

Women and Infant Nutrition Field Support Project (WINS)

**Joint WINS/SUSTAIN Assessment of the
Potential for Manufacturing and Marketing
of a Low Cost Weaning Food
in Nigeria**

October 12 to November 2, 1991

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INTRODUCTION

A four member team representing the Women and Infant Nutrition Field Support (WINS) and Sharing U.S. Technology to Aid in the Improvement of Nutrition (SUSTAIN) projects of the U.S. Agency for International Development (USAID) Office of Nutrition visited Nigeria at the invitation of the National Committee on Food and Nutrition (NCFN) between October 17-24, 1991. According to goals set forth in the NCFN workplan, the team members and their NCFN and FIRO counterparts visited and assessed the following four manufacturers who would potentially be able and interested in producing low cost weaning foods: JHY Foods, Temitope Bakery and Catering Services, Lisabi Mills, and Domino Stores. A planned trip to manufacturers in Kano was not made due to difficulties with the flight schedule. The following is a draft report of the findings and recommendations of the visiting team.

FINDINGS

Sufficient data are available to demonstrate need for a low cost weaning food in N'geria. Numerous studies have shown that over-reliance on the popular low cost unfortified maize or sorghum gruels (ogi/akamu/koko) is implicated in relatively high rates of malnutrition at the weaning age, and moreover that these rates have increased under the stress of structural adjustment. Up to the present, high quality weaning foods are on the market and are purchased by the poor but are unaffordable in the quantities needed to prevent malnutrition. There are several product strategies possible for execution of nutritionally adequate products.

Infrastructure is available (advertising agencies, distribution facilities, salespeople, promotions, etc.) that would allow a manufacturer to execute a tailor-made program for successful launch of a new product. The key need is for private sector initiatives in this market segment.

There are expressions of interest on the part of several Nigerian manufacturers in exploring this potential market. Some of these manufacturers have or would be able to acquire the manufacturing and marketing capabilities to service the market. However, the team believes that each of the manufacturers reviewed faces hurdles. These include the cost of reformulating products, revising processes, obtaining equipment, devising low-cost packaging, developing market strategy, and design and execution of effective advertising and promotion.

Product Goals: The criteria used to define a low cost weaning food are proposed to be: (1) nutritional content meets internationally recognized standards for weaning food; (2) retail market price not more than half of the market price of available upscale market weaning foods. This price level would make the product available to at-risk populations in Nigeria, who currently purchase unfortified ogi at about a third the cost of the expensive products, on a per calorie basis; (3) nutrient density as commonly consumed is greater than 50 kcal/100 ml.

Barriers: Barriers to the successful marketing of a low cost weaning food are severe. Costs and pricing factors are particularly troubling:

- (1) Inherent cost of key components, particularly fat, protein of suitable amino acid composition for babies and micronutrients is significant.
- (2) Packaging cost is of overriding importance, with metal cans and plastic containers providing best product protection. Plastic pouches and cellophane bags can be much cheaper than cans but still are of significant cost especially in smaller unit packaging which would be useful to keep total retail unit price at a low level.
- (3) Luxury-level product brands, and their associated printed-can packaging, are well recognized by consumers at even the lowest income levels. Without an established market position, a lower cost product in lower cost packaging might tend not to be accepted at any price because of the lack of any quality image that could be associated with such a product.

There is a fundamental handicap facing a firm trying to enter a low-cost weaning food market in establishing the necessary quality image. This is an arena in which an agency such as NCFN could be of assistance.

RECOMMENDATIONS

Since much is known about weaning foods in Nigeria, no useful purpose would be served by delaying the start of manufacture of a low cost weaning food by private sector firms in order to conduct additional research. A benchmark survey for nutritional evaluation could be planned to take place during the start-up period, together with additional research needed specifically for the design of the product and its promotion and distribution.

NCFN and FIIRO can play a useful role in encouraging a set of business conditions that promotes private sector firm activity in this market segment.

Approaches to Weaning Food Development: Two types of weaning foods should be considered for technical assistance. The first is the soy-ogi type, which is a fortified version of the fermented maize or sorghum pap, which is the baby food of preference not only in Nigeria but through most of Subsaharan Africa.

The second is a biscuit powder approach, deriving from biscuit formulation which were at the origin of manufactured baby foods, and having advantages of low cost manufacture, taste familiarity to babies, and ease of producing an instant nutrient-dense product that would not be over-diluted. This product, which was successfully produced and marketed in Zaire, is baked in a biscuit machine and crushed before packaging.

NCFN Actions: It is recommended that NCFN remain actively involved in any baby food venture, which would be carried out as a part of the existing NCFN workplan. NCFN has already identified the technical experts group for a weaning foods assistance project.

NCFN should establish an easily recognizable symbol of approval for weaning foods. This symbol should be available to any product meeting the international standards, that would not be used as a breastmilk substitute or diluted to unacceptable nutrient density. The symbol should be promoted and advertised in such a way that low-cost weaning foods would not be burdened with the marketing expense of gaining consumer confidence in products so identified.

USAID Participation: USAID assistance should be provided under a variety of mechanisms of which the WINS and SUSTAIN Projects already are available. USAID should also provide assistance to the NCFN directly for this aspect of its workplan.

Potential role for WINS: WINS assistance could be given in: (1) rapid survey assessment and benchmark data collection, (2) nutritional evaluation, (3) nutritional formulation of products, (4) organization and training of market vendors as nutrition sales agents, and (5) other social marketing activities. This assistance would be provided on a relatively long-term project basis, primarily indirectly through support to local public sector technical assistance agencies and research institutions, such as institutes, universities, and NGOs. By NCFN agreement, WINS technical assistance to the soy-ogi type of food would be provided on subcontract through FIIRO to a firm already licensed through FIIRO to produce soy-ogi and should include back-up resources in technical trouble-shooting during the start-up phase, nutritional formulation, and social marketing. Assistance to the biscuit-powder type of food would be provided under an existing WINS-Tufts University subcontract, through an extension of existing subcontractual research arrangements between the Tufts University School of Nutrition and the Sociology Department of the University of Lagos (UNILAG). FIIRO would provide a technical monitoring service as well as technical consultants to the UNILAG Project, while UNILAG would provide sociological expertise to the Soy-ogi Project. WINS should also assist in funding NCFN activities in the quality recognition effort and in sourcing recent research information.

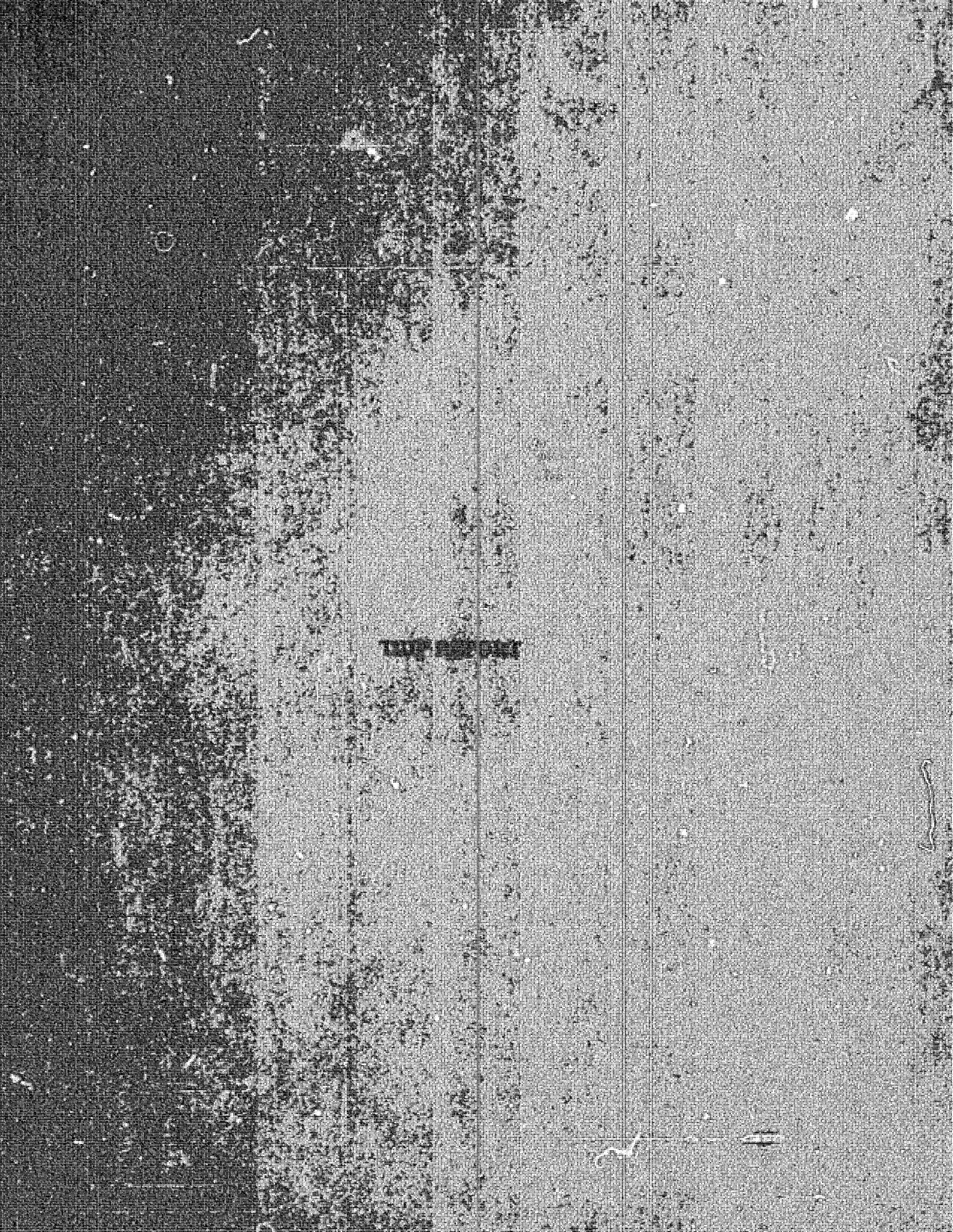
Potential Role for Sustain: SUSTAIN would provide short-term one-on-one assistance from the U.S. private sector directly to local private sector firms. Technical assistance from Project SUSTAIN could potentially hasten the completion of one or more product/marketing efforts by candidate companies. However, the structuring of such assistance requires careful consideration: (1) services of SUSTAIN consultants should be sought by the private sector firms involved; (2) there must be a mechanism for assuring that the product/marketing effort meets the criteria of low-cost and nutritional adequacy; (3) consulting assistance available through Project SUSTAIN should not harm indigenous efforts to provide such services in either the private or the public sector. It is also possible that SUSTAIN could provide private sector advertising/promotion expertise to the quality recognition effort.

The following describes possible mechanisms for the provision of assistance to appropriate private sector firms.

NCFN should encourage the development and marketing of a range of competing products and approaches.

Private firms would apply to NCFN for expert assistance from SUSTAIN in the development and marketing phases.

NCFN would carry such requests to USAID and be reimbursed actual costs for processing. NCFN may recommend against supplying SUSTAIN inputs on the basis that appropriate assistance is available from FIIRO, UNILAG, or other indigenous sources. NCFN could screen requests as appropriate for SUSTAIN or for WINS.



**Trip Report from a Joint WINS/SUSTAIN Assessment
of the Potential for Manufacturing and Marketing of a Low Cost
Weaning Food in Nigeria and for WINS Follow-up Activities**

by

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A. EXECUTIVE SUMMARY

Representatives of the Women and Infant Nutrition Field Support (WINS) and Sharing U.S. Technology to Aid in the Improvement of Nutrition (SUSTAIN) Projects of the U.S. Agency for International Development (AID) Office of Nutrition carried out assessment activities with the Nigerian National Committee on Food and Nutrition (NCFN), Ministry of Science and Technology (M.O.S.T.), between October 12 and November 3, 1991.

This assessment identified strong potential for the development of a low cost commercial weaning food in Nigeria and identified local manufacturers in the greater Lagos area appropriate to initiate such a venture. Two types of weaning food are recommended, a soy enriched version of the traditional maize/sorghum weaning pap, called soy-ogi, and an instant crushed biscuit product in very small packets also enriched with soy and bean flours. Traditional pap sellers, who vend raw pap in the form of a wet flour from door-to-door at dawn, expressed interest in selling soy-ogi after it had established a market image. Market stall vendors of biscuits and snacks, who sell convenience foods throughout the day, thought the crushed biscuit packets would sell well, with initial promotion.

The biscuit manufacturer who wishes to produce the crushed biscuit weaning food already has created sample packets, has presented WINS with a business plan, and offers to repay assistance received in weaning food for use by clinics or hospitals. This manufacturer's popular biscuit line has the lowest per calorie cost on the market. Soy-ogi was formulated by the Federal Institute of Industrial Research (FIRO) and is scheduled for launch as a medium cost product in a high status tin by a local manufacturer in March 1992. After establishing a prestige image, this company is interested in low cost bulk sales to vendors.

Following a strategic business planning exercise, two phases of technical assistance might be provided: the first to complete the nutrient formulation and product testing of the biscuit product; and the second for assessment, marketing, and vendor training for both products, which would sell as very different types of foods for babies.

B. OBJECTIVES

Between October 12 and November 3, I served as the WINS team leader of a two part assignment in Nigeria. The first part of this assignment, which lasted through October 24, was to coordinate a joint WINS/SUSTAIN assessment of local manufacturers of weaning foods and related children's snack foods, to be conducted with the NCFN. The second part, which took place between October 25 and November 2, was to work with Dr. Amy Sampson, in collecting background information for the preparation of a potential WINS follow-on proposal. The SUSTAIN team consisted of team leader Don Maxwell, a food technologist with his own small company in Minneapolis providing assistance to industry, and Jack Sinunu, who was retired from work in international sales for Campbell Soup. Dr. Amy Sampson, who has been conducting nutritional program evaluation research for industry at Tufts, and I represented WINS.

This report synthesizes activities carried out in completion of both parts of my scope of work (SOW). It is not intended to replace the joint technical report of the assessment visit, which is presented in Section I. Given the assessment process, the joint draft report, which was completed with our Nigerian counterparts and represents their points of view, should not be ignored in future communications with Nigeria, as it was officially reviewed, edited and approved by the NCFN, discussed in an open forum attended by food manufacturers and by official representatives from UNICEF and WHO, and presented to USAID, Nigeria on October 24 before the departure of the SUSTAIN team.

The purposes of the joint WINS/SUSTAIN visit were to:

1. Assess the potential for the local manufacturing and marketing of a low cost weaning food, in order to:
2. Facilitate private sector involvement in optimal infant and young child feeding through the production of a low cost weaning food.
3. Fill information gaps identified by the joint World Bank, UNICEF, and A.I.D. Mission to Nigeria on Nutrition and Food Security (May 5-28, 1991) and
4. Support objective IV.1 of the work program of the NCFN. This objective is to assess the potential nutrition impact and commercial viability of low cost weaning foods (soy-ogi and eko ilera).

Specific objectives of the WINS/SUSTAIN mission were to assess the current capabilities and willingness of local manufacturers to produce a low cost weaning food, as well as the potential feasibility of converting their present operations to produce an acceptable and affordable food (see SOW in Annex I). The specific points covered in fulfillment of these objectives are shown in the following checklist:

- a. Firm structure (J. Sinunu): ownership, management, business focus, market trends/history
- b. Product Characteristics (M. Zeitlin & A. Sampson): type of product, positioning/market focus, nutrients/formulation, home preparation & storage, taste - acceptability cost/nutrient analyses, project nutritional impact
- c. Raw Materials (D. Maxwell): ingredient sources, seasonality, price & price stability, transport, storage, packaging materials, packaging materials sources
- d. Manufacturing (D. Maxwell) process: process equipment, equipment condition, production capacity, capacity utilization, packaging equipment, packaging equipment condition, capacity/utilization, power/water supplies
- e. Sales/Distribution (from firm perspective: J. Sinunu and A. Sampson; from vendor perspective: A. Sampson and M. Zeitlin): description of market structure, wholesale/retail, transport, subsidized outlets, vendor training/education, wholesale/retail pricing
- f. Promotion/Advertising (from firm perspective: J. Sinunu and A. Sampson; from vendor perspective: A. Sampson and M. Zeitlin): market research, mass media, packaging, point of purchase, nutrition education/social marketing

An additional objective of the SOW included the assessment of the needs, capabilities and constraints of the traditional vendors of "pap," who prepare this food in their homes and vend it door-to-door, and the identification of strategies for the continued involvement of these vendors in weaning food production and marketing.

C. ACTIVITIES

Before the arrival of the SUSTAIN team on October 17, I discussed the schedule of the assessment activities with the in-country members of the assessment team. At USAID, Program Officer Rudolf Thomas represented the A.A.O. Gene Chiavaroli, who was on leave. Dr. Clu Ogunye and Professor Tola Atinmo, head and chairman of the NCFN, respectively, drew up the official agenda for the assessment (Annex II). Mrs. C. Kupoluyi and Dr. Oluwole Olatunji of the Federal Institute of Industrial Research, Oshodi (FIIRO) arranged visits with the manufacturers who had been identified during a preliminary WINS assessment carried out in August/September. Other participants included Dr. F.A.O. Osinowo of FIIRO, the NCFN designated NCFN member responsible for commercial weaning food development, Dr. Nike Grange, NCFN member responsible for the development of a weaning pap enriched with bean flour and palm oil, called "eko ilera", pediatric nutrition specialist at the University of Lagos (UNILAG), and head of the Nigerian Pediatric Association, Dr. Tade Akin Aina, professor of sociology at UNILAG and in-country director of the Tufts-UNICEF Nutrition Project and Dr.

Omololu Soyombo, and Kehinde Taiwo, faculty members in sociology. Dr. Nimal Hettiaratchy, Food Security Officer of UNICEF, and Dr. Mrs. Omojokun, of the Nutrition Section, Primary Health Care Division, Ministry of Health and a number of food industry representatives were formally invited to discuss the findings of the assessment.

October 18 I briefed the newly arrived WINS/SUSTAIN team members, after which we met with our NCFN collaborators. Mr. Thomas briefed the entire assessment team on USAID's development programs and priorities.

The remaining period was spent visiting the manufacturers in the Lagos area and discussing with relevant representatives from the private and public sectors. Our trip to Kano never materialized because of problems encountered at the Lagos domestic airport. The manufacturers we visited are listed in Annex II. While summary assessments of these manufacturers are given in the Principal Findings section below, information regarding their operations was judged to be proprietary and confidential. It can be made available upon request to appropriate individuals.

October 23, I synthesized the report of the assessment from the contributions of the other team members, according to scenarios tested out with Professor Atinmo of the NCFN. Atinmo and I were concerned to suggest avenues by which Nigeria might continue to benefit both from WINS and SUSTAIN. For WINS, we suggested continuing to explore a follow-on project. For SUSTAIN we suggested a somewhat piecemeal approach of having SUSTAIN brochures made available to Nigerian companies through the NCFN, which would screen requests for short-term assistance. We did not propose that SUSTAIN's short-term, one-time inputs be integrated with WINS longer term strategies into the same weaning-food development project, because we didn't feel we had the authority to make such a recommendation.

October 24, the day of the SUSTAIN team's departure, we first presented the draft of the joint report to the NCFN and wrote in the changes they suggested. The findings of the assessment were then presented to the representatives from UNICEF, WHO, UNILAG, JHY foods, a local donut company, and others from the M.O.S.T and the M.O.H. At this meeting other topics such as subsidies through the health services and community-based activities came up for discussion.

Later on the same day we met with Mr. Thomas, for a presentation of the draft report of the assessment and the SUSTAIN team's debriefing. During the meeting, Mr. Thomas, "did not think that the 'Potential Role for Project SUSTAIN,' as stated in terms of the provision of short-term technical assistance in isolation, would be sufficient to enable a company to profitably produce a new product. With respect to the 'Potential Role for WINS,' Mr. Thomas requested that we narrow our focus to the two or three companies that had the best prospects for success and that we prepare a succinct one page statement of a potential project plan, backed by appropriate supporting documents, in order to enable the Mission to determine whether this project merits further investigation." While opening the door to further project development by WINS, this response highlighted the need to continue to think about an appropriate role for SUSTAIN.

On the following day, I clarified with Rudy Thomas the types of additional information that would be needed if the Mission were to consider funding a proposal from WINS, in order to help us identify the various parts of our WINS scope of work to the Mission's priorities. I subsequently consulted with Bibi Essama by phone on Mr. Thomas's advice and the potential for WINS to fund such activities.

Between October 26 and November 1, Amy Sampson and I worked with participants from the NCFN, UNILAG and FPRO on the pap-makers' assessment and to obtain information regarding the various scenarios in which future work might be conducted with the three manufacturers, who had been identified in the draft report, namely Domino Stores, Temitope Bakery and Catering Services, and JHY Foods.

In order to ensure that every aspect eventually needed for a project proposal would be covered in sufficient detail, we used a proposal format for organizing our information. We proceeded in this manner because of the high cost and extreme difficulty of communications between Nigeria and the U.S.

D. PRINCIPAL FINDINGS AND RECOMMENDATIONS

1. The findings of the assessment of manufacturers in the greater Lagos area are as follows:
 - a. JHY Foods Limited: This company could attach a weaning food production to its current factory producing low cost corn snacks. The managing director, Chief Julius Adeluyi, who is head of the Nigerian Pharmaceutical Association and of the Nigerian American Chamber of Commerce, owns a chain of rural pharmacies which might also serve as an outlet for the food. An attorney with many interests, he should not be excluded from further dialogue.
 - b. Temitope Bakery and Catering Services, Ltd: We view this company, located about 100 km North of Lagos, as most likely to succeed. The biscuits they now produce are the least expensive on the market. They are purchased by the same clientele and have about the same per calorie cost as the pap/ogi weaning food of the poor. The managing director, Timothy Ogunyanwo, started earlier to develop a weaning food with a nutritionist from the University of Ibadan, but put the project on hold when the company was faced with the ban on wheat flour and other hardships of structural adjustment. During our stay he used his existing equipment during the idle midnight to 8 a.m. shift in the bakery, to produce samples of a near-acceptable cellophane packaged two serving instant weaning food (using biscuit dough enriched with soy and bean flours). He has sent us his own business plan and he proposes to pay back any financial assistance received in the form of free or subsidized food to hospitals or health centers.

- c. C.N.: LISABI MILLS (Nig.) Ltd.: Dr. J.K. Ladipo, the managing director, who gets SUSTAIN Notes, has a Ph.D. in Food Science from Cornell, and runs a highly professional automated operation with new top of the line equipment. The SUSTAIN team thought he was our best prospect. The WINS team and the NCFN members understood Dr. Ladipo to say that he was not interested. About 1980, he tried selling traditional pap in powdered form in a tin in supermarkets and discontinued it because it didn't sell in the worsening economy, as it was much more expensive than the pap made at home by the vendors.
 - d. Domino Stores, Ltd.: Domino obtained a license from FIIRO to produce soy-ogi in 1987. They now plan to launch it in medium priced high status tins under the name "Mamajoy" in March. They are interested in low cost bulk sales after they have established the status of this product at the high end. Because Nigerians have strong cultural allegiance to ogi (pap), and because FIIRO developed this food and is committed to it, we believe it is important to upgrade pap, working through Domino.
2. The findings of focus groups and interviews with vendors revealed three distinct vendor types: traditional ogi vendors; market vendors of expensive high status baby products; and market vendors of biscuits, snacks and sweets.
- a. Traditional pap/ogi vendors make this food at home and vend it from door to door in the very early morning. They were aware that traditional ogi is not nutritious but said they have no better alternative to feed their children. If a profit could be made, they would be interested in selling Mamajoy soy-ogi, which would have to be provided initially on credit or in free samples. It was their opinion that, because of the higher price of soy-ogi, Mamajoy would first have to establish an image in the prestige market before it would sell well in the low income market.
 - b. Vendors of high end baby products, including infant formula, and expensive baby cereals such as Bambeena (Glaxo) and Nutrend (Nestle) have stalls in certain sections of the markets. They would sell a soy-ogi product, such as Mamajoy, if it were packaged in impressive metal tins or plastic screw off jars. They stressed that the packaging of a new baby food would have to be as sophisticated as that of existing products. After the product was established, they might sell inexpensive refill packs for the tins or jars. They were not interested in selling an inexpensive single-serving weaning product.
 - c. Vendors of biscuits, sweets and snacks can be found almost everywhere catering to the general public. They felt that with aggressive advertising, they would be quite successful selling a small packets of low-cost crushed biscuit weaning food. In fact one vendor said that the makers of "family biscuits" had produced a baby food similar to what is now proposed which sold well but is no longer available. They also felt that they would need to initially have sample products on credit. They were sensitive to the fact that many low-income women cannot afford to purchase the more expensive imported baby foods.

They said the product would have to be marketed simply as a nutritious locally produced item, not as a low cost alternative to imported brands.

3. It would be appropriate to initiate an AID assisted commercial weaning food project at this time. Several of the firms visited probably have the capacity to produce a low-cost commercial weaning food, and there appears to be a profitable market niche for such a food. The reason this niche is empty may be that the manufacturers of expensive baby foods are content with their current high profit margins in small markets, which they view as easier to manage than low profit margins in mass markets, which characterize low cost baby foods. Neighboring Benin, with living conditions and cultures similar to Nigeria, already has an inexpensive cellophane-packaged cereal and legume weaning food. Team members judged it likely that as soon as one Nigerian firm brings out such a food, others will follow suit.

Indications that the time is right are that two of the three manufacturers that WINS identified as potential partners already are on the brink of production. Domino Stores is scheduled to produce Mamajoy soy-ogi in February, as a moderately-priced high status tinned product, with an interest in bulk distribution through low cost vendor sales as a possible later stage. Temitope biscuit manufacturers have carried out experimental test production of a nutrient-dense (36% calories from fat and 15% from soy and bean protein), low cost crushed biscuit food baby food and are seriously considering starting operations without waiting for USAID assistance.

4. Since much is known about weaning foods in Nigeria, no useful purpose would be served by delaying the formulation and product testing of a low cost weaning food in order to conduct additional preliminary research. A benchmark survey for nutritional evaluation could be planned to take place during the start-up of mass production, together with additional research needed for the promotion and distribution of the product.
5. The two types of weaning foods which should be considered for technical assistance correspond to those currently in the pipeline at Domino Stores and Temitope. The first is the soy-ogi type, which is a fortified version of the fermented maize or sorghum pap, which is the baby food of preference through much of Subsaharan Africa. The second crushed biscuit approach has advantages of using existing biscuit ovens and grinders, taste familiarity to babies, and ease of producing an instant nutrient-dense product that does not expand in bulk when prepared with water. Soy-ogi, like the staple nutrient-poor pap, lends itself to overdilution for bottle-feeding or force-feeding, and in its present formulation has only 17% of calories from fat (the percentage dropped when they added sugar to presweeten the product).
6. Two phase of technical assistance are needed. The first consists of small-scale assistance to product development, with respect to nutritional formulation and basic product testing. This phase applies only to the crushed biscuit-type of food, as Domino Stores is not willing to improve the formulation of soy-ogi at this time, because they are so close to

launching Mamajoy. However, they are enthusiastic about formulation assistance down the line at the "new improved" stage" of product development. Working closely with Temitope or JHY Foods, this first design and quality assurance phase would bring the instant crushed biscuit/snack type of food to the point of production. The second staging and roll-out phase would include the larger tasks of assessment, market development, and evaluation.

We believe it is important to sequence these phases, because there is no need to engage large numbers of staff for research and promotion before the product and production processes are ready for large scale distribution.

We also believe that the phases could be funded incrementally. If the first phase is well-done, the Nigerian manufacturer probably could launch the product themselves, if for any reason the funds for the second phase were unavailable. Moreover, an inexpensive second phase, limited to vendor training and promotion would be sufficient, at a minimum, to benefit the target group who need this product.

7. Two types of assistance are needed to insure that the products improve the nutrition of the poor. The particular concern for phase 1 is nutritional formulation, where the provision of sufficient micronutrients and calories from fat and legumes will compete with the desire to increase shelf-life, reduce production costs and maximize profits. For phase 2 marketing, a particular concern will be how to popularize an inexpensively packaged product so that it can compete with the high status products that currently spend about a third of their product cost on glossy high-tech tins. Creative approaches to marketing through biscuit vendors, ogi vendors and health centers, and a NCFN logo or seal of approval may be needed.
8. Criteria used to define a nutritious low cost weaning food should be defined and an official seal of approval designed by the NCFN for products that meet these criteria. The following criteria were tentatively agreed upon: (1) nutritional content meets internationally recognized standards for weaning food; (2) retail market price not more than half of the market price of available upscale market weaning foods. This price level would make the product available to at-risk populations in Nigeria, who currently purchase unfortified ogi at about a third the cost of the expensive products, on a per calorie basis; (3) nutrient density as commonly consumed is greater than 50 kcal/100 ml.
9. Regarding the roles of the NCFN and other Nigerian institutions in a commercial weaning food project, the following points were discussed and agreed upon in principle. As a coordinating and policy-making body, the NCFN is expected to undertake small projects related to the formulation of policy, such as the creation of a seal of approval for low-cost weaning foods. An organization such as the NCFN would not normally be the implementing agency for a large field program, such as the training of market vendors to promote a low cost weaning food. While project funds, by definition, would not be available for unrestricted support to the NCFN, meetings of NCFN members

could be built into a budget for technical advisory group meetings monitoring the development of a weaning food. In fact, the NCFN has already identified the technical experts group for such a weaning foods assistance project.

In the present climate of structural adjustment and the promotion of privatization, a parastatal organization such as FIIRO could not be funded either directly, or indirectly through a holding company, to produce and market a weaning food. Soy-ogi, for example, has been in pilot production for 15 years through FIIRO. After playing out the idea that a subcontract for assistance to Domino could be run through FIIRO, we also rejected this possibility because of bureaucratic barriers to the speed at which WINS must operate in order to succeed within the USAID funding cycle. A technical assistance project in food technology should nevertheless benefit FIIRO. FIIRO members could be the recipients of program benefits such as study fellowships in the area of food technology, for example, if these were available.

The University of Lagos (UNILAG) could serve as an implementing institution for the research and training required to launch and evaluate a commercial low cost weaning food. NCFN members, such as Dr. Osinowo, and employees of other institutions, such as Dr. Osinowo and Dr. Olatunji of FIIRO, could perform their tasks on a consultant basis through UNILAG. UNILAG is now finishing a comparable four year nutrition field project funded by UNICEF through a subcontract to Tufts University. The results of this previous project demonstrate the institutional capacity of UNILAG to conduct the assessment, vendor training and evaluation aspects of the new project.

10. Although we did not succeed in visiting Kano on this trip, we recommend extending assistance to manufacturers in the North as soon as a successful food has been launched in the South. We view it as too ambitious to attempt start-up activities in both the North and the South simultaneously, however, and we see numerous reasons why the Lagos area is the most appropriate location in Nigeria to start such a project. These include an urban concentration estimated at 10 million in greater Lagos, with another large connected urban market located immediately to the North in Ibadan, the universal practice of purchasing weaning food, and the fact that most mothers of weaning aged infants in low income urban areas of South Western Nigeria are themselves petty vendors, who could benefit from selling as well as from buying the weaning product.

E. NEXT STEPS

In order to determine how to proceed with this project, the following steps are recommended:

1. Convene a meeting at the AID Africa Bureau, at which the background information for the design of a proposal would be formally presented to Washington agency personnel

interested in this project. Such a meeting could take place between January 7-21. This meeting should consider:

- the low cost commercial weaning food project concept as developed by WINS and the NCFN.
 - potential sources of funding for the two proposed project phases.
 - modalities for joint WINS/SUSTAIN cooperation.
 - the appropriate position of such a project in the technical assistance agendas of the different branches of AID and other agencies.
2. Send a strategic business planner specializing in food companies to assess the profitability of the three proposed ventures, to negotiate the amount each company would invest in the project, and to select the one or more companies having the best prospects and highest commitment, if their strategic business plan(s) promised to be viable.
 3. Communicate with the USAID Mission in Nigeria regarding plans for such a presentation and other follow-up action.

ANNEX I

SCOPE OF WORK

**Joint WINS/SUSTAIN Assessment of the Potential for
Manufacturing and Marketing of a Low Cost Weaning Food in Nigeria.**

I. Background

This assessment is the outcome of site identification missions to Nigeria undertaken by Bibi Essama, Director of the Women and Infant Nutrition Field Support (WINS) project (August 5-8 and September 4-6, 1991), Dr. Marian Zeitlin, Faculty member at Tufts University School of Nutrition and subcontractor for the WINS project (August 6 - September 7, 1991), and Carolyn Coleman, Technical Officer for the Sharing U.S. Technology to Aid in the Implementation of Nutrition (SUSTAIN) and Food Technology and Enterprise (FTE) projects (August, 1991).

As a result of discussions held with the AID Affairs Officer (A.A.O.) in Lagos and members of the National Committee on Food and Nutrition, it was recommended that an assessment of the potential for local manufacturing and marketing of a low cost weaning food be conducted and funded through the WINS and SUSTAIN projects. It was determined that such an assessment would facilitate private sector involvement in optimal infant and young child feeding through the production of a low cost weaning food, help fill information gaps identified by the joint World Bank, UNICEF, and A.I.D. Mission to Nigeria on Nutrition and Food Security (May 5-28, 1991), and support objective IV.1 of the work program of the Nigerian National Council for Food and Nutrition (NCFN). This objective is to assess the potential nutrition impact and commercial viability of low cost weaning foods (soy, ogi and eko elara).

In order to obtain background information on the existing food manufacturing infrastructure in Nigeria for use in preparing the scope of work for this assessment, the WINS project was requested by the AAO to conduct a preliminary review of local manufacturers of weaning foods and related children snack foods. The review covered the two urban areas of Lagos and Kano, which have the largest concentrations of industrial food manufacturing in the South and the North of the country.

The preliminary WINS-funded review was conducted by two local consultants - Dr. Oluwole Olatunji and Ms. C.F. Kupoluyi of the Federal Institute of Industrial Research, Oshodi (FIIRO), Lagos, in close collaboration with Dr. Marian Zeitlin. The review provides useful information concerning the local manufacturers of weaning and children's snack foods and their level of interest in weaning food production, the production technology(ies) used by them and the characteristics of their products.

The current feasibility study builds upon these preliminary findings and involves a broader assessment of opportunities for and constraints to the development and marketing of a low cost nutritious weaning food product in Nigeria. Specific objectives of this assessment are described in the following section.

II. Scope of Work

A. Purpose of the visit

A team from the WINS and SUSTAIN projects will visit Nigeria for 10 days (from October 17-27, 1991). The basic purpose of the visit is to conduct an assessment of the weaning food situation in Nigeria and determine whether and how the present physical and marketing infrastructure can be used to produce and market a nutritious low cost weaning food.

B. Specific objectives

Specific objectives of the mission are to:

1. Assess the current needs, capabilities and willingness of local manufacturers to produce a low cost weaning food. Specific points to be covered include:
 - 1.1 characteristics of their products, including nutrient composition and cost per 100 calories and per gram of protein;
 - 1.2 manufacturing information, including production capacity, market share, type, source and vintage of equipment, packaging and storage facilities;
 - 1.3 cost and supply information, including sources of supply and cost of raw materials, supply problems and their potential solutions;
 - 1.4 current marketing structure and strategy(ies) including wholesale and retail outlets, characteristics of sale agents, wholesale and retail costs at different stages, turnover of stocks, interactive process with market vendors, advertising;
 - 1.5 consumer characteristics, i.e. who buys the product, and how often they use it;

- 1.6 assessment of the development potential of the manufacturing infrastructure including availability of equipment and spare parts, appropriateness of the technology(ies), available source(s) and cost of additional equipment;
 - 1.7 assessment of the financial viability and managerial capacity of the firm and of manufacturers' perceptions of their needs and constraints.
2. Assess the feasibility of selected plants converting or expanding their present machinery/equipment to produce an acceptable, nutritious weaning food, at a price that is affordable to low income families. This objective will include a determination of the type(s) of low cost weaning food products that the manufacturers are able and willing to manufacture, their nutritional and ingredient formulations and how the product(s) will be marketed. In identifying the type(s) of weaning food product lines that might be developed, emphasis must be placed on locally grown cereal grains and other staples rather than on imported food commodities such as wheat. The following specific points will be covered:
- 2.1 physical plant conversion requirements and/or adjustments;
 - 2.2 nutrient composition and ingredient formulation and of the recommended weaning food product lines and their cost implications;
 - 2.3 sourcing of ingredients (i.e., are ingredients available throughout the year? Can they be sourced from the private or public sector, or both?);
 - 2.4 business analysis and planning (i.e., cost of production of the weaning food(s) and management requirements);
 - 2.5 marketing: distribution in bulk or prepackaged form? Research and development requirements as they relate to consumers' acceptance of the product(s);
 - 2.6 macroeconomic environment: cost of doing business in Nigeria as it relates to fiscal, monetary and labor policies (e.g. tax regime, exchange rates, interest rates, and wage indexation).
3. Assess the needs, capabilities and constraints of the traditional makers of "pap" and identify strategies for their continued involvement in weaning food production and/or marketing.

C. Activities

The assessment team will fulfill its scope of work through site visits to selected plants, meetings and discussions with representatives of the food industry, government officials, members of the NCFN, the AAO in Lagos, the World Bank and other organizations involved in nutrition activities in Nigeria. Existing documentation on the weaning food situation in Nigeria will also be reviewed.

Because of the limited time available for this assignment, site visits will be limited to manufacturers and food markets in the Lagos and Kano greater urban areas, which have the largest concentrations of industrial food manufacturing in the South and North of the country. The manufacturers to be visited will be drawn from the list of manufacturers who were identified during the preliminary review funded by the WINS project. The report of this review will be provided to the team before the onset of this assessment.

The first working day will be devoted to briefing sessions with the AAO in Lagos, members of the NCFN and representatives of other agencies, as appropriate, and to developing the outline for the integrated report. The team will present its findings to the AAO and the NCFN on the last day of the mission. Dr. Zeitlin will lead an initial team meeting on Friday at which each member's contribution to the final report will be clarified and deadlines set for delivering these contributions before each team member's departure from Lagos.

A detailed schedule of activities will be prepared by the NCFN and the FIIRO staff and the WINS/SUSTAIN Coordinator, in consultation with relevant government and private sector representatives. Since this scope of work provides for a 6 day work week, it is suggested that visits to some manufacturing companies be scheduled on Saturday of the first work week.

III. Team Composition and Level of Effort

The AID Office of Nutrition, through the WINS and SUSTAIN projects, will provide U.S. technical consultants with expertise in the following areas:

- weaning food product development and promotion: Mr. Donald L. Maxwell and Dr. Marian Zeitlin
- marketing: Mr. Jack B. Sinunu and Dr. Amy Sampson
- food technology: Mr. Donald Maxwell and Dr. Amy Sampson
- manufacturing hardware and equipment: Mr. Donald Maxwell

- microenterprise/small-scale enterprise development: Dr. Amy Sampson
- infant and young child feeding and nutrition: Drs. Amy Sampson and Marian Zeitlin

The total level of effort (LOE) anticipated to fulfill the above scope of work is 36 person days of U.S. technical assistance and 35 person days of local technical assistance, as outlined in Table I.

As shown in Table II, the WINS/SUSTAIN team members have been paired with Nigerian counterparts who have agreed to contribute their technical expertise and local experience for the completion of specific tasks. Accordingly, local expenses (honoraria, in-country travel) associated with their participation in this assessment will be covered by the WINS project.

The following Nigerian counterparts have agreed and/or have been recommended to collaborate with the WINS/SUSTAIN team on this assessment:

- Dr. Olu Ogunye, Chairman of the NCFN and Director of Medical and Pharmaceutical Sciences in the Federal Ministry of Science and Technology. Dr. Ogunye will review and approve the scope of work as well as the work schedule and, as necessary, provide his technical input to the assessment.
- Dr. F.A.O. Asinowo, Assistant Director at FIIRO and member of the NCFN, will draft the work schedule and work with the WINS/SUSTAIN team as available. It should be noted that Dr. Asinowo has been commissioned by the NCFN to pursue the development of commercial weaning foods.
- Dr. Nike Grange, faculty member at the University of Lagos and member of the NCFN, will work with Drs. Marian Zeitlin and Amy Sampson on the nutritional formulation of the weaning food product(s) and on ingredient formulation.
- Professor Tola Atinmo of the University of Ibadan and Dr. Tade Aina of the University of Lagos will review the scope of work and work schedule for the visit and advise the team members during the assessment, as appropriate.
- Dr. Oluwole Olatunji, food technologist and Research Director at FIIRO and Mrs. C.F. Kupoluyi, market analyst at FIIRO will plan and coordinate the site visits to local manufacturers and food markets and accompany the SUSTAIN team members, as appropriate. Additionally, Dr. Olatunji will work with Mr. Donald Maxwell as indicated on Table II.

- Mr. Kayode Taiwo, Lecturer in Sociology at the University of Lagos, will deal with issues of social/cultural acceptability and cost of the proposed weaning food formulation(s), in collaboration with Drs. Marian Zeitlin, Amy Sampson and Nike Grange.

IV. Deliverables

The output expected from this consultancy is an integrated report, to be prepared jointly by the WINS and SUSTAIN project team members, and their Nigerian counterparts. Dr. Marian Zeitlin, coordinator of the U.S. assessment team, will have primary responsibility for integrating the various report components into an integrated document. Contributions from each team member will be integrated into a single report by Dr. Amy Sampson under Dr. Zeitlin's supervision.

The report must cover all the points/issues listed in the scope of work and include a tentative plan of action for a follow-up intervention. The report (in draft) will be submitted to the NCFN and the AAO for their review and comments a day before the debriefing session(s). A more comprehensive report will be prepared in Washington by the SUSTAIN/WINS team following the review of the draft by A.I.D./Washington and by Education Development Center, Inc. and the National Cooperative Business Association - contractors for the WINS and SUSTAIN projects. The final report will incorporate suggestions and comments made by all the reviewers. It will be officially submitted to the A.A.O. and the NCFN three weeks following the completion of the field assignment.

TABLE I: SUSTAIN/WINS TEAM COMPOSITION

AREAS OF EXPERTISE	Anticipated LOE	Funding Source
<p>NUTRITIONIST - Dr. Marian Zeitlin</p>	<p>14 person days</p>	<p>WINS</p>
<p>MARKETING SPECIALIST - Mr. Jack Sinunu</p>	<p>6 person days</p>	<p>SUSTAIN</p>
<p>FOOD TECHNOLOGIST/ HARDWARE AND EQUIPMENT SPECIALIST - Mr. Donald Maxwell</p>	<p>6 person days</p>	<p>SUSTAIN</p>
<p>NUTRITIONIST/SMALL-SCALE ENTERPRISE DEVELOPMENT/ MARKETING - Dr. Amy Sampson</p>	<p>10 person days</p>	<p>WINS</p>

TABLE II: NIGERIA ASSESSMENT TEAM

<u>Tasks:</u>	<u>Team Members:</u>
1. Assessment Coordinators	Drs. Osinowo, Atinmo and M. Zeitlin
2. Assessment of needs and capacity and interest of local manufacturers in weaning food production	
● Physical plant/Hardware technology/Product	Mr. Maxwell and Dr. Olatunji
● Packaging and Storage	Mr. Maxwell and Dr. Olatunji
● Marketing	
- Distribution from producers to vendors (wholesale and retail outlets	Drs. Sampson, Taiwo and Mr. Siranu
- Advertising	Mr. Sinunu and Ms. Kupoluyi
- Consumer Acceptability	Mr. Sinunu and Ms. Kupoluyi
● Nutrient Composition/ Cost Analysis	Drs. Zeitlin, Grange and Taiwo
● Ingredient Formulation including sourcing	Dr. Sampson
3. Assessment of needs and capabilities of traditional "pap makers"	Drs. Sampson, Grange, and Ms. Sheehan

ILLUSTRATIVE BUDGET

ITEMS	WINS	SUSTAIN	TOTAL
CONSULTING FEES/HONORARIA*			
- 24 person days (US consultants/WINS)	8,400		8,400
- 35 person days (local consultants)	1,400		1,400
TRAVEL			
- International travel	7,600	7,600	15,200
- In-country travel	1,000	1,000	2,000
- Per Diem/Incidental Expenses	1,000	1,000	2,000
TOTAL	19,400	9,600	29,000

* SUSTAIN members volunteer their technical expertise and are not paid a consulting fee for their field assignments.

ANNEX II

ANNEX II

**Tentative Schedule for WINS/SUSTAIN Nutrition Assessment Team
Visiting Nigeria, October 17 - 29, 1991.**

<u>Weekday</u>	<u>Date</u>	<u>Time</u>	<u>Zone</u>	<u>Institutions to be visited</u>
Thursday	October 17		Lagos	Team arrives Lagos.
Friday	October 18	9-10 a.m.		Team meets with Dr. Zeitlin.
	October 18	10-11 a.m.		Team meets with F.M.S.T. Officials and Officials of the National Committee of Food and Nutrition.
		12-2 p.m.		Lunch.
		2-4 p.m.		Team meets with USAID Official.
Saturday	October 19		Lagos	Team meets with Officers of LISHABI FOODS.
				Team visits FIRO
Sunday	October 20			FREE
Monday	October 21			Team visits JHY FOODS.
			Ogun State	Team visits TEMITOPE FOODS at Sagamu.
Tuesday	October 22			Team visits JOLLY FOODS.
Wednesday	October 23			Team visits PARAMOUNT FOODS.
				Team visits CHIPITOS FOODS.
				Team leaves Kano for Lagos.
Thursday	October 24			De-briefing.
				Meeting with FMST Officials and Officials of the NCF & N et. al.
				Team presents draft reports.
				SUSTAIN team departs Nigeria.
Tuesday	October 29			WINS/SUSTAIN team presents Final reports to National Committee of Food and Nutrition.