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AN ANALYSIS OF P.L. 480

TITLE II COMMODITY RATIONS IN BOLIVIA

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PURPOSE OF STUDY

To design the most appropriate uniform commodity ration for each program category for all agency - sponsored projects that use P.L. 480 Title II commodities.

INTRODUCTION

A food aid commodity ration can serve two purposes:

- 1) improve the nutritional content of the diet, and
- 2) provide monetary value to the recipient, i.e. increase the cash available to the household.

Food aid commodities are meant to be consumed as only part of an individual's or household's food intake, rather than as a total diet. It is important to keep in mind that in the context of the total diet some of the commodities in the ration will replace usually-purchased foods, while others may be consumed in addition to the usual foods.

Some commodity rations, especially those for on-site feeding projects, are selected with only the first purpose in mind. Others, however, especially those for take-home projects, may need to be selected on the basis of their monetary value to the recipient as well. In most situations, it is possible to design a ration that is both nutritionally and economically cost effective.

Once the basis on which the commodity ration is to be selected is established, the next step is to select commodities, or a commodity ration, that is cost effective, i.e. it delivers the

quantity of energy, protein and/or monetary value, at the least cost to the donor which in this case is the U.S. Government. Table 1 depicts commodity rankings by energy and protein content. A program for which the rations are selected with cost effectiveness in mind can serve either more recipients or provide larger benefits to present recipients.

INFORMATION USED FOR THIS ANALYSIS

Many sources of data were used to arrive at the conclusions reached in this report. The most important ones are listed below:

- 1) 250 questionnaires completed by interviewing recipients in three districts: La Paz, Cochabamba, and Trinidad (see Table 2 for a break down of areas, program categories, and agencies). The questionnaires (see Annex 1) were prepared by the Bolivia AID office on the basis of guidelines prepared for a similar study in Perú in 1985. It should be stated that the Bolivia office did an excellent job in preparing the questionnaires and coordinating their completion.
- 2) Discussions with the agencies involved, CRS/CARITAS, FHI, ADRA/OFASA and SNDC. Both group and individual meetings were held with all the agencies.
- 3) Visits to distribution sites and interviews with recipients.
- 4) Discussions with Ministry of Health, Nutrition Division, and Ministry of Planning and Coordination.
- 5) Import, export, per capita consumption, and other statistical data from the following sources:

- Estudio de Pronóstico Agropecuario, La Paz; Ministerio de Asuntos Campesinos y Agropecuarios, 1985.
 - Programa Nacional de Asistencia Alimentaria, Bolivia; Ministerio de Planeamiento y Coordinación, no date.
 - Desarrollo y Pobreza en Bolivia, La Paz; UNICEF, 1984.
 - Indices de Precios al Por Mayor y Productos Alimenticios, La Paz; Banco Central de Bolivia, 1986.
 - Resumen Estadístico Bolivia; Instituto Nacional de Estadística, 1983.
 - Memoria Anual - Gestión 1984 La Paz; División de Estudios Económicos, 1984
- 6) P.L. 480 Title II Commodities Reference Guide.
- 7) Results of a survey on commodity purchase and consumption conducted in El Alto by Javier A. Arce.
- 8) Prices from local stores (as compared to those reported by recipients).
- 9) AER and Voluntary Agency operational plans for FY 86 and ABS for FY 87 (see Annex 2).

BACKGROUND

Diet

The diet of the low-income Bolivian people consists of tubers (e.g. potatoes, oca) cereal products (e.g. bread, noodles), fats (e.g. lard, vegetable oil, shortening) small amounts of vegetables (e.g. onions, carrots, tomatoes, beans), sugar, small quantities of

animal products, and very little fruit or dairy products. This diet appears to lack nutrients rather than energy and is a result of economic conditions rather than of supply. The Ministry of Health (MOH) states that protein, iron, and iodine deficiencies are of major nutritional concern. The poor quality of the diet contributes to the high infant and child mortality rates.

Health Status

Of the approximately six million Bolivians 41 percent are so isolated that they are not reached by any medical care. The amount of pregnancy wastage is known to be high, and perinatal mortality is one of the highest in the world, in fact, unofficial* estimates are as high as 325/100,000 births. The reasons explaining this phenomenon are malnutrition, lack of potable water, inadequate hygienic practices, repeated upper respiratory infections, frequent diarrhea, and some parental neglect.

The MOH would like to improve the situation and work through the Agency for International Development by monetizing some Title II commodities for the following purposes:

- 1) To provide nutrition education, and
- 2) To assist in improving the local production of foods that are complementary to the Title II rations.

The MOH has established milk centers where preschool age children receive a glass of milk (NFDM and butter oil from EEC) per day five days per week. They have established a new rehabilitation

* Not all birth are registered as many take place at home.

program for malnourished preschool-age children with help from WFP, WHO, and UNICEF. These centers provide four meals per day. In addition, a pilot project began in La Paz on pregnant women to see if iron supplementation is beneficial to them.

Cáritas with help from PRITECH is establishing an oral rehydration therapy project where the participants in the mother's clubs will receive training on the use and preparation of oral rehydration solutions. The Title II commodities are not going to be used directly for ORS preparation (locally available rice and potatoes will be the starches) but will serve as an incentive for mothers to attend such training session at their clubs.

Food Production

Bolivia is attempting self-sufficiency in food by increasing the production of commodities which are imported in large quantities, i.e. wheat, milk, and oil. In addition to increasing wheat production, there are also efforts to improve the output of traditional cereals, such as cornmeal, rice, and quinoa. In 1985 Bolivia expected* to import 380,000 MT of wheat. All processing takes place in country. There are plans to fortify wheat flour with soy and to add cornmeal as well as soy to bread flour.

At the present time no food commodities are subsidized nor do any have a fixed price. As a result much food (as well as other goods) are imported illegally across the borders of Argentina and Brazil and prices rise steadily.

Current Title II Program

Bolivia is a landlocked country with great difficulties in

* Only provisional figures for 1985 are available.

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internal transport. Due to lack of roads and railway lines commodities are shipped to some areas by boat on rivers part way, then trucked at great expense. Present inland transport costs are over \$ 130 per metric ton.

The currently-used FY 1966 AEF lists six different commodities for the six program categories administered by the four agencies (See Table 3): bulgur, CSM, oil, NFDM, wheat flour, and peas. Examining the actual rations distributed, five more commodities, leftover from previous years, are noted: rice, cornmeal, oats, soy-fortified oats, and lentils; therefore, at the present time eleven different commodities are being distributed in the Title II program in Bolivia.

The three voluntary agencies and SNDC use very different commodity rations for the same programs (See Table 3). This appears to present some difficulties, therefore they agreed to have uniform rations for all program categories (Table 4 is the result of this attempt).

In take-home distribution programs, such as MCH and FFW, the food-aid rations are distributed through an intermediary organization, a mother's club or community group. It is the organization that reimburses the agency for the food-aid related expenses such as containers, collects contributions from the recipients, and decides on the plan of action, i.e., programs to have at mother's clubs (e.g. training in income generating activities such as poultry raising, teaching handicraft techniques, or health education activities) or how to divide the work in FFW (e.g irrigation, road building, sewer and water line laying, or building protection against mudslides).

It was observed that in some projects recipients do not receive their rations for several months, in one FFW project in Cochabamba

work had started eight months previously and no rations had yet been received, in another in La Paz it had been six months since rations were distributed. One reason for the delay is that all commodities are not received at the same time and the agency does not want to go to the expense of distributing less than full rations. These delays should be avoided and partial rations distributed when all commodities are not available. After all, as monthly distributions are budgeted, they should take place with whatever commodities are available and the rest distributed after arrival at one and a half times to twice the usual amount until all that is due recipients have been caught up.

THE COMMODITIES

There are ten# commodities distributed by the four agencies involved. By far the largest proportion is wheat, either as wheat flour or bulgur.

Cereal Products

Presently the following cereal products are distributed: wheat flour, bulgur, rice, oats, cornmeal, and CSM.

Wheat flour - Approximately 18%# by tonnage of all cereals on FY 87 AER is wheat flour. It is a well accepted commodity with resale value potential. Used for baking bread and other baked goods, for soups, pancakes, fried dough, noodles, and porridge.

It should be 11 but oats could not be discerned from sf oats.

#1 One of the voluntary agencies does not dissociate sf oats and lentils, both left over from previous years, therefore figures cannot be exact.

Bulgur - By far the largest quantity of cereal product by tonnage, 61%, distributed by all the voluntary agencies. While accepted, not particularly preferred by the population, therefore does not have good market value. Usually soaked before cooking to save on fuel costs. Used by itself as porridge, or with vegetables as rice would be, in soups, stews, or as part of bread dough.

Rice - Five percent of total cereals, only leftover stock used, a preferred staple in some parts of the country.

Oats - Only leftover stock used, CBS claims that theirs is unfortified, ADHA's is soy-fortified, it constitutes 2% of total cereal tonnage by weight. Well accepted and preferred by many recipients, though not part of the traditional diet.

CSM - Used by only one voluntary agency who hoped to target it at children. 13% of total cereal products used. Targeting was unsuccessful, it is consumed by the whole household and even used to brew "chicha" (fermented corn beverage). It's uses are many, gruel, bread, beverage, cookies, fried and cooked as pillau and so forth. It still appears on the 1987 ABS.

Cornmeal - One percent of total cereals is cornmeal which is leftover stock from previous year. It is traditional and preferred in certain parts of the country. None of the recipients reported to have received any, it was probably used in geographical areas not covered by this study.

Non-fat-dry Milk (NFDM)

Used by all agencies in most program categories, including general relief, even if not listed on the AER. Milk in any form is too expensive to be purchased by the recipient population. The

distributed NFDM does have commercial value because of its use in ice cream manufacturing. NFDM, however, is not milk and therefore presents some difficulties. It appears that projects recipients have been taught to reconstitute it with water as a beverage, flavored with spices, to be given to children. In fact, children will consume it dry, just as it arrives. Unfortunately, no information is provided with this commodity.

It should be pointed out that due to the high concentration of protein, NFDM is likely to cause digestive problems, especially in children, when solely reconstituted with water. Ideally, NFDM should be used as an ingredient in prepared foods such as porridge, stews, soups, or breads, rather than consumed as a reconstituted separate beverage. Therefore, it is recommended that one view NFDM as "milk flour"* rather than as powdered milk. This is not to say that when NFDM is diluted with a source of carbohydrate and fat, it would not be a nutritionally acceptable food item. What is important is that recipients have a full understanding of the uses of this product.

Edible Oil

A commodity presently used in all rations. While recipients do purchase some oil, they prefer the more expensive lard. Average household fat purchase is probably between two and four kg per month. In some programs, oil is distributed in very high quantities, 7-8 liters at a time, due to infrequent distribution schemes and large projected household sizes. This does tend to encourage sales which takes place below market price.

* Terminology suggested by Doctor C. Capone-(CRS/New York)

Lentils and Peas

These commodities were added to the ration for their protein content. As they are usually not purchased by recipient households, they have acceptability problems as well^{as} the fact as that they convey little monetary value. Fuel is expensive in Bolivia, and dried peas, beans, and lentils take a long time to cook. Lentils, especially, are not a cost effective means of providing protein (\$ 1 lentil = 470 g. protein, \$1 peas = 796 g., \$1 NFDM = 3263 g.). Lentils and peas are presumed to replace cereals from the usual diet, they are similar in energy content.

THE PROGRAMS

There are four types of major food aid programs sponsored by P.L. 480 Title II in Bolivia: MCH, FFW, on-site child feeding (SF, OCF, PSF), and General Relief. More than three fourth of the beneficiaries receive their commodities through the take-home mode of distribution. In the take-home program, recipients are aware of the income effect of the food aid ration and claim to purchase the following with the monetary value of the ration: fuel, soap, electricity, time for education, along with the following food items: spices, coffee, sugar, vegetables and chocolate.

The most frequently-purchased food items by recipients in MCH and FFW projects were, in order of frequency of purchase, the following: sugar, vegetables, noodles, meat or fish, bread, potatoes, and condiments. Dairy products, eggs, and fruit were infrequently purchased.

Maternal and Child Health

These projects are organized around mothers' clubs and for membership a woman either has to be pregnant or a mother of at least one preschool-aged child. Some participants spent as little as 27 percent of their income on food while others spent more than 100 percent.

The MCH ration is meant to be targeted at the mother and her preschool-aged children and most receive individual rations times the number of preschool-aged children (usually a household ration of minimum one and maximum three) though some clubs give the same number of rations to all (usually three). The commodity ration does not appear to be successfully targeted: women freely admit that it is shared with the whole household. Nutritional supplementation, therefore, is diluted and it is total household size that determines the quantity of food-aid commodity each targeted individual consumes.

In some MCH centers, rations are provided on the basis of anthropometric measurements of the children. While growth monitoring is a good idea, it should not be used as the basis for qualifying for food aid rations. In the first place, there is a tendency to record a weight that would qualify the child for the program - this has been observed elsewhere. An even better justification for giving the ration to all mothers in the clubs is that considering the importance in terms of economic value of the ration, not providing it for a mother whose children meet the selected anthropometric standard appears a punishment, or the reverse, the mother who does not use her scarce resources to her children's best benefit gets the reward of a valuable food-aid ration. Anthropometric measurements may also not be valid bases for

evaluating MCH projects as improved nutrition could manifest itself in increased activity levels and in improved ability to fight infection, thus a successful program may appear to be unsuccessful.

Some MCH projects provide special on-site feeding for infants who are below the norm of the Bolivian growth standards based on the US' NCHS standards (see Appendix 3). Such centers provide one meal a day, breakfast, using bulgur, wheat flour, and NFDM, from Title II, with some amino acid powder and butter oil. No vitamin or mineral supplements are added. No education is given the mother on how to feed a malnourished child while she is at the feeding center.

Food for Work

Urban FFW projects appear to be well targeted as participants are often very poor, unemployed or underemployed males and females. A large proportion of urban recipients appear to be female.

Some communities divide the work evenly and distribute equal food rations, others reimburse for actual numbers of days worked with a daily household ration.

The food aid ration is meant as an incentive for people to engage in labor that will bring them benefits: water inside the house, irrigated crops, roads, and so forth. Depending on the economic status of the recipient, the food aid ration may or may not be an adequate incentive. Some farmers with land resent the quantity of work parcelled out to them which they view as disproportionately large compared to the expected benefit, while others are satisfied to work for rations they will receive in the future.

On-Site Feeding

These are aimed at children and provide some ingredients for one or more meals during the day. School Feeding is designed for five days per week for eight months of the year. Some schools provide both breakfast and a noon meal. Preschool Feeding is aimed at low-income malnourished one to five year olds and operate 25 days per month all year. Much of Other Child Feeding is relief given orphanages for 30 days per month all year.

General Relief

This appears to be a catch-all category under which destitute people are given an occasional ration or the food aid ration is a contribution to hospitals, asylums, and other similar adult feeding facilities.

UNIFORM RATIONS

One major problem with attempting to arrive at uniform rations is that the agencies distributing the food may have different objectives. Some may want to help alleviate poverty by providing small rations to as many people as possible, others may view the food aid as an incentive toward achieving additional stated purposes, while still others may want to use the food aid ration as an economic asset for development. An attempt will be made here to keep in mind as many objectives as possible.

Another problem is household size. For take-home programs some agencies presume household sizes of 4 or 5 or more. MCH projects

consider the mother and the number of preschool-age children (e.g. CRS uses 3, FHI 3.3, and ADRA 5). FFW projects calculate the number of dependents to be 4 or 5. It all appears arbitrary, as the actual situation rarely confirms the planned one, household sizes seem to be larger than either agency calculates, probably between 6 and 7 individuals. Thus, either take-home rations will have to be designed per household and each agency can keep claiming as many members as they did previously, or a uniform household size and preschool-age children number agreed on.

In terms of on-site feeding, the number of meals provided per day varies. Some Gen Rel and OCF appear to be institutional feeding. School Feeding and Preschool Feeding are on-site feeding programs where the children receive usually two meals per school day but the ration may be designed for only one.

In all on-site school and preschool feeding projects some food and/or cash is contributed by the parents for additional ingredients, such as sugar, potatoes, spices, and vegetables.

Recipient contributions and expenses also vary. The agencies distributing the food charge a small percentage of the market value of the ration, which may not be the same as its monetary value to the recipient (see Table 5). Other costs are incurred as well, e.g. transportation, storage, opportunity cost, payment for the activity of the mother's club, and so forth.

At the present time the commodity rations requested on the AER and what is reported to have been received by the recipients are different. If uniform rations are to be used, and if the projects should achieve their intended purposes, it is mandatory that the agreed upon rations are actually distributed by all agencies.

CONCLUSIONS

General

The Bolivia PL 480, Title II program is a complex one, four agencies each administering one to six different categories of feeding programs (see Tables 3, 6, and 7).

The ideal ration for Bolivia is nutrient-dense as the diet is low in energy in proportion to its nutrient content. It should also convey a minimum amount of income in the take-home programs to assist in the improvement of the quality of life. This is necessary also because in the MCH program the ration has to provide an adequate incentive for women to attend and pay for the activities the mother's clubs, and in FFW it should substitute for at least the government minimum wage of \$ 15 per month.

The ideal on-site feeding project ration should contribute to a meal that is nutrient dense, easy to prepare, and tasty to children.

An appropriate ration should not interfere with local food production and marketing, and should be able to achieve the project's intended purpose cost-effectively. The fewer the number of commodities in a ration, the easier the logistical and administrative aspects.

After the commodities for the ration have been selected, the quantity of each commodity to be distributed needs to be determined. It is best to distribute food-aid commodities in take-home projects in quantities equal to or less than usual consumption or purchase. Beyond that quantity the excess becomes highly cost ineffective.

Another consideration is how frequently should commodity rations be distributed, keeping in mind the time and expenses incurred by both the recipient and the agency. It is generally not recommended, however, that large quantities of commodities be distributed at any one time. A low-income household has many expenses for which they need cash, thus receiving large quantities of food would almost assure that some of it will be sold. There may also be storage and potential spoilage problems, another reason for sales.

The most appropriate commodities for food-aid rations in Bolivia appear to be wheat products, NFDM, and edible oil. These commodities are consistently imported, therefore their use should help the Bolivian government's balance of foreign currency payment. As the quantity of Title II food is small and is given directly to the recipient, it should not have a negative incentive on local production. Small amounts of soy are also imported (500 MT in 1985). A soy-fortified cereal is desirable considering the quality of the diet.

The meal pattern is such that it may be difficult to assimilate a large quantity of a single cereal product into the diet, therefore it is necessary to use two cereal products, such as soy-fortified bulgur and wheat flour. The advantage of sf bulgur is that it is a versatile commodity, can be substituted for rice, noodles, quinoa, potatoes, etc., has a low market value, and as soaking in water softens it enough for consumption as is, it does not use much fuel for cooking. It is also highly cost effective for protein, second only to NFDM (see Table 1).

Wheat flour is ubiquitous because almost all consume bread or noodles, or some other food prepared from it. Most recipients use the flour to bake bread and often some soaked bulgur is added to the bread dough.

NFDM is a commodity highly cost effective for protein content (see Table 1). It is a useful addition to the diet even if it does not replace any usually purchased food item, thus conveying virtually no monetary value to the recipient.

Edible oil is not a nutritionally desirable nor a cost effective commodity in Bolivia. Nutritionally, it provides only energy, while it is true that fats are needed for a number of metabolic functions, such as absorption of fat-soluble vitamins, the Bolivian diet does not appear to lack fats. Oil is not cost effective to the recipients, its price not being too high, \$ 1.25/liter, or approximately double the price of a kilogram of cereal.

Food for Work

monthly household

Two rations are proposed here for FFW projects, one with three and the other with four commodities:

(1) 20 kg sf bulgur		(2) 20 kg sf bulgur
15 kg wheat flour		10 wheat flour
3 kg NFDM		3 kg NFDM
		2 l oil
\$ 6.93	cost/ration	\$ 7.58
135,490 kcal	energy content	134,970 kcal
6112 g	protein content	5587 g
\$ 19.5	monetary value to recipient	\$ 20.0
8.8	cost effectiveness: protein	7.3
2.8	" " monetary value	2.6
45	g protein/1000 kcal energy	41
\$ 316,197 (25%)	savings: ADRA	\$ 227,082 (18%)
\$ 349,016 (36%)	" FHI	\$ 291,296 (30%)
\$ 134,464 (26%)	" SNDC	\$ 98,584 (19%)

Option number one provides more protein and monetary value to the recipient than any of the rations on the current ABS at substantial savings (see Tables 6 and 7).

Maternal and Child Health

monthly household
Two rations are proposed here for MCH take-home projects: one with three and the other with four commodities

(1) 10 kg sf bulgur		(2) 9 kg sf bulgur
10 kg wheat flour		5 kg wheat flour
4 kg NFDM		4 kg NFDM
		1.5 oil
\$ 4.21	cost/ration	\$ 4.30
85,920 kcal	energy content	77,480 kcal
4216 g	protein content	3518 g
\$ 11.0	monetary value to recipient	\$ 8.8
8.3	cost effectiveness:protein	6.8
2.6	monetary value	2.0
49	<i>g</i> protein/1000 kcal energy	45
\$ 115,500 (28%)	savings: FHI	\$ 109,000 (26%)
\$ 96,800 (39%)	" ADRA	\$ 93,500 (58%)
\$ 206,460	losses: CRS	\$ 291,100

The proposed rations provide more protein and monetary value to the recipient than any of the currently-used rations (see Tables 6 and 7).

The difference in nutritional content and monetary value to the recipients between CRS and other voluntary agency MCH projects is large: CRS ration costs \$ 4.00 per month while ADRA's is \$ 6.9 (see Table 7), on the other hand, CRS has 26 times as many recipient households as ADRA (see Table 3).

The present CRS MCH rations are too small, both in terms of nutrient and monetary value. Considering the costs involved (contributions, transport, and opportunity cost) an MCH ration should provide an approximate monetary value of \$ 8-10 per household per month.

If the first option for the MCH ration is accepted, the savings from ADRA and FHI will make up the loss from CRS. Otherwise, some of the savings from FFW will have to be diverted to MCH.

General Relief

Two rations are proposed here for general relief, which are used either as take-home rations or as part of the diet at adult institutions.

(1)	6 kg sf bulgur		(2)	4 kg sf bulgur
	1 kg NFDM			1 kg NFDM
				0.5 l oil
	\$ 1.25	cost/ration		\$ 1.26
24,630 kcal		energy content		22,050 kcal
1398 g		protein content		1050 g
11.2		cost effectiveness, protein		8.3
56		g protein/1000 kcal energy		47
\$ 1,900 (29%)	Savings:	ADRA	\$ 1,900 (29%)	
\$ 11,100 (18%)	"	FHI	\$10,704 (17%)	
\$ 27,400	Losses:	CRS	\$29,200	

The savings from ADRA and FHI amount to approximately \$ 13,000, which leaves CRS still about \$ 15,000 short, this amount could be moved from savings accrued in FFW.

The above rations provide less energy than ADRA's expensive

ration, but Option 1 provides more energy than either CRS' or FHI's present rations (see Tables 6 and 7). Option 1 also provides more protein than any of the present rations and more cost effectively.

Given the relief and on-site feeding orientation of the program, the monetary value of such a ration to the recipient is irrelevant.

School Feeding

(1) 2 1/2 kg sf bulgur		(2) 1.5 kg sf bulgur
1 kg NFDM		1 kg NFDM
		0.5 l oil
\$ 0.58	cost/ration	\$ 0.59
12,380 kcal	energy content	9,101 kcal
792 g	protein content	618 g
13.6	cost effectiveness: protein	10.5
64	g protein/1000 kcal energy	68
\$ 47,100 (8%)	Savings: CRS	\$ 37,900 (7%)
\$ 10,800 (37%)	" ADRA	\$ 10,520 (36%)

CRS has almost 30 times as many recipients as ADRA at a much lower present cost per ration, \$ 0.63 as compared to \$ 0.92. To keep within the budget, this ration had to be kept small.

CRS presently distributes 1.5 kg NFDM per recipient, this is too much for 20 days; 1 kg NFDM provides 50 g per day per child, an adequate amount.

Some schools bake bread for the children, in that case wheat flour could be substituted for some of the sf bulgur. The cost will be approximately the same, the protein content will be reduced but it will still be adequate.

The first proposed ration provides more energy and protein than is available in either of the two present programs at substantial savings.

Preschool Feeding

There is only one Preschool Feeding project presently in Bolivia. The commodity ration of five commodities can easily be reduced to three or four, as illustrated below:

(1)	3 kg sf bulgur	(2)	3 kg sf bulgur
	2 kg wheat flour		1 kg wheat flour
	1.5 kg NFDM		1.5 kg NFDM
			0.5 l oil
\$ 1.11	cost/ration	\$ 1.31	
23,225 kcal	energy content	24,005 kcal	
1267 g	protein content	1,162 g	
11.4	cost effectiveness, protein	9.6	
55	g protein/1000 kcal energy	48	
\$ 19,680 (20%)	Savings, ADRA	\$ 5,280 (5%)	

These rations provide more energy and protein per day per recipient at considerable savings compared to the currently-used one. As PSF operates 25 days per month, the larger quantity of NFDM is justified.

Other Child Feeding

As these projects operate 30 days per month, a somewhat larger ration than PSF is called for. The following options are provided:

(1) 4 kg sf bulgur		(2) 3.5 kg sf bulgur
2 kg wheat flour		1 kg wheat flour
1.5 kg NFDM		1.5 kg NFDM
		0.5 l oil
\$ 1.30	cost/ration	\$ 1.41
26,725 kcal	energy content	25,755 kcal
1440 g	protein content	1,249 g
11.1	cost effectiveness: protein	8.9
54	g protein/1000 kcal energy	48
\$ 16,000 (12%)	Savings: FHI	\$ 6,100 (5%)
\$ 6,900 (6%)	" ADRA	
	Loss: ADRA	\$ 3,000

Both these rations provide more energy and protein and more cost effectively than the presently-used ones. If Option 2 is selected, the loss from ADRA's project would have to be made up from FHI's savings.

Summary

To achieve uniform rations within each program category, some amount of cost redistribution will have to take place. This results in larger budgets for CRS in MCH and SF projects and smaller budgets for the other agencies (see Table 8).

The proposed rations are not only uniform and can be distributed at considerable savings to the total program - 10.6 and 6.7 percent depending on the option - but provide greater nutritional benefits (see Table 6) and monetary value to the recipient, both more cost effectively (see Table 7).

RECOMMENDATIONS

- 0 Whether or not a program will provide the Title II food in the context of an on-site or take-home mode should be noted on the AER. This would enable calculations for nutritional appropriateness at FFP Washington.
- 0 FFW and MCH take-home rations should be considered as household ones, rather than as individuals plus dependents, unless a specific food item is added to be targeted at specific members of the household. Such rations are shared among family members, therefore they may be recognized as household rations, and their components selected accordingly.
- 0 Rations should be distributed as they are designated on the AER. Food aid rations are designed to achieve their stated purposes cost effectively, changing the quantities may interfere with the attainment of those objectives.
- 0 Funds should be reallocated as necessary because it is not possible to design uniform rations without more equitable distribution of available funds.
- 0 In a take-home project it is best to distribute the food monthly. When the agency is not able to do so temporarily, no more than one and a half times to twice the usual quantity should be distributed at any one time. When all the commodities do not arrive at the same time, it is best to distribute those that are available, without waiting for a complete ration.
- 0 Given that the three major commodities recommended to be used in this report are all imported into Bolivia, the local office

should be allowed to monetize a portion of it to support projects that will directly provide a health benefit to the recipients.

- 0 NFDM, an excellent and inexpensive protein source, should be programmed with care. This commodity, more than any other, has the potential to do harm, therefore information about its proper use must be provided to the agencies promoting it. This should be done worldwide.

- 0 NFDM should be added to FFW rations to compensate for the low nutrient density of the local diet. This will especially benefit the children in the FFW recipients' households.

- 0 Serious consideration should be given to deleting oil from all rations. Oil is neither a nutritionally desirable commodity in Bolivia nor does it convey monetary value to the recipients cost effectively. In no circumstances should this expensive commodity be programmed in quantities above usual purchase.

- 0 Lentils and peas, both commodities used for protein content without any economic value should be replaced by a more cost effective protein source such as NFDM or soy-fortified cereals, or both.

- 0 Given that food-aid recipients are not aware of basic nutrition education principles, nutrition education must be made a prime concern for all agencies involved in food-aid distribution.

- 0 Children's anthropometric measurements, while good tools for growth monitoring, should not be used as eligibility criteria for MCH participation or for the evaluation of such a program.

ABBREVIATIONS

ABS	-	Annual Budget Submission
ADRA	-	Adventist Development and Relief Agency
AER	-	Annual Estimate of Requirements
CRS	-	Catholic Relief Services
CSM	-	Corn - Soy - Milk
EEC	-	European Economic Community
FFP	-	Food for Peace
FFW	-	Food for Work
FHI	-	Food for the Hungry
g	-	gram
kcal	-	Kilocalories
Kg	-	Kilogram
l	-	liter
MCH	-	Maternal and Child Health
MOH	-	Ministry of Health
MT	-	Metric tons
NCHS	-	National Center for Health Statistics
NFDM	-	Non-fat dry milk
OCF	-	Other Child Feeding
ORS	-	Oral Rehydration Solution
PSF	-	Preschool Feeding
SF	-	School Feeding
sf	-	soy fortified
SNDC	-	Servicio Nacional de Desarrollo de la Comunidad (National Community Development Service)
UNICEF	-	United Nations Children's Fund
US	-	United States of America
WFP	-	World Food Programme
WHO	-	World Health Organization

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T A B L E 1

COMMODITY RANKING BY ENERGY AND PROTEIN
CONTENT AS PER ACQUISITION COSTS

<u>COMMODITY</u>	<u>COST*</u> (S/MT)	<u>E N E R G Y</u>			<u>P R O T E I N</u>		
		Content (Kcal/100g)	Cost Effec- tiveness	Cost Effec- tiveness ranking	Content (g/100 g)	Cost Effec- tiveness	Cost Effec- tiveness ranking
NFDM	110	363	33.0	1	35.9	32.0	1
Bulgur	188	354	1.8	4	9.3	4.9	7
Cornmeal	184	368	2.0	2	7.8	4.2	9
Wheat Flour	187	364	1.9	3	10.5	5.6	6
Oil	789	884	1.1	8	**	-	-
Rice	280	363	1.3	6	6.7	2.3	10
CSM	266	380	1.4	5	20.0	7.5	4
sf Oats	294	375	1.2	7	20.0	6.8	5
Lentils	525	340	0.6	10	24.7	4.7	8
Peas	310	340	1.0	9	24.7	7.9	3
sf bulgur	190	350	1.8	4	17.3	9.1	2

* FY 87 acquisition costs

** Oil does not contain any protein.

Source: FFP Commodities Reference Guide

TABLE 2

NUMERO DE ENTREVISTAS A REALIZAR EN AREAS
URBANAS Y RURALES, POR PROGRAMAS

<u>Programas</u>	<u>CARITAS</u>					
	<u>La Paz</u>		<u>Cochabamba</u>		<u>Trinidad</u>	
	<u>Urbano</u>	<u>Rural</u>	<u>Urbano</u>	<u>Rural</u>	<u>Urbano</u>	<u>Rural</u>
SMI	20	20	20	20	20	20
AE	-	10	-	5	-	5
	<u>F H I</u>					
SMI	10	15	-	-	-	-
APT	-	5	-	-	-	-
	<u>ADRA/OFASA</u>					
SMI	10	5	10	5	10	5
AON	5	-	5	5	5	5
APT	5	5	5	5	5	5
	<u>S N D C</u>					
APT	-	10	-	10	-	-

TABLE 3

COMMODITY TYPES AND QUANTITIES BY AGENCY
AND PROGRAM CATEGORY

AGENCY	RATION*	PROGRAM CATEGORY					
		MCH	SF	OCF	GEN REL	FFW	PSF
<u>CRS</u>							
	bulgur	9.0	1.5	-	3.0	-	-
	oil	1.5	0.25	-	0.5	-	-
	CSM	4.5	-	-	-	-	-
	NFDM	-	1.5	-	1.5	-	-
	Recip. No(x1000)**	78.4	115.0	-	15.0	-	-
	Cost (\$ x 1000)	3754.3	580.7	-	197.6	-	-
<u>FHI</u>							
	bulgur	4.0	-	1.2	1.5	7.5	-
	wheat flour	7.0	-	1.5	1.5	16.5	-
	NFDM	3.0	-	0.9	0.9	-	-
	peas	6.6	-	1.5	1.5	14.0	-
	oil	1.65	-	0.5	0.5	2.5	-
	Recip. No(x1000)**	6.0	-	7.5	3.3	7.4	-
	Cost (\$ x 1000)	418.6	-	133.0	60.6	964.4	-
<u>ADRA</u>							
	bulgur	7.5	1.0	1.5	2.5	10.0	1.5
	wheat flour	7.5	1.0	1.5	3.5	14.0	1.5
	NFDM	4.5	0.6	0.9	0.9	-	0.9
	peas	5.0	0.6	1.0	1.0	10.0	1.0
	oil	2.5	0.35	0.5	0.5	2.0	0.5
	Recip. No(x1000)**	3.0	4.0	7.5	0.3	11.4	6.0
	Cost (\$ x 1000)	248.3	29.4	123.9	6.4	1266.3	99.6
<u>SNDC</u>							
	wheat flour	-	-	-	-	28.0	-
	cornmeal	-	-	-	-	5.5	-
	oats	-	-	-	-	5.5	-
	NFDM	-	-	-	-	5.5	-
	oil	-	-	-	-	5.5	-
	Recip. No(x1000)**	-	-	-	-	4.6	-
	Cost (\$ x 1000)	-	-	-	-	517.0	-

* in Kg or l, quantities rounded

** per household in MCH and FFW

Sources: FY86 AER, FY87 ABS, Agency Program Plans.

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TABLE 4

PROPOSED RATIONS FOR FY 87 VOLAG PROGRAMS

	110'		187'		184'		294'		789'		TOTAL		No. of CALORIES	Gms. of PROTEIN
	Gm/d	Kg/m	Gm/d	Kg/m										
MCH	30	.9	66.6	2.0	50	1.5	--	---	15	.45	161.6	4.85	663	20.8
PSF	30	.9	66.6	2.0	50	1.5	--	---	15	.45	161.6	4.85	663	20.8
OSF	30	.9	66.6	2.0	50	1.5	--	---	15	.45	161.6	4.85	663	20.8
SF	30	.6	66.5	1.3	--	---	20	.4	6.5	.13	123.5	2.46	482	20.8
FFW	30	.9	66.6	5.0	66.6	2.0	--	---	15	.45	278.2	8.35	1083	31.1
GEN REL	30	.9	66.6	2.0	50	1.5	--	---	15	.45	161.6	4.85	663	20.8

January 31, 1986

TABLE 5

MONETARY VALUE OF TITLE II COMMODITIES

Commodity	Value to Recipient* (US \$/Kg)	Market Value* (US \$/Kg)
Wheat Flour	0.5	0.4 - 0.88**
Bulgur	0.6***	
C S M	0.6***	
Oats	0.6***	0.6 - 1.1
Cornmeal	0.6***	0.5 - 0.8
Peas	0.6***	
Lentils	0.6***	1.0 - 1.7
N F D M	-	0.55 - 3.2
Oil	1.25****	0.90 - 2.0

* US\$ = 2 Million \$b.

** US Wheat Flour is valued at less than other wheat flours

*** All cereals (except wheat flour) are presumed to replace some mixture of rice, noodles or other native cereals, therefore their value to the recipient are the same as the cost of those items. Peas and lentils are presumed to replace cereals also .

**** Recipients are just as likely to purchase lard (\$1.5 Kg.) therefore the oil may have a higher value to the recipient than its market price.

Source: Data collected on site.

TABLE 6

DAILY ENERGY (kcal) AND PROTEIN (g) CONTENT OF MONTHLY
RATIONS BY AGENCY AND PROGRAM CATEGORY

AGENCY		PROGRAM CATEGORY					
		MCH	SF	OCF	GEN REL	FFW	PSF
<u>CRS</u>	energy	2043	549	-	682	-	-
	protein	56.4	33.9	-	27.2	-	-
<u>FHI</u>	energy	2884	-	746	785	5205	-
	protein	126.0	-	35.2	32.8	195.5	-
<u>ADRA</u>	energy	3640	583	728	1088	4592	874
	protein	143.5	28.0	28.7	38.8	161.6	35
<u>SNDC</u>	energy	-	-	-	-	7038	-
	protein	-	-	-	-	215	-
<u>Proposed 1</u>	energy	2864	619	891	821	4516	929
	protein	140.5	40	48	47	203.7	51
<u>Proposed 2</u>	energy	2583	455	859	735	4499	960
	protein	117.3	31	42	35	186.2	46

Sources: AER FY 86, ABS FY 87, Commodities Reference Guide.

TABLE 7

COSTS AND VALUES (US\$) PER MONTHLY RATION
BY PROGRAM CATEGORY AND AGENCY

AGENCY	PROGRAM CATEGORY					
	MCH	SF	OCF	GEN REL	FFW	PSF
<u>CRS</u>						
Cost/ration	4.0	0.63	-	1.1	-	-
Cost/Kg	0.30	0.21	-	0.25	-	-
Monetary value to recip.	5.9	-	-	-	-	-
<u>Cost effectiveness: prot.</u>	4.2	10.7	-	7.6	-	-
" ; monetary value	1.5	-	-	-	-	-
<u>FHI</u>						
Cost/ration	5.8	-	1.5	1.5	10.85	-
Cost/Kg.	0.25	-	0.26	0.26	0.27	-
Monetary value to recip.	7.0	-	-	-	13.7	-
<u>Cost effectiveness: prot.</u>	6.5	-	6.8	6.6	5.4	-
" ; monetary value	1.2	-	-	-	1.3	-
<u>ADRA</u>						
Cost/ration	6.9	0.92	1.3	1.8	9.20	1.4
Cost/Kg.	0.25	0.26	0.25	0.24	0.26	0.25
Monetary value to recip.	8.7	-	-	-	12.0	-
<u>Cost effectiveness: prot.</u>	6.2	6.1	6.5	6.5	5.3	6.25
" ; monetary value	1.3	-	-	-	1.3	-
<u>SNDC</u>						
Cost/ration	-	-	-	-	12.80	-
Cost/Kg.	-	-	-	-	0.26	-
Monetary value to recip.	-	-	-	-	17.2	-
<u>Cost effectiveness: prot.</u>	-	-	-	-	5.0	-
" ; monetary value	-	-	-	-	1.3	-
<u>Proposed 1</u>						
Cost/ration	4.21	0.58	1.3	1.25	6.93	1.11
Cost/Kg.	0.17	0.17	0.17	0.18	0.18	0.17
Monetary value to recip.	11.0	-	-	-	19.5	-
<u>Cost effectiveness: prot.</u>	8.3	13.6	11.1	11.2	8.8	11.4
" ; monetary value	2.6	-	-	-	2.8	-
<u>Proposed 2</u>						
Cost/ration	4.30	0.59	1.4	1.26	7.58	1.31
Cost/Kg.	0.22	0.21	0.22	0.23	0.21	0.22
Monetary value to recip.	8.8	-	-	-	20.0	-
<u>Cost effectiveness: prot.</u>	6.8	10.5	8.9	8.3	7.3	9.6
" ; monetary value	2.0	-	-	-	2.6	-

Sources: AER FY 86, ABS FY 87, Commodities Reference Guide.

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TABLE 8

PROPOSED SAVING TO THE TITLE II PROGRAM

<u>Program Category</u> <u>and Agency</u>		<u>Costs (US\$ X 1000)</u>		
		<u>Present</u>	<u>Option 1</u>	<u>Option 2</u>
MCH	- CRS	3,754.3	3,960.7	4,045.4
	FHI	418.6	303.1	309.6
	ADRA	248.3	151.6	154.8
FFW	- FHI	964.4	615.4	673.1
	ADRA	1,266.3	950.1	1,039.2
	SNDC	517.0	382.5	418.4
GEN REL	- CRS	197.6	225.0	226.8
	FHI	60.6	49.5	49.9
	ADRA	6.4	4.5	4.5
SF	- CRS	580.7	533.6	542.8
	ADRA	29.4	18.6	18.9
PSF	- ADRA	99.6	79.9	94.3
OCF	- FHI	133.0	117.0	126.9
	ADRA	<u>123.9</u>	<u>117.0</u>	<u>126.9</u>
	TOTAL	8,400.1	7,508.5	7,831.5
	SAVINGS		10.6%	6.7%