000 for about ten months of the school year. Properly qualified teachers should be compensated on the basis of the Mission's proposed Micronesian D Schedule which will be confined to fully qualified professionals in various fields. See Part III, Section G for description of this plan.

With regard to American teachers, the Trust Territory will be faced with a number of unhappy teachers unless it provides a sound program of orientation to its new recruits. For 1963, the districts were responsible for this. At the time of the Team's visit, there was no definite program being designed to orient teachers anywhere, except in Truk. The Trust Territory approached the University of Hawaii to conduct its orientation program, but this was made contingent on the availability of funds from foundations and sources outside the Trust Territory. There should have been no question about funds. Orientation of new teachers is of such importance that the Trust Territory should be able to provide the necessary funds. The cost for orienting teachers as a group in Hawaii or elsewhere this year could have been easily absorbed from savings in personnel salaries since only about 50% of the 140 allotted teaching positions for 1963-1964 can be filled.

Orientation of new teachers, or any other American employe for that matter, should be a regular part of the employment process. For

those who will be hired for the school year 1964-1965, provisions should now be made for a good orientation program to take place partly in Hawaii or the mainland and partly in the various districts. Many mainland institutions have had experience with Peace Corps orientation programs. Their experience could be most beneficial to the Trust Territory. The orientation should include, among other topics, the mission of the United States in Micronesia and its responsibilities under the United Nations Charter; the Trust Territory government - its relationship to the United States and to Micronesia; the geography, people, history, and culture of Micronesia; education -- its role and functions, its students, structure and curriculum, its problems and all other aspects of the school. The orientation should be conducted not only by people who know Micronesia well and who know the problems of educating its children and youth, but also by experts in the problems of Americans overseas and the problems inherent in culture contact. Orientation, if held in the Mainland initially, could serve a dual function: (a) to prepare teachers psychologically for teaching in Micronesia and (b) to weed out those who obviously could not be successful in the Micronesian environment. It seems that paying teachers' travel back to their point of recruitment from any point in the Mainland will be much less expensive than the problems and the miseries maladjusted teachers can create.

Aside from the proper orientation of American teachers, there is the even more critical problem of recruiting the right kinds of teachers

in the necessary numbers. The Mission developed an agreement in principle between the Trust Territory government and the State of Hawaii, whereby the latter would accept the contractual responsibility of providing the right kinds and numbers of teachers from its own State educational system. They would be detailed, with their individual agreement and subject to the individual confirmation by the Trust Territory government, on two-year tours of duty. Since they would retain their positions in the Hawaiian State Teaching Service, the advantages of such an arrangement are numerous. The Mission understands that this proposal is being pursued by the High Commissioner. However, if for any reason that is not now foreseeable, such a contract should not be realizable, and it remains necessary for the Trust Territory government to recruit American teachers directly, the Mission would recommend that the Peace Corps be asked to cooperate with Interior in handling the screening and the orientation of the teachers.

Present thinking calls for the elimination of all American teachers by 1973. The date seems unrealistic and the idea unsound. Even if the number of qualified Micronesians should be adequate to staff the schools of the Trust Territory, it would be a wise policy to have at least five to ten percent of the teaching positions in each district and at both the elementary and secondary levels open for competent American teachers on a limited-term appointment in order to bring to Micronesia new blood with new ideas and practices in education.

9. Wherever Possible Small Schools Should Be Consolidated

Micronesia has something like 180 public and 40 non-public school units for a little over 19,000 students from grades one through twelve. This represents an average of 86 students per unit. Small one-and-two-teacher schools have been found to be very costly to operate -- costly in terms of the effects of poor education as well as in terms of money.

The geography of Micronesia makes small schools unavoidable in certain localities. Consolidation, however, is possible in many areas now served by small units. Some already are scheduled for consolidation within the next two to three years as new schools are constructed. Many more units can be consolidated in such localities as Ponape, Yap Island proper, Majuro, Koror and Babelthuap.

The point of this recommendation is that as a matter of deliberate policy, the Trust Territory should provide for and move toward more consolidation of schools in the interest of better education. To be sure, this may entail additional cost for housing and feeding students in some localities, bus transportation, and other services; but these are readily off-set by improved instruction, efficiency in operation, economy in staffing and to some extent savings in toal construction costs.

10. A Master Plan For The Development of School Facilities Should Be Prepared As Early As Possible

The Trust Territory is faced with a gigantic task of building adequate classroom and other school facilities throughout Micronesia. With financing from the United States Government, the Trust Territory embarked this year on a three-year accelerated elementary school construction program, involving approximately $10,000,000 in Federal funds plus contributions from the people of Micronesia in terms of donated land, free labor and local aggregates like sand and gravel for concrete-block production. The ten-million dollar project is intended to build 488 elementary classrooms by 1966 and 246 houses for elementary school teachers by the end of fiscal 1965. With the expansion of secondary education throughout the territory, construction of new facilities was also in progress in all district centers. Half a million dollars was requested for fiscal 1964 and an estimated $3,316,000 scheduled to be requested for 1965 to expand and improve high school facilities.

The school construction program is running way behind schedule. There were several reasons for this, one being that appropriations were not available until late in Fiscal Year 1963, and second, the Trust Territory government, at both the district and headquarters levels, did not have a clear and detailed plan on how to proceed with the project. The construction picture at the time of the visit was one of poor planning, poor coordination and improper control.

What is needed in the school construction project, of course, is a master plan for development. Schools are now being built at random and without too much attention to future growth and to the possibilities of improved roads and transportation facilities. Sites are more often accepted on the basis of availability rather than desirability. The junior high school in Kusai is a case in point. This was built away from the population center so most of the students have to be housed and fed. A careful study of population movement, proposed roads and transportation facilities, and other vital factors affecting school sites and facilities should provide the Trust Territory with the basis of a master plan for school development.

As much as possible, the accelerated construction of elementary school facilities should be looked at in terms of the proposal made to consolidate small units. The recommendation to keep seventh and eighth grade students in elementary units should be evaluated in terms of its effects on classroom needs. From the educational point of view, keeping seventh and eighth graders in small elementary units may prove to be a handicap for students, especially for those who need to go beyond the elementary level.

School buildings are educational tools as much as they are shelters from the elements. Educators should be consulted and their approval sought for every school building design and every site selected.

In so far as it is possible, the Trust Territory should provide permanent construction of concrete block rather than the temporary Enewitok building, particularly in typhoon-prone areas.

Since information was not available to make projections of school facilitiy needs on a school by school basis, overall estimates were made to determine the need for additional classrooms to serve the 1968 elementary school population.

The following projections of elementary (1-6 grades) school enrollment were made by the Trust Territory education personnel for the years 1963 through 1968:

Year	Projected enrollment
1963	13,723
1964	14,410
1965	15,404
1966	18,441
1967	19,471
1968	20,425

The projections exclude non-public school enrollment which was 3,525 in 1962 and which is expected to remain about constant during the period. They also anticipate that the entrance age for children will be reduced to 6 years old. The projections include the phasing in of these additional pupils over a three year period starting in 1966.

The accelerated elementary school construction program will provide 488 new classrooms and 104 of the present classrooms are considered useable, giving a total of 592 classrooms. Using an average of 25 students per classroom (a conservative figure is used because of the small size of the schools in many islands) these classrooms will take care of 14,800 students. To provide for a 1968 enrollment of 20,425 students approximately 220 additional classrooms will be needed, costing an estimated $2.3 million.

Teachers' housing needed to accompany these schools would cost $1.4 million, bringing the total additional elementary school capital costs to $3.7 million through 1968.

As indicated earlier in the report a sharp drop is expected in enrollment beyond the sixth grade. The need for 7th and 8th grade facilities is based on the assumption that 50 percent of the sixth grade class will go on to these grades. It is further assumed that approximately 60 percent of the eighth grade class would continue on to higher grades. While the majority of seventh and eighth grade students are expected to attend day schools, our projections assume that 70 percent of the 9th through 12th grade enrollment will be boarding students. The combined cost of classrooms, dormitories, dining facilities and teachers' housing for the secondary schools through 1968 is estimated to total $6.3 million. The cost of meeting the needs for both elementary and secondary school construction through 1968 will be $10 million.

11. For Purposes of Future Planning, A Relatively And Reliable Pupil Population Projection Should Be Obtained

A distinct characteristic of the schools in Micronesia is the upward growth pattern of enrollment. Between the period 1952 and 1962, the school population more than doubled in size, from 8,856 to 18,294. Enrollment is expected to increase from 18,973 in 1963 to approximately 23,826 by 1968 and 30,000 by 1973.* With greatly improved school facilities, better qualified teachers and good school lunch program, more students will enter and remain in school for a longer period of time than has been the case up to now.

There are conflicting predictions on enrollment. For future planning, reliable projections of school enrollment are a prime requisite. School population figures are significant indicators of the dimensions of the problem of programming, staffing, housing, financing, and generally operating the total educational enterprise. Unless someone is capable of doing this in the Territory, it is recommended that the services of an off-island expert on school population projection, available in many mainland universities, be obtained for a three months period to provide educational planners with a reliable indicator of student growth.

* Figures provided by Director of Education, Department of Education, Trust Territory Headquarters, Saipan. The figures are conservatinve - include non-public schools.

12. Adequate Provisions Should Be Made For An Expanded Man-Power Training Program Beyond Secondary Schools

A recent projection of needs in the professional field indicated that something like 1,043 positions of all categories in 1963-1964, including 635 teaching positions, require training beyond secondary schools. This is expected to increase to 1,305 by 1967-1968. Some of the positions will require less than four years of college but some, like dentistry and medicine, will require more. According to figures provided by the director of education, the Trust Territory expects to have about 164 college graduates by 1968, including 21 who graduated prior to September 1963, and 565 by 1973. This number is a far cry from what the territory needs in the way of technically and professionally trained Micronesians. Excluding approximately 800 teachers, the need for trained manpower in other fields will be in excess of 500.

In the absence of any institution beyond secondary schools, the Trust Territory resorts to scholarships and other means of financial assistance for those who need higher training. In 1961-1962 the Trust Territory government awarded $101,500 worth of scholarships to 55 students. For the same year, non-government scholarships amounted to $103,600 for 78 students.

Elsewhere in the report a number of references have been made to the need for college and professionally trained personnel. To meet this

Elsewhere in the report a number of references have been made to the need for college and professionally trained personnel. To meet this need the Mission recommends an expansion of the scholarship program through 1968. The number of scholarships and the estimated costs (which are included in the Mission's recommendations on annual operations budgets in Part II, Section C) are summarized below:

Number of New Scholarships	Annual cost(in thousands) 1965	1966	1967	1968
100	$ 250	$ 250	$ 225	$ 200
125	-	312	312	275
150	-	-	375	375
200	-	-	-	500
	$250	$ 562	$ 912	$1,350

These projections assume that most of the scholarships would be for a four year period. By 1968 approximately 500 students are expected to be on scholarships. The projections are based on the general premise of providing scholarships for 25 percent of the students graduating from high school. Thus about 7.5 percent of a given year's entering first grade class could be expected to go on to college through the scholarship program.

To meet the need for training young men and women beyond secondary schools for technical and professional positions, the Trust Territory should begin a program of guidance in the secondary schools to identify students with potential for technical and/or professional training. The

proposed scholarship program should be evaluated both from the point of view of adequacy of funds and selection of areas of training. At the same time that off-island programs are expanding, all efforts should be exerted to strengthen the agriculture institute in Ponape, the nursing program in Saipan and the teacher training center also in Ponape. Other priority training programs are suggested in various sections of this report.

Because of its proximity to Micronesia and its low-cost features, the College of Guam offers the Trust Territory a college within its own locale. Close to a hundred Micronesian students were registered at the College of Guam during the academic year 1963. It is expected that the number of Micronesians will increase. The Trust Territory should make a study of the best way to utilize the College of Guam in meeting its needs for more college trained personnel. The Guam College could be very useful in preparing teachers for the elementary schools, for example. The College of Guam, however, can not continue for too long to support an expanded Micronesian program without some assistance. There are at least three ways of providing assistance: (1) The 1961 Task Force suggested a joint Trust Territory-Guam support program. This has merits and the Trust Territory government should begin to explore its feasibility. (2) Money grants for expenses in an amount to be based on the number of Micronesian students. (3) As a long range possibility, the establishment of a Pacific college, based on Guam, financed jointly by the Pacific territories

and the United States Government should also be explored. This would be somewhat like Howard University in Washington, D.C.

13. As Part Of The Total Educational Responsibility, The Trust Territory government Should Take A Vital Interest In Nonpublic Schools And Should Facilitate Their Educational Activities

Some 40 nonpublic schools are engaged in discharging in a favorable manner a part of the educational responsibility of the Trust Territory government. Over a third of the elementary students and over forty percent of secondary students are enrolled in nonpublic schools. Most observers in the area consider the nonpublic schools superior to the public schools. Public school officials treat nonpublic schools with "pleasant aloofness" and show very little, if any, live interests in their educational activities. Some officials frankly are resentful to the idea of assistance to nonpublic schools in any form. They see these schools as competitors rather than as partners in education. Not many seem to see the connection between the educational activities of nonpublic schools and the educational mission of the Trust Territory government. This is unfortunate.

Because nonpublic schools are discharging well a part of the educational responsibility of the Trust Territory government, the Administration should give due recognition to this important fact through a positive policy of assistance and cooperation. This can be done in many ways:

(1) The statement of educational philosophy and objectives for Micronesia should include the role of nonpublic schools in the total educational effort.

(2) The Department of Education should establish a top-level bureau and appoint a top-level educator who will coordinate the work of nonpublic schools and who will be responsible for meeting their needs in every possible way.

(3) The High Commissioner should appoint a Trust Territory Committee of non-public school educators and/or supporters to advise him and the director of education on all matters affecting nonpublic schools. Such a committee should be given due recognition by the Trust Territory government and should have the right of direct access to the director of education and other top levels of government in pursuit of educational matters.

(4) The Trust Territory should recognize and wherever possible give weight to the needs of nonpublic schools in making priority decisions on such matters as the building or maintenance of public roads, extension and repair of electrical, telephone and water lines and facilities. This is not intended to mean extending these facilities way in the wilderness just to serve a nonpublic school and no one else. It means, however, that the same weight and priority should be applied to the needs of nonpublic schools as they would be

applied to public schools, on how far and when to extend roads, public utilities and other non-school facilities.

(5) The Trust Territory should eliminate present charges for freight from Guam to the district centers on United States Department of Agriculture surplus food for nonpublic school lunch programs.

(6) The Trust Territory should assist nonpublic schools through joint purchase and procurement of materials for school construction, instructional supplies, materials and equipment, textbooks and other commodities whenever such assistance could mean savings for both government and nonpublic schools through bulk purchases and shipment. This could be done simply by asking nonpublic schools to submit their needs at the time the government prepares its orders for its schools, and billing them at cost when goods are delivered.

(7) The Trust Territory government should make available either for purchase or preferably on a non-fee basis surplus government land for school sites. This will be highly desirable especially for well-established nonpublic schools. This policy is in line with United States mainland practice where the Federal Government makes available free of charge to both public and nonpublic schools and colleges any land it owns and does not need for its own use.

(8) Trust Territory equipment and skilled personnel should be made available free of charge to nonpublic schools for temporary assistance where the educational benefits clearly indicate the value of such assistance.

(9) The Trust Territory should conduct regular meetings between nonpublic school teachers, administrators and other personnel and those of the public schools, for the purpose of sharing ideas and working out mutual problems of education.

(10) The Trust Territory should consider nonpublic schools as "public" for purpose of assistance and not as "private" in the same sense as merchants are private, and should therefore deal with nonpublic schools on a different basis, often providing services and assistance free of charge where such assistance will provide for better education.

This recommendation for assistance concurs with the sentiments expressed by members of the United States Congress and the Trust Territory government should facilitate the educational work of nonpublic schools. It was the sense of such leaders of Congress as Congressman Wayne Aspinall, Chairman of the House Committee on Interior and Insular Affairs, Congressman Leo O'Brien, Chairman, House sub-committee on Insular Affairs, Congressman Michael Kirwan, Chairman of the House Appropriation Subcommittee handling Trust Territory appropriations, as well as others in Congress, "that it would not be considered out of place for the Trust Territory

government to furnish assistance to nonpublic schools, solely in their secular aspects, to the same degree to which Federal assistance is now or may hereafter become available to similar schools in the United States and to the extent to which the furnishing of such assistance is consistent with the use of funds, after they are actually appropriated, to accomplish in full the purposes for which they are appropriated." Financial and other forms of assistance to nonpublic schools always raises the question of its constitutionality. Until such question is settled by the Supreme Court or by amendments to the Constitution clarifying the matter, assistance to nonpublic schools in the Trust Territory, in the views of Congressman O'Brien, should not be the vehicle to try to solve that problem.

14. To Assure Success, The Trust Territory Should Demand Of Its Educational Leaders Nothing Short of Superior Quality Leadership And Service

For many years now, education in Micronesia was essentially a "holding operation." This is rapidly changing. The responsibilities of education departments at both the district and territorial levels will increase tremendously during the years ahead. The success or failure of the school system and the quality of service and leadership it renders rest in the final analysis upon the character, the ability and the capacity of the people who occupy the key positions in education. The rate of educational change in Micronesia -- and changes are needed badly in many respects -- and the extent to which the schools can be

successful in providing quality education unique to the needs of Micronesia in the 20th century will be determined in large measure by the presence of enlightened, aggressive and competent, and creatively intelligent leadership and service in the territorial and district levels of education. Micronesia is not without dedicated leaders in education. But there is a terrible shortage of qualified leadership and service. Many things about the schools point to the absence of quality leadership, the most obvious and recent one having to do with the accelerated school construction program. Most Trust Territory educators see the accelerated program simply in terms of more classrooms and more teachers. Competent, bold and imaginative leadership would have capitalized on this first major breakthrough in education to begin a more vitalized and forward-looking educational program for Micronesia.

The time has come for the Trust Territory to face squarely the problem of poor leadership. There is a high proportion of mediocre and incompetent and stale personnel holding key positions in education throughout Micronesia. In the interest of students and the community and the future of Micronesia, the High Commissioner, as the Chief Executive Officer, must single out the incompetent people, be humane but firm in taking the steps necessary to remove them from their positions. Somehow, even with local and United States Civil Service tenure laws in effect, the Trust Territory government must find ways to eliminate the unfit from the school system and to remove them from their

positions in administration where they do great damage to children and youth as well as to teachers and others who work under their care. The same should also be done with those who hold positions as teacher-trainers and/or supervisors. This should also apply to Micronesians as well as to stateside employees. Those who occupy the positions of superintendent of elementary schools should also be removed, reclassified, or shifted from their positions unless they are qualified.

Of course, it is not enough simply to remove the incompetents from their positions. It is imperative that those with potentials for leadership be provided with every opportunity to improve themselves. It is imperative, too, that potential leaders be identified early and be provided with every opportunity to develop into top-notch leaders. For the long pull ahead, it is essentail that native leadership be developed. Promotion of Micronesians to key administrative positions should not be used simply as a "showcase"; nor should it be used to award the faithfuls who served good and long. Promotion of both Micronesians and Statesiders should be based only on competence and leadership ability. If educational leadership is to realize its potential and properly serve the schools and the territory, education must be strengthened not only by more adequate number of professional staff properly compensated, but also by the appointment of and retention of professionally competent educational administrators.

In conclusion, it should be stressed that providing a sound program of education unique to Micronesian needs is possibly the biggest

single challenge facing the United States in its objectives of bringing about the most rapid political, economic and social development. In addition, it is probably the most politically sensitive single issue among the Micronesians, and a failure in this sector of the over-all program would have very widespread effects among the masses of population.

Chapter 6

PUBLIC HEALTH

As a Public Health Team from Region IX of the U.S. Public Health Service had only recently (March 14 - May 11, 1963) made a survey on health conditions and diseases in the territory, the Mission did not include in its membership any public health or medical expert. The recommendations of the health team focused primarily on the building up of a core of professional public health and medical staff and the upgrading of those Micronesian personnel, both medical and paramedical, who are already in the service. Development of basic health plans and programs would be developed by the new health and medical staff.

Though rather critical of the general tenor of the Public Health Team report, the High Commissioner indicated his agreement in general with the "final summary comments and major recommendations" of the Health Team. Since these recommendations are largely concurred with American personnel staffing needs and the upgrading and training of Micronesian personnel, the Mission directed its major efforts in the Public Health sector to two problems it judges critical and which were not dealt with in the Public Health Team's report:

1. Capital funding necessary to provide adequate health and medical facilities;
2. Implementation of the recommendations on securing American professional staff.

Medical Plant Survey and Capital Requirements of Program

Present hospital facilities consist of a main hospital in each of the six district centers and a sub-hospital each in the island of Kusai, in Ebeye (Kwajalein Atoll) - and in the island of Rota. A leprosarium is located in the island of Pingelap. There are also about 106 field dispensaries which serve the routine medical needs in outlying communities.

The ninety bed hospital in Saipan was only recently completed. The tuberculosis ward for male patients is still on the planning stage and presently therefore both male and female patients are housed in the same wing of the present facility. An additional $40,000 may be required to construct and equip these facilities.

The new hospital in Palau is still incomplete. The unobligated balance of $40,000 will be used to remodel a portion of the existing warehouse for dental offices and the old nursing school for a kitchen and a dining room.

The new facility in Majuro, Marshall islands, contains about 45 bed spaces. The T.B. Ward which was a part of the old hospital has 20 beds. A new laundry and a classroom for health aid trainees are yet to be provided. In addition, a 60-bed ward is on the drawing board to house severe paralytic cases left by a recent polio epidemic. Of the funds for the hospital project, there is still a balance of about $90,000 which is earmarked to complete these facilities - the polio ward, a new

laundry and a nurses' dormitory-and-classroom unit. However it is possible that this balance may fall short of needs by as much as $80,000.

The present hospitals in Ponape and Truk consist of old frame and quonset type structures and should be replaced. A funding program has been started for both hospitals. Appropriations to date total $320,000.[1]/ The proposed facility for Ponape should contain at least 125 beds and that for Truk about 150 beds. At about $5270 per bed for construction (350 square feet @ $15) and $1000 per bed for equipment, an additional funding of a little over $1,400,000 (275 beds @ $6270 less $320,000) would be required to complete the two projects.

The hospital in Yap is of concrete structure built on a mound which appears to be an old fort or shelter of some type. Though the hospital is not ideally situated, its appearance can be improved immensely by more efficient housekeeping practices. Fresh paint and lots of soap and water would give the facility almost a new look. Unless the building will be weakened structurally by further settling, its replacement should probably not be included in the capital program through Fiscal 1968.

One sub-hospital is needed in Babelthuap (Palau), in Ulithi and in Woleai (Yap outer islands), in Lukunor and in Puluwat (Truk district), in Jaluit and in Wotje (Marshall Islands) and possibly in Rota (Mariana district). At a minimum 20-bed space for each and at $5000 per bed there is needed approximately $800,000, i.e., eight (8) units at about

1/ Not included is the sum of $15,000 for remodeling the kitchen of the present hospital.

$100,000 each. The existing unit in Kusai will need a little refurnishing and not immediate replacement. The sub-hospital in Ebeye is being planned for transfer to the concrete shrapnel community shelter.

No general survey was made on the number of field dispensaries which should be replaced. Observation of the few visited, however, indicated as a very rough rule of thumb that approximately 50 percent of the total number requires new buildings.

At about $4,000 per unit, total funding should total around $200,000 computed as follows:

$ 2,000	for a 200 square foot bldg. @ $10 per sq. ft.
1,000	for fixtures per unit
1,000	for equipment
$ 4,000	Total cost per unit
50	units to be replaced
$200,000	total funding required.

Therefore, the recommended size of the public health capital program through Fiscal 1968 adds up approximately $2,500,000.

Securing American Professional Staff

The major problem here is the tremendous difficulty for the Trust Territory government in individually recruiting and periodically replacing American physicians who have the necessary personal and professional qualifications. (This will continue to be a problem for at least ten to fifteen years, by

which time it is hoped that fully qualified Micronesian physicians will become available). Given this major and almost insuperable problem (arising from the necessarily insufficient compensation, poor living conditions, interrupted career, etc.), the Mission recommends that the responsibility for providing qualified U.S. physicians on a rotation basis be contracted out. The logical organization with which to contract this responsibility is the U.S. Public Health Service, but that organization informs the Mission that it is reluctant to enter into a contractual arrangement for providing physicians without having full jurisdiction over the entire Public Health program in the Trust Territory. Since this would involve the creation of a separate administration and bureaucracy, the Mission envisions many problems from such an arrangement in this vast island-scattered area where logistic and administrative difficulties are so great. As an alternative, the Mission was able to secure a tentative agreement in principle from "Medico", the non-profit volunteer organization, on a contractual arrangement for the provision and two-year rotation of the necessary American physicians. It is recommended that the Department of Interior, in consultation with the Trust Territory government, work out such a contract as quickly as possible.

An additional comment on the use of those American physicians is advisable. The Mission suggests that they not necessarily always be used as the district Public Health Department Heads. Rather, the American physicians should be used quite flexibly, given the fact

that, (1) there are in some districts, such as Palau, Micronesian medical practitioners who are competent medical administrators, and their automatic replacement by Americans would cause resentment among the Micronesians; (2) the greater need for internists and surgeons; and (3) the critical humanitarian need, as well as greater political impact, of American physicians frequently traveling throughout the islands on the district field trip vessels.

Similarly, both in terms of the greater political impact and the most effective execution of the Public Health Programs for proper sanitation, water supply, etc. in the islands outside the district centers, the Mission recommends primary reliance on the proposed Community Action Program of Peace Corps Volunteers (II-B-7), and only secondarily on a corps of Micronesian sanitarians.

Finally, as a minor but needed service, the willingness of the Public Health Department of the Government of Guam to handle at very minimal charges the supervision of the proper collection of Vital statistics in the Trust Territory and their processing through their new IBM equipment should be utilized. The same applies to the offer by the Public Health Department of the Government of Guam to supply laboratory backstopping services to the hospitals of the Trust Territory.

Chapter 7

COMMUNITY ACTION PROGRAM

Such a program to be implemented by the Peace Corps was found to be particularly essential in the Trust Territory due to:

1. widespread requests of villagers for leadership and assistance of this kind;
2. questions by Micronesians as to why couldn't the Peace Corps help them if it was helping the rest of the world;
3. the limited development potentials of this scattered island food-gathering economy makes community action one of the very few feasible aids that can be offered;
4. the difficulties of conducting a vigorous large scale community action program within the framework of the T. T. Government Bureaucracy;
5. given U.S. political objectives, the tremendous need in the Mission's judgement for direct and continuing American contacts at local levels.

The Mission recommends that the program consist of projects such as farm to market type roads, simple public building construction, catchment water systems and sanitation facilities, land clearing, adult education, handicraft assistance and youth corps development. The Peace Corps Volunteers would not function as teachers in the schools of the Trust Territory government.

It is suggested that the training program of the Peace Corps Volunteers would begin June 30, 1964, and that the work could then begin in October.

1. Council of Micronesia to pass resolution asking the T. T. Government to make available $200,000 to District Congresses for logistic support for the initial two year contract which could be administered by District Administrators under terms of a single Peace Corps Project agreement to be signed by the District Congresses.
2. All non-logistic support (recruitment, training, allotments, subsistence, international-travel, medical support, etc.) to be advanced by Peace Corps and reimbursed by Department of Interior on quarterly advice of charges, if so desired by the Peace Corps. ($600,000 over the two-year period).
3. One Peace Corps Representative to the Trust Territory, with headquarters in Saipan; 2 Associate Representatives, one in the Marshalls and one in Palau; and 6 Peace Corps leaders (1 each stationed at each District Center). This rather large complement of administrative personnel seems advisable in view of the great distances involved between PCV locations and administrative centers.
4. The initial program for 60 Peace Corps Volunteers can be expanded in successive phases.
5. Peace Corps volunteers will be assigned outside of District Centers among the 100 or so municipalities to assist them

with self-help programs of community improvement as described above.

6. Outside costs of this program would be in the magnitude of $800,000 over the initial two-year period.

7. Members of this Mission, particularly Mr. Cleo Shook, are available to work with Peace Corps Headquarters if needed, to develop the specific community action program referred to above and to negotiate the Peace Corps Project Agreement with the District Congresses.

COST BREAKDOWN

A. Logistic:

(1)	Multiple use front end loaders @ $7,500 each, or $15,000 in each of six Districts -	$ 90,000
(2)	$500 per year per Volunteer for special purchases over the two years -	60,000
	$50,000 for 25 small boats including motors and spare parts -	$200,000

B. Non-logistic:

Estimated $10,000 per volunteer for 2-year period - $600,000

Chapter 8

POLICIES ON TAXATION, LAND AND HOUSING

Taxation

The principal source of revenue for the Trust Territory Government is an annual appropriation from Congress, amounting to $15 million in fiscal year 1963. The Trust Territory Government collected an estimated $1.9 million additional from local sources. Of this, only $250,000 were true tax receipts, the much larger remainder representing gross revenue accruing to the government from business-type operations (sea and air freight and passenger fares, utility charges, building rentals, medical and dental fees, etc.). Tax revenues for fiscal year 1963, separated from the gross revenue data supplied to the Mission by the Finance Office of the Trust Territory Government, are as follows:

Copra processing tax	$ 187,854.45
Cigarette and tobacco tax	56,258.75
Excise tax	3,373.08
Trochus Royalty	3,057.00
Licenses, fines and court fees	5,030.36
	$ 255,573.64

In addition to these taxes collected by the Trust Territory Government, all the districts and many municipalities levy taxes on Micronesian residents. The resulting tax system is chaotic, with the Trust Territory Government, the District Congresses, and many municipalities frequently taxing the same products and assuming overlapping financial burdens for the same activities. One consequence is a distortion of trade and productive activity away from the most efficient channel.

Therefore, the Mission recommends that the High Commissioner issue an order before the Micronesian Legislature is opened in 1964 along the following lines:

1. All export taxes should be reserved to Trust Territory Government.
2. All general and specific import duties reserved to Trust Territory Government with exception of items listed in 5.
3. All import and export duties on trade within the Trust Territory should be eliminated.
4. All personal and corporate taxes on gross and net income as well as general sales taxes should be reserved to Trust Territory Government.
5. District Congress taxes should be confined to excise taxes on soft drinks, beer and liquor, cigarettes and tobacco, amusement taxes, business licenses and fees, vehicle registration and driver licenses and all other licenses and fees.
6. Municipalities should be permitted to tax and levy license fees only as permitted by their District Congresses.

The Mission calculated that such a rationalization of the tax structure at the rates now in effect would increase Trust Territory Government annual revenues by about $90,000. Revenues would increase further if a moderate but general import tax were to be later imposed by the Trust Territory Government.

The proposed rationalization of the tax structure would, of course, reduce district and municipal tax collections substantially. This is another reason for the recommendation made in the Educational Section of this report, that the District Congresses and Municipalities should be relieved for administrative and educational reasons of the remaining and confused financial obligations they now have for teachers' salaries. The Trust Territory Government is now paying more than 90 per cent of overall educational costs and it should defray the remainder too.

Table 19 summarizes the estimated loss in revenues and the relief from educational expenses by district, showing a net gain in every district.

TABLE 15

Estimated Revenue and Expenditure Impact of Proposed Tax Rationalization by District. *

	Changes in Total Tax Revenues due to their shift from District Congresses to TT Govt.	Changes in burden of education costs.	Net changes in revenue available for non-educational activities.
T. T. Govt.	+90,000 **	+215,000	-125,000
DISTRICTS			
Marshalls	-46,000	- 52,000	+ 6,000
Palau	-10,000	- 25,000	+ 15,000
Ponape	-15,000	- 32,000	+ 17,000
Marianas	-14,000	- 53,000	+ 39,000
Truk	-10,000	- 43,000	+ 33,000
Yap	- 5,500	- 10,000	+ 4,500

* Based on FY 1963 revenues
** Excluding district copra taxes, which would be cancelled.

Thus, for a net increase in annual cost of $125,000, the Trust Territory Government could integrate and simplify (with resulting savings in administrative costs) its educational program as well as lay the groundwork for increased revenues in the future which hopefully would some day reduce the subsidy demands on the United States.

The Trust Territory Government now carries in its tax system a 15 per cent "processing tax" on all processed goods. In fact, it is levied only on copra (there is a separate "royalty" on trochus), and it has been specifically waived on handicraft. This tax provides an undesirable disincentive to manufacturing production of all kinds (the Mission was told this several times on its trip around the Trust Territory), and the Mission recommends that the term "processing tax" be dropped and that the 15 per cent tax on copra be retained simply as a "copra tax".

Copra is heavily taxed at all three levels of government, and this too inhibits further production of the principal cash product by lowering the cash return to the producer. District and Municipal taxes on copra will automatically be eliminated by the proposed general reform of the tax structure, and as alternative services of local tax revenue are developed, the Territorial copra tax might also be eventually eliminated. In the meantime, however, this copra tax should be retained as the only substantial source of funds for allocation by the Council of Micronesia.

The Mission feels that the consideration of a moderate tax on salaries and wages and a moderate income tax on chartered companies and unincorporated businesses might be advisable in the fairly near future. Later, if the U. S. Congress were to agree to a "return" of the proceeds of the Federal Income Tax collected from U. S. citizens in the Trust Territory similar to the arrangements with American Samoa, then the Trust Territory could levy a comparable income tax rate structure. The chief advantage would be developing greater experience and responsibility in the Territorial Legislature through the exercise of having to appropriate the expenditure of larger revenues. (However, there might be opposition in the U. S. Congress to such an arrangement as long as the U. S. Congress is directly appropriating large amounts for the Trust Territory Government.)

With the exception of Saipan "Municipality", the chartered municipalities of the Trust Territory each have tiny revenues composed of miscellaneous taxes and fees on all levels, most of which are used to pay the salaries of the elected magistrates (Mayors), secretaries, treasurers, and numerous councilmen. There is a justified dissatisfaction on the part of the more articulate villagers that they, who are on the margin of subsistence, are being taxed by this "American-imposed" municipality unit which serves little or no function but to pay salaries to village leaders investing little time in making decisions that they previously made free as a public service. (In fact many of the municipality officers outside the district center municipalities go out and collect taxes when their salaries have to be met).

Given this situation as well as many other factors, the Mission recommends that the District Congresses, which will control all municipal taxation under the recommendations made here, assume the financial responsibility of paying only one salary in each municipality to the full-time Magistrate, elected by the voters of that municipality as usual. (An alternative would be for this same salary to be paid by the Trust Territory Government through its District Administration so that the municipal magistrate would be the representative of the Trust Territory Government. Either alternative would be preferable to the existing situation.)

The Marianas District represents a special case due to the fact that Saipan, with 82 per cent of its population, was uniquely organized under the Navy administration as one municipality and it collects large tax revenues (about $80,000 annually excluding business type operations). Last year, a new Marianas District Congress was superimposed on this municipality at the suggestion of the Trust Territory Government in order to bring about a structure of government comparable to the other district. Sources of revenue available to the new Marianas District Congress are extremely limited and a tax tug-of-war is developing between the Municipality and the District Congress. In the opinion of the Mission, with which the High Commissioner informally expressed full agreement, the same proposed rationalization of the tax structure and educational administrative burden should apply in the Marianas. Possibly it should be accompanied by a division of the large Saipan Municipality into several smaller

village municipalities comparable to the municipal organization in the rest of the Trust Territory, but if politically difficult, this division is not essential.

Non-chartered "municipalities" cannot levy money taxes - which is one reason many villages have refused to be chartered - but local taxes of labor services are common in Micronesia. In the extreme case of Yap, men sometimes must work more than half the time on community projects. The Trust Territory Government has itself encouraged the use of this "free" labor on government construction projects and community development projects. Yet in fact reliance on labor taxes often represents considerable sacrifice for the Micronesians who must neglect their food cultivation and copra processing. Moreover, the productivity of the "free" labor is very low due to high absenteeism and low "esprit de corps", which may raise related project costs and eliminate the "savings" from use of such labor. Therefore, the Mission recommends that the T. T. Government study this problem and formulate policies as to where they should continue to use free labor and where they should pay some compensation to the villagers, preferably on a unit piece work basis similar to the system of construction piece work rates developed in Palau with private contractors.

The grand total of all municipality tax revenues (excluding commercial operations and labor taxes) now collected in the Trust Territory is roughly, based on preliminary FY 1963 data, about $65,000 excluding the special case of Saipan and about $145,000 including Saipan. Under the

Mission's recommendation, these would be integrated (after eliminating intra-territorial import and export taxes) into the tax revenues of the six Districts which would then be able to increase their grants-in-aid to municipalities for approved municipal projects in addition to paying Magistrate salaries.

In conclusion the Mission believes based on its survey, that the entire set of recommendations outlined in this section would not only move toward a rationalized tax structure more conducive to the Trust Territory's over-all economic development and permit the needed integration of educational funding and administration, but would also have a favorable net political impact in the Districts and an even stronger favorable political impact on the forthcoming Micronesian Territorial Legislature.

LAND

The archaic and complicated communal land tenure systems of Micronesia, which as previously explained, seriously encumber its political and economic development, make essential the development of a Land Policy by the Trust Territory Government. The need for such a policy is intensified by the widespread confusion and legal disputes over individual and communal land titles and over what land is in the public domain (which affects the homesteading program). Land ownership in Micronesia is an acutely sensitive issue, it representing in a subsistence economy the only form of social security. The formulation of a land policy that will meet the needs of the immediate situation and ease the longer run

transition to the modern world is a difficult task, but the Mission believes that the broad guidelines should be as follows:

1. First and completely basic is the need for an accurate land survey and registration throughout the Trust Territory.

Although a network of primary controls was previously established by the U. S. Army, it would be advisable if the U. S. Coast and Geodetic Survey in the Department of Commerce were to establish an accurate triangulation network of secondary controls using electronic surveying equipment. This would not be inexpensive, the job probably requiring one to two years work by three or four teams using considerable equipment. This step is not absolutely essential but it would avoid the future problems and disputes that have plagued land matters in Guam where this step was also omitted.

Next all land parcels, whether owned by individuals, clans or the government, should be surveyed and registered on maps. It is estimated that this job would require the full-time equivalent of one trained Micronesian team working in each of the six districts from two to four years.

2. Clan homesteading of "public domain" in order to correct without more delay previous injustices of the German and Japanese administrations, could be permitted but with a special clause reserving for the government the right to subdivide the land at a later date among the individual family heads of that clan.

3. After completing the general survey and registration, the Trust Territory Government should commence a gradual and long-term program to demonstrate to the members of the clans the advantages to them from individual rather than communal land tenure. The long-term objective would be legislation by the District Congresses providing for division of the clan lands when a majority of the clan members so opted. In the interim the policy of leasing clan lands to individuals could be encouraged since it is a policy that would be acceptable without too much difficulty in most of Micronesia.

4. Other appropriate methods of working toward the individual land tenure objective can also be developed -- e.g., the conditioning of mortgage credit to individually owned land parcels, and the levying of a general land tax in money.

5. The District Congresses should also be asked (and guided) to develop legislation simplifying land inheritance and local land tenure systems.

6. Both for the immediate and the longer run situation, the Mission recommends that the homesteading regulations of the Trust Territory Government be made more flexible. The low existing acreage limits on homesteading tend to perpetuate subsistence utilization of the land, and the economic development of Micronesia would be fostered by having fewer people receive larger parcels of land that would permit them to engage in commercial farming.

HOUSING

Possibly the most shocking sight in the beautiful islands of the Trust Territory is that of the widespread corrugated iron slum shacks that go under the name of housing. The problem is acute in the semi-urban district centers and on the congested island of Ebeye where live the Micronesian laborers for the Kwajalein base. The Mission does not recommend any give-away housing program for the Trust Territory but it feels that the following elements of a housing policy are appropriate, and their cost has been included in the Mission's estimate of capital requirements.

1. In the very special case of Ebeye (where the crowding and unsanitary conditions helped spread a disastrous polio epidemic last year), there should be a housing program to replace virtually all the houses on the island which should be in conjunction with the installation of the water supply and sewage systems provided for in our Public Works program. However, the cost of the housing (concrete block) could be repaid by the Ebeye residents over a 20 year period, even allowing for a modest interest charge. The cost of such a general housing replacement program on Ebeye should be approximately $400,000, and should be administered along with other programs outlined below by a Housing and Town Planning Unit at Headquarters.

2. This Unit should establish the urban plans, zoning ordinances and minimum building codes that are urgently needed in the more populous district centers such as Moen in the Truk District.

3. The Housing Unit should also organize the commercial purchase,

stocking and selling of critical construction materials, primarily lumber and cement, to enable private individuals to replace and improve their own housing. The building supplies fund should be $450,000 for maximum impact on housing throughout the territory. The private trading companies are reluctant for many reasons to undertake this business, but it is critically needed. Once started by the Trust Territory Government, it should be possible at a later date to persuade the trading companies to take over this operation.

4. The Housing Unit should be prepared to lend funds on a long-term, low-interest basis for a housing development in Garapan on Saipan ($300,000 including utilities and access roads), and in Moen on Truk ($50,000 to start).

C. Capital Requirements for the Development Programs

The capital requirements for the development programs recommended in the various sections of this report are summarized below according to the territory wide activity and by each district. In the classification by districts, those activities which did not lend themselves to an areal distribution are classified under the heading "territory wide". School construction costs were distributed on the basis of projected school enrollment because detailed information was not available to plan for schools on an individual location basis. The relationship of these capital investments to the objectives of each of the programs are discussed under the relevant program sections.

Each of the tables identifies what is termed as an "optimum" and "minimum" program. The former is the maximum level of capital investment that can be realistically sustained in the 4 year period from FY '65 through FY '68 to achieve as rapidly as possible the desired goals for political, economic and social development. The latter is considered to be the minimum level of capital investment necessary to assure achievement of the political objectives but involving a less rapid rate of economic and social development.

The minimum level rather than the optimum levels of capital funding would result in the following program changes:

Table I

FY '65-'68 Capital Requirements for Development Programs

(by function) (In thousands of dollars)

	Optimum	Minimum
Education	$ 9,944	$ 8,088
Public Health	2,384	2,184
Agriculture and Fisheries	550	450
Economic Development Fund	5,000	3,000
Public Buildings	400	400
Public Safety and Judiciary	910	460
Sea Transportation	1,257	1,337
Air Transportation	200	200
Communication and Radio	2,700	1,200
Public Works and Utilities		
Airports	4,235	2,535
Harbors	1,300	1,300
Water Supply	1,545	1,545
Roads	2,655	1,480
Sewage Systems	745	545
Electric Power Systems	1,093	893
Employee Housing	1,190	1,190
Other	1,379	1,128
General Administration	500	500
Equipment Replacement	2,500	1,935
Housing Assistance	1,200	800
	$ 41,687	$ 31,170

Table II

FY '65-'68 Capital Requirements for Development Programs
By Districts (In thousands of dollars)

	Optimum	Minimum
Marianas District		
Schools	$ 1,074	$ 873
Sub-hospital	100	100
Micronesian Legislative Offices	100	100
Court House	40	40
District Congress Building	50	50
Roads Repair	35	35
Power Plant Overhaul	98	98
Employee Housing	160	160
Ammunition Cleanup	200	0
Equipment Replacement	85	85
Garapan Housing Development (utilities and roads)	300	300
	$ 2,242	$ 1,841
Marshalls District		
Schools	$ 2,585	$ 2,103
Court House	40	40
District Congress Building	50	50
Ships and Warehouses	266	266
Airport and Water Supply System	1,450	450
Ebeye Water	245	245
Ebeye Sewage	150	150
Sewage System	350	150
Water Treatment	35	35
Road Improvements	90	90
Power Expansion	60	60
Employee Housing	360	360
Reefer	10	10
Ammunition Cleanup	50	0
Island Sub-centers at Jaluit and Wotje includes sub-hospital, dock and warehouse	954	954
Equipment Replacement	300	200
Housing Loan Fund	400	250
	$ 7,395	$ 5,413

	Optimum	Minimum
Palau District		
Schools	$ 1,084	$ 882
Sub-hospital	100	100
Entomology Laboratory	50	50
District Congress Building	50	50
Ships and Terminal Facilities	320	320
Airport	1,200	500
Water Supply	180	180
Roads	575	575
Sewage Extension	35	35
Employee Housing	170	170
Move POL Yard	40	40
Rehabilitation or Public Works Area	25	25
Equipment Replacement	300	300
	$ 4,129	$3,227
Ponape District		
Schools	$ 1,631	$1,326
Hospital	684	684
District Congress Building	50	50
Court House	40	40
Airfield	1,585	1,585
Boat Channel Dredging and Ships	145	225
Water System Rehabilitation	285	285
Road Improvements	1,020	320
Sewage System	110	110
Power Plant	600	400
Employee Housing	170	170
Kusaie Public Works	35	35
Equipment Replacement	280	280
	$ 6,635	$5,510

	Optimum	Minimum
Truk District		
Schools	$ 2,854	$ 2,321
Hospital	820	820
Sub-hospitals	200	100
District Congress Building	50	50
Court House	40	40
Ships and Warehouse Facilities	295	295
Water Supply and Storage	350	350
Roads	320	120
Enlarge Sewage System	65	65
Rebuild Power System	185	185
Employee Housing	170	170
Replace Public Works Fuel Line	35	35
Equipment Replacement	420	320
Housing Loan Fund for Moen	50	50
	$ 5,854	$ 4,921
Yap District		
Schools	$ 716	$ 582
Sub-hospitals	200	100
District Congress Building	50	50
Ships and Warehouse Facilities	231	231
Harbor	1,300	1,300
Water System	450	450
Roads	615	340
Sewage System	35	35
Electric Power	150	150
Employee Housing	160	160
Telephone System	30	30
Equipment Replacement	250	250
	$ 4,187	$ 3,678

	Optimum	Minimum
Territory Wide		
Dispensaries 50 Units	$ 280	$ 280
Agricultural Stations	500	400
Economic Development Fund	5,000	3,000
Jails and Police Stations	750	300
Purchase of DC-4	200	200
Communications	2,700	1,200
Central Construction Equipment Pool	865	500
Capital for Central Supply Fund	500	500
Capital for Building Supplies Fund (private housing)	450	200
	$11,245	$6,580

Marianas District

The $200,000 cost for clearing the northern end of Saipan of undetonated ammunition is eliminated in the awareness that this expenditure can be postponed but not indefinitely.

Marshalls District

The airport would be rehabilitated at a cost of $100,000 rather than replaced. Although eventual replacement will be necessary, the rehabilitation work will permit continued use of the facility for a few years. The optimum plan contemplated using the new airfield for water catchment, but the present airport is not suitable for this purpose.

A separate water system will need to be constructed at a cost of $350,000, which is therefore included in the minimum size program. With a smaller supply of water from the separate system, the scale of the sewer system is reduced by $200,000.

The capital for the housing loan fund is also reduced by $150,000.

Construction equipment acquisition is reduced by $100,000.

Palau District

By building the airport to lower standards, the construction cost can be reduced by $700,000. However, this lower quality will require a larger maintenance program to keep the airport in operating condition.

Ponape District

The road program is reduced by $700,000. This will require placing more reliance on water transportation and the channel dredging activity is increased by $80,000 to provide better water access to all parts of the island. The optimum program provided for replacing two electric power generators. One generator can be overhauled for $200,000 less than it can be replaced.

Truk District

Part of the road construction program is deferred and the acquisition of construction equipment is reduced by $100,000.

Yap District

The road interconnection to Mop island has been eliminated to reduce total road construction costs by $200,000.

Territory-wide

1. The minimum program provides $100,000 less for agricultural station requiring a cut-back in the construction of certain facilities on existing agricultural stations.
2. The economic development fund would be limited to $3 million under the minimum program. Unless additional private capital can be obtained, the reduction will result in deferring some development projects.
3. The $450,000 reduction in the minimum program for jails and police

stations would require continued use of certain sub-standard facilities through 1968.

Annual Funding Requirements

Three criteria were used to make a tentative distribution of the optimum capital investment program over the four years from 1965 to 1968. These were: (1) the relative urgency of providing the public services, (2) the attainment of a sustained economic impact from the investments over the four years, and (3) the capability of the government to effectively administer the program - that is, the relative lead-times of the different classes of capital investment. Based on these criteria, the annual investment requirements are summarized in the following table, along with the related operations expenditures.

	(In Millions)			
	1965	1966	1967	1968
Capital investments	10.0	14.0	12.0	5.5
Operations	14.6	16.6	19.1	20.8
Total	24.6	30.6	31.1	26.3
Less Local Revenues and Other Receipts	1.0	1.0	1.1	1.1
Net Federal Financing Required	23.6	29.6	30.0	25.2

On the basis of these projections it is recommended that the authorization for the Trust Territory be raised to $23.5 million in 1965 to $29.5 million in 1966, $30 million in 1967 and $25 million in 1968.