

Meats, Seafood, and Poultry

**Partnerships for Food Industry Development
A U.S./Ukrainian/Moldovan/Georgian/Azeri/Nicaraguan/South African
Partnership**

Leader-with-Associates Agreement No: PCE-A-00-01-00012-00

Funded by

The United States Agency for International Development

USAID M/FM/CMP

1300 Pennsylvania Avenue, N.W.

Washington, DC 20523-7700

**Second Semi –Annual Report
(Phase II, July 1, 2005 – January 14, 2006)**

Submitted by

International Programs

Louisiana State University Agricultural Center

Baton Rouge, Louisiana

In association with

The World Food Logistics Organization, Alexandria, VA

The International Institute of Food Safety and Quality, Kyiv, Ukraine

The Moldovan Center for Food Safety and Quality, Chişinău, Moldova

Rapadani, Ltd., Tblisi, Georgia

The University of Stellenbosch, Stellenbosch, South Africa, and

**The Cooperative League of the USA – Nicaraguan Chapter, Managua,
Nicaragua**



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List of Acronyms

AFDO.....	Association of Food and Drug Officials
AWP.....	Annual Work Plan
BIZPRO	(Economic Growth through SME Development)
BPCS.....	Better Process Control School
CAMIB	Central Agricultural Marketing Information Bureau
CCC.....	Commodity Certification Center (of Azerbaijan)
CCT.....	Cold Chain Technologies
CIDEA	(Research Center of Aquatic Ecosystems at University of Central America)
CIS	Commonwealth of Independent States
CLUSA	Cooperative League of the USA (Nicaraguan Chapter)
CAPANIC.....	(Seafood Industry Association of Nicaragua)
DAI	Developmental Alternatives International
ES.....	Electrical Stimulation
EU	European Union
FAO.....	(UN) Food and Agriculture Organization
FDA.....	Food and Drug Administration
FSQ.....	Food Safety and Quality
GMP.....	Good Manufacturing Practices
HACCP	Hazard Analysis Critical Control Point
HCPI	Host Country Partner Institutions
ICS	In-Country Satellite
IHA	International HAACP Association
IIFSQ.....	International Institute of Food Safety and Quality
ISO	International Standards Organization
ISS.....	Information Support System
KNUTE.....	Kyiv National University of Trade and Economics
LSU AgCenter	Louisiana State University Agricultural Center
MAGFOR	Ministry for Agriculture and Forestry
MASQ.....	Metrology, Accreditation, Standardization and Quality
MCFQS.....	Moldovan Center for Food Quality and Safety
MOU	Memorandum of Understanding
NFSQO	National Food and Safety Quality Organization
NSF	National Sanitation Foundation
OARSSP	Overall Assessment Report and Solution Strategy Paper
PAPA	Project Assessment Planning and Action
PFID.....	Partnerships for Food Industry Development
PFID-MSP.....	PFID – Meat, Seafood and Poultry
PHT.....	Post Harvest Technology
PHTC	Post Harvest Technology Center
PSE.....	Pale, Soft, and Exudative
RSA.....	Republic of South Africa
SAIL.....	Schaffer and Associates International Ltd.
SARDA.....	South African Refrigeration Distribution Association
SAR.....	Semi-Annual Report
SSOP.....	Sanitation Standard Operating Procedures

TTA..... Training and Technical Assistance
 TTT Train the Trainer
 UNAM University of Namibia
 USAID United States Agency for International Development
 USAID/EGAT..... USAID/Economic Growth, Agriculture, and Trade
 USAID/RCSA..... USAID/ Regional Center for Southern Africa
 USDA..... United States Department of Agriculture
 USDA/FAS USDA-Foreign Agricultural Service
 USt University of Stellenbosch
 WFLO World Food Logistics Organization
 World Lab World Laboratory, Ukraine Branch
 ZATACZambian Agri-business Technical Assistance Centre

Section I. Summary and Introduction

This is the second Semi-Annual Report (SAR) of the Partnerships for Food Industry Development for Meat, Seafood and Poultry's (PFID-MSP's) second phase of operation and the tenth SAR overall for the USAID/EGAT-funded leader award. Under Phase II, the Project was jointly undertaken by the Louisiana State University Agricultural Center (LSU AgCenter), the World Food Logistics Organization (WFLO), the Ukraine-based headquarters of the International Institute for Food Safety and Quality (IIFSQ), the IIFSQ's In-Country Satellites (ICSs), the University of Stellenbosch (USt) in the Republic of South Africa (RSA), and the Nicaraguan Chapter of the Cooperative League of the USA (CLUSA). To date, the IIFSQ's ICSs include the Moldovan Center for Food Safety and Quality of Chişinău, Moldova and Rapadani, Ltd of, Tblisi, Georgia while efforts are being made to contract the Commodity Certification Center (CCC) of Azerbaijan.

The PFID-MSP program has recorded several results during this reporting period. Among the highlights for this reporting period are:

- Stakeholder enterprises increasing sales revenue due higher food safety and quality standards;
- A total of 14 certified Hazard Analysis Critical Control Points (HACCP) training courses were conducted in Eastern Europe by IIFSQ for a total of 265 participants, including 70 women – the benefits of such training were documented in the USAID/Ukraine newsletter;
- One contract received that will provide additional funding for IIFSQ; and
- One draft National Standard developed to better conform to international standards;
- Training of IIFSQ staff in HACCP Auditing;
- Review of the Food Safety and Quality (FSQ) situation and related program development possibilities in Kazakhstan;
- Formal establishment of the Post Harvest Technology Center (PHTC) in Stellenbosch, RSA, which has started to supply the game meat industry with relevant information;
- Initial assessment on FSQ issues for the South African game industry;
- A short list of potential Cold Chain Technologies (CCTs) for PFID-MSP to examine in RSA;
- Assessment of Cold Chain Technologies and Food Safety and Quality Issues in Nicaragua;
- Conclusion of the assessment and solution strategy development activities pertaining to the PFID-MSP Associate Award funded by USAID's Regional Center for Southern Africa.

Key issues and future activities include the following:

- Delayed mission approval and budgetary issues postponing the ICS contract offer to the CCC and Internet server problems for the IIFSQ;
- Conduct of the second Better Process Control School (BPCS) in Kyiv;

- Training assessment finalization, curriculum development and “block men” training for the PHTC;
- Strategy development for enhancing FSQ in South African game meat;
- Conduct of a case study to determine the viability of a selected CCT in RSA;
- Revision of the Cold Chain Technology Project Activity in Nicaragua to one providing Training and Technical Assistance to a stakeholder plant;
- Participation of two South African and two Nicaraguan stakeholders in Train the Trainer (TTT) instruction for seafood HACCP.

Future activities are detailed in Annual Work Plans for each of the Project’s three target areas: Eastern Europe/Commonwealth of Independent States (CIS), South Africa and Nicaragua.

Section II. Eastern Europe/Commonwealth of Independent States

IIFSQ’s achievements show that food safety services are in high demand not only in Ukraine, but also in other newly independent states. Also, in the last half year the demand for auditor services significantly increased, including diagnostic (initial) and registered audits. IIFSQ plans address this demand in its Annual Work Plan (AWP) for Year II.

A. IIFSQ Expansion

1. Accomplishments

In October, IIFSQ conducted a certified Basic Seafood HACCP Training on the request of the Director of Breeze Ltd., a fish harvesting and processing company located in Berdyansk on the Azov coast. Breeze has a history as Partnerships for Food Industry Development’s (PFID) stakeholder since 2003 when IIFSQ gave its first independent Seafood HACCP training in Berdyansk. After that training Breeze started to develop a HACCP system. In 2005 Breeze targeted the European Union (EU) market and needed advanced staff training. So on October 26-28 IIFSQ gave a certified on-site Basic Seafood HACCP training for twenty-four (including fourteen women) participants. These included Breeze employees and individuals invited by the facility, including local veterinary inspectors and graduate students of a local University who will be hired by Breeze upon graduation. Currently Breeze is unique among fish processing facilities in Ukraine (and probably in all Eastern Europe) in that it has as many as twenty-four staff members that are certified by the US-based Association of Food and Drug Officials (AFDO) in seafood HACCP. The impact of Breeze’s adoption of HACCP principles is shown below.



Figure 1 Breeze Processing Facility

Impact - Breeze Ltd., established and headed by Sergey Matveyev, is one of the leaders in the Ukrainian fish industry and has been exploring the potential of external markets. To realize such potential, Breeze has been a PFID-MSP stakeholder since June 2003. Since then, the IIFSQ has trained twenty-four Breeze specialists and helped Breeze develop a HACCP plan and improve its facilities' sanitation control. In 2003-2004 Breeze made several sales to the United States, at a total volume of 240 tons and value of \$867,000. In 2005, Mr. Matveyev designated the EU market as his new target market. Adoption and adherence to international standards made Breeze eligible to receive the European Veterinary Certificate and become the first Ukrainian fish processor approved to export to the European Union.

The HACCP system contributed to increased processing efficiency in that it redirects efforts to the processing steps where they yield higher returns. HACCP's positive effect on product quality also yields a higher price; at a volume of 5,277,000 cans of various products in 2005, Breeze sells them at price up to 30% better (1.5 UAH or \$0.30) than its competitors, without any decrease in demand. To motivate his personnel, Mr. Matveyev intends to increase current monthly wages an additional 30-50% (\$48-\$90) for those who contribute the most to Breeze's compliance with Good Manufacturing Practices and sanitation procedures.

In increasing access to global trade through higher standards of food safety management, Breeze and the IIFSQ gave all other national processors a pattern to follow; that what is needed is to offer a product that would be readily accepted in the US market.

In September 4, Dr. Myroniuk was invited by AzStandardService, the Azeri certification body, to participate in a conference entitled "Supporting National Producers". Together with the Azeri Minister for Agriculture, Dr. Myroniuk presented International HACCP Association (IHA) certificates to participants of HACCP/Meat&Poultry course held in May.

In September, a new Ukrainian Law on Food Safety and Quality was approved without public discussion. IIFSQ believed it to be noncompliant with international requirements, particularly the newly published International Standard Organization (ISO) 22000 "Food safety management systems – Requirements for Any Organization in the Food Chain" in terms of terminology, system of state control, etc. On October 7, IIFSQ expressed its opinion by conducting a press-conference and round table discussion on ISO 22000 Standard and the degree to which the new Ukrainian Law complies to it. Dr. Myroniuk, the IIFSQ Director also participated in other public activities and (with other NGOs) signed a Request to the President, the Parliament, and the Government to hold a public hearing, suspend the Law and revise it. As a follow-up to these public appearances, Dr. Myroniuk published two articles in food industry magazines *Miassnoe Delo (Meat Business)*, October '05) and *Dairy Business* (November '05). During October – November, IIFSQ prepared an official translation of ISO 22000 and, jointly with UkrMetrTestStandard, drafted a National Standard based on ISO 22000.

On November 18-26, PFID-MSP's Director from the LSU AgCenter (Dr. Lakshman Velupillai), with representatives of the IIFSQ (Dr. Gennadii Myroniuk and Ms. Anna Vasylenko, Director, International Relations), conducted an assessment trip to Kazakhstan. The purpose of the trip was to assess the food safety systems in place in the country, look at buy-in potential by discussing PFID-MSP interventions at the local USAID Mission; to visit government, private sector and non-governmental entities to learn more about the food industry in general, and food safety/regulatory compliance in particular; and to visit with other USAID programs and projects in the country.

Meetings with local meat processors, GosStandart, the Ministry of Agriculture representatives, and others reveal that Kazakhstan is in the early stages of understanding and commitment of food safety as it is practiced internationally. Plants visited indicated that they are complying with national standards for quality. Some companies are ISO 9000 compliant. However, the concept of HACCP is not currently incorporated into those national standards and only the largest company in the country is thinking of applying HACCP. Most individuals expressed great interest to implement food safety standards. Such implementation would facilitate the supply of food items including meats and seafood to the foreign oil companies that operate in the region. Although they are committed to buying at least 40% of their food requirements locally, there are difficulties with the local suppliers meeting standards acceptable to the oil companies. It appears that the oil companies see the value in supporting local suppliers' efforts in meeting international standards, and may even support such activities. A similar situation exists with local food supply to the US military base in Kyrgyzstan.

Both the Kazakh Standards Committee and the Ministry of Agriculture are interested in supporting any training, general capacity building activities, and support through technical assistance to the industry in the overall food safety and standards area. A detailed description of findings is provided in the Trip Report prepared by Dr. Velupillai and included in Annex E.

Moldovan and Georgian In-Countries Satellites (ICSs) were selected in the previous reporting period. The Moldovan Center for Food Quality and Safety (MCFQS) is well-established and holds a leading position in the country in terms of food safety as evidenced by the following:

- Jul. 19-21 - MCFQS gave a certified Basic Red Meats HACCP Training course to nineteen individuals, including four women;
- Oct. 12-14 - MCFQS gave certified Basic Red Meats HACCP Training to five employees (incl. four women) of SRL "Corsor" meat slaughterer and processor located in Soroca;
- The Department of Veterinary Service and Inspection of the Agricultural Ministry applied to MCFQS for training of 250 veterinary and sanitary inspectors. During the period of October – December, MSFQS gave eleven three-day training courses (certified Basic Red Meats HACCP) for specialists of Veterinary Service and Sanitation and Veterinary Inspection, and for food processors. A total of 217 (incl. forty-eight women) individuals received training;
- MSFQS established contacts and provided HACCP consultations to six food processors:
 - "Ion Bilba" (sausage producer, located in Edinet). Two specialists of this plant were trained and certified on Red Meat HACCP training, conducted at Jul. 19-21. With the counseling assistance provided by MCFQS was developed HACCP plan for 17 sausage products;
 - JS "Piscicola Gura Bicului" (fresh-water fish producer, located in Anenii Noi). MCFQS provided feasibility study for safe fresh water fish processing;
 - JS "Piscicola Ghidrin" (fish processor, located in Falești). MSFQS provided consultations for HACCP prerequisite programs development and implementation. It were given recommendations before starting HACCP implementation to start prerequisite programs implementation. It made a bargain

- to organize visiting to Free Fisheries company for getting acquainted how to implement HACCP system in practice;
- “Vesnicia Ltd.” (fish processor, located in Stefan Voda). MSFQS provided consultations for prerequisite programs and HACCP plan development and implementation;
 - “Corsor Ltd.” (poultry processor, located in Soroca). Five specialists of this plant were trained and certified on Red Meat HACCP training, conducted at Oct. 12-14. It made a bargain to start HACCP plan development and implementation for poultry, cattle and pigs slaughtering and processing in 2006.
 - JS “Maestro-Nut” (walnuts, cherries, plums and meat). MSFQS provided consultations for prerequisite programs and HACCP plan development and implementation and HACCP system certification. Plant started HACCP plan development and filed an application for external audit and HACCP certification.
 - Oct. 31 – Nov. 4 - MSFQS organized a visit of two USDA representatives (Dr. Joseph L. Blair and John H. Miller) to four PFID-MSP stakeholder food facilities – USDA is assessing Moldova’s current FSQ status and is willing to identify potential areas for technical assistance using PFID experience;
 - Dec. 9 - MSFQS and Central Agricultural Marketing Information Bureau (CAMIB) representatives attended a Stakeholder Consultation Workshop on a Food Safety and Agricultural Health Action Plan, organized by the European Bank for Reconstruction and Development – MSFQS presented PFID experience in the area of food safety and proposed to expand the Action Plan with HACCP activities.

In October, 2005 at Ann Arbor, MI, the National Sanitation Foundation (NSF) Center for Public Health Information’s HACCP auditor training course was attended by Dr. Myroniuk and Oksana Dorofyeyeva of the IIFSQ. Dr. Kenneth McMillin of the LSU AgCenter (whose course registration fee was paid by the LSU AgCenter) also attended. The HACCP Auditor course was conducted with emphasis on auditing standards and practices related to Codex Alimentarius and International Standards Organization guidelines for sanitation, hygiene, and Hazard Analysis Critical Control Point (HACCP). The course’s curriculum items included the following (greater detail is provided in Dr. McMillin’s Trip report in Annex E):

- Evaluation, monitoring and auditing practices including suitability of guidelines, particularly Codex Alimentarius provisions;
- Direct evaluation and auditing experiences gained through class exercises on citing of elements of standards using Codex General Principles;
- Information on ISO 9001 – 2000 Quality Management Systems and equivalent provisions;
- Principles of auditing were in comparison to key standards and norms;
- Class exercises to identify correlations between elements of ISO 9001: 2000 and Codex Alimentarius General Principles of Food Hygiene and dealing with barriers to collecting audit information;
- Descriptions of opening and closing audit meetings with company representatives;

- Information on audit notes and evidence collection, corrective action requests, and desk audit reports;
- Information on ISO 19011: 2002 Guidelines on Quality and/or Environmental Management Systems Auditing; and
- Class exercises on reviewing and analyzing corrective action requests, writing a corrective action request, documenting audit information through audit notes, conducting a desk audit and preparation of an audit report.

2. *Issues and Future Activities*

After some delay for institutional reasons, USAID/Baku mission gave its approval for the Commodity Certification Center (CCC), one of the two applicants for this position. Unfortunately, questions regarding donor fund availability are delaying an offer to the CCC. In addition, there have been communication problems with Rapadani, the Georgian ICS. The MCQFS is enthusiastic to participate in Year 2 activities, but its contract concludes at the end of 2005. IIFSQ will explore options of giving Seafood HACCP training in Moldova, as this training is strongly requested by MCQFS.

The benefit of the HACCP Audit training course would have been higher if the course had provided an opportunity for the three PFID participants to confirm their competency as auditors by taking final exams and received certificates. Unfortunately, final certification exams were restricted to NSF officials. Initially, UkrMetrTestStandard also wanted to send representatives to Ann Arbor from its funds but changed its decision. New skills acquired by IIFSQ personnel in HACCP auditing will be used for in-plant audits in Ukraine, and in Georgia and Azerbaijan. A planning document on HACCP audits was prepared (refer to Annex B) to provide guidance to the IIFSQ in this matter.

B. Food Security Capacity Building, Better Process Control School (BPCS) and Additional Activities

1. Accomplishments

Breeze Ltd. received food security materials from Dr. Moody's seminars conducted last June. In addition, the following activities beyond those mandated in the AWP were accomplished.

- September 13-16, Sevastopol, Ukraine – Dr. Myroniuk made a presentation at a conference “Acute Issues of Conformity Assessment of Integrated Quality and Safety management Systems;
- In October-November Dr. Myroniuk taught a short course on HACCP to eighteen students in Kyiv National University of Trade and Economics’ (KNUTE’s) Department of Food Commodity Science and Expertise and headed the State Exam and Diploma Commission at that Department he also consulted several graduates whose diplomas included HACCP-related issues;
- IIFSQ won a tender for a short-term technical assistance project sponsored by Economic Growth through SME Development (BIZPRO) and Developmental Alternatives International (DAI) on HACCP assistance to a vegetable processor in Cherkassy Oblast; on Dec. 2 the contract was signed;

- IIFSQ developed a University course training curriculum on HACCP and submitted it to KNUTE;
- Dec. 15 - IIFSQ and UkrMetrTestStandard gave a one day food safety training to executives of Kyiv bakery enterprises;
- Upon request of USAID/Kyiv, IIFSQ prepared a paper on HACCP Training Benefits (Annex C) a success story on Breeze (refer to previous text) and a success story on Cerealia Ukraine Ltd, a grain processor (Annex D) – these documents were all documented in the January 2006 mission newsletter “USAID Insight”.

2. *Issues and Future Activities*

Follow-up on the Bio-security materials provided to Breeze is planned for the next visit of Dr. Moody to Ukraine (May-June 2006) so that the company’s potential access to the US market is enhanced.

As in 2005 the Kyiv National University of Trade and Economics (KNUTE) will provide its premises for the 2006 Better Process Control School to be held in late May – early June of 2006.

During the reporting period IIFSQ has established a broadband wireless Internet line. However, the quality and reliability of current Internet service is rather poor, so IIFSQ is going to explore other options. As IIFSQ’s site on World Laboratory’s (World Lab’s) web-platform is closed, IIFSQ plans to move its web-pages to a new platform. IIFSQ has not yet received Web pages from World Lab because World Lab’s server is currently down.

For the next six months, IIFSQ plans to start preparatory activities for events to be conducted later next year (BPCS’2006) and in 2007 (Risk Assessment Conference). Also, IIFSQ will provide logistical support for seminars to be taught by US technical experts (on Risk Assessment) and for the follow-up on bio-security training initiated in 2005.

Section III. South Africa

PFID-MSP’s day-to-day activities in the Republic of South Africa are being coordinated by the Project’s South African partner institution, the University of Stellenbosch with Professor Louwrens Hoffman as the primary representative. The Project Scope of Work commits PFID-MSP to address the following programmatic objectives in its South Africa Component:

- Project Object # 1 - Post Harvest Technology Center (PHTC);
- Project Object # 2 - Food Safety and Quality (scheduled for next year); and
- Project Object # 3 – Value Added Post-Harvest Technology – Cold Chain Technologies.

The Project’s South African operations were slow to start due to delays in funding from Washington DC but officially started in August 2005 when the sub-contract between the LSU AgCenter and USt was signed. There were also delays due to personnel turnover. Since the beginning of December, 2005, Ms Sune Botha has been employed, primarily to coordinate the Post-Harvest Technology Center. Ms. Botha holds a Master of Science Food Sciences (cum laude) degree specializing in Meat Science. Most of the required office equipment has been purchased.

A. Post Harvest Technology Center

1. Accomplishments

The Center is formally established with a designated office (Suné Botha, Associate Coordinator; Tel: 27-21-8084739; e-mail PHTC@sun.ac.za). Ms. Botha's responsibilities regarding the PHTC include HACCP course development and conduct, other curriculum development and training sessions for meat processors. She will also be involved in helping technology transfer for product development.

The PHTC has been requested to supply information from its database as pertaining to the chemical composition of various game meat species to both Roelcor and Mosstrich & Game. The database consists of data sets and results generated from research projects during the past five years. The collaborating exporters require the information (muscle chemical composition of various game species as well as ostrich) from the data base to supply to potential international buyers. The PHTC was also asked to help solve a game meat color problem that one of the exporters had with the rejection of a number of containers in Europe. This problem was discussed within the PHTC as well as with various international collaborators and the cause seems to be a break down in the cold chain.

Presently the PHTC is also supplying the game meat industry with information pertaining to required legislation. This information involves, among others, discussions pertaining to the best methodology of harvesting game animals so to ensure that the deterioration in quality is minimized as well as to ensure that International ethical standards are adhered.

2. Issues and Future Activities

The second facet of PHTC's fore-mentioned information strategy for the game industry is providing stakeholders with chemical composition tables of game meat which they then pass on to their clients as well as to human dieticians. Once the information is publicly available (within the next two years) PFID-MSP will look at the possibility of building a web page that contains this nutritional data – possibly the same web page funded under the associate award that will contain a cold chain directory.

After a round of meetings with WFLO, a local round table meeting was held with key role players in South Africa. The key question posed to this group was: "What would you like to see in the curriculum of a Three Year Cold Chain Technology course?" From the answers received, a proposed curriculum was developed. This now needs to be refined with WFLO indicating what type of information should be drawn from their library and what needs to be developed. Dr. Hoffman has suggested that a post training workshop (to be held with WFLO specialists early in 2006) address these issues. One of the other factors that came out from this round table was that the course had to be generic enough to cover all perishable commodities (meat, fruit, dairy, vegetables, etc) and that where applicable, more specific courses within the module would be held. The feeling was also that it should be focused on middle management. Additional training assessment findings and resulting program directions are pending from USt. This should include collaborative possibilities with the South African Refrigeration Distribution Association (SARDA).

The PHTC also proposes to become involved with "block men" training to ensure product quality within the whole red meat sector. This refers to training courses for abattoir and breaking

plant workers regarding the typical primal cuts for beef, sheep, pork and ostrich carcasses. USt is awaiting a contract from Northlink College. On good faith, Ms. Botha already has started writing some of the course content. The aims would be to have the course recognized and registered with the Government by the middle of 2006 and then to start the training. There will be two target groups: the first would be unemployed people (the RSA Government supplies R900 per person per month for food and travel logistics while they participate in the training) and the second group would be the training/retraining of people already working in the industry. Later USt would like to extend this training into the game industry – maybe in more focused short courses.

B. Food Safety and Technology, Issues and Future Activities

USt has identified a potential HACCP intervention (with potential cold-chain components) in the South African game industry. Presently the game meat scenario is divided into four sections; bush meat, biltong hunters, national supply and consumption and Export. The first two are such that vast resources would be required to impact their quality control system (the first is also illegal). It is the organized culling, transport and marketing of game meat, both on a local and on an export level that requires input from the PHTC as mentioned in the fore-mentioned Sub-Section on Objective 1. Most of the game is exported by companies that already export ostrich meat and species specific game meat has been channeled along the same market lines as an alternative exotic meat. These supplies/exporters normally have good Quality Assurance schemes in effect as these are pre-requisites set by the importing countries. Although there exists legislation for the local retail and supply of game meat, very little implementation of such laws seems to be happening.

Both of these two channels of game supply require HACCP programs (scheduled to be conducted next year as PFID-MSP's Objective 2 for South Africa). Under the guidance of the PHTC, the following strategy is envisaged over the next number of years (a student from Tswana University of Technology, Pretoria, will be conducting most of these activities under guidance of the Team):

- 1) *Baseline study* - Conduct a baseline study (National and International) on problems/needs experienced with existing game meat quality/safety management plans by using retrospective and existing data.
- 2) *Situation analysis in South Africa* - Conduct an analysis of policies, procedures/codes of conduct and practices followed by all three tiers of Government.
- 3) *Development of Integrated model* - Develop a model for intervention for the following: National Government, Provincial Government, Municipal (District/Metro) and the Game/game meat industry (including National parks).
- 4) *Pilot Model Review* - Expose the developed model to the various Government departments and the Game/game meat industry.
- 5) *Implementation* - Apply the model to the various levels of Government and the Game/game meat industry and monitoring thereof.
- 6) *Evaluation* - Evaluate the implementation results against the baseline and implement changes to the model.

The fore-mentioned project falls under both Project Objectives #2 and #3 in that, ultimately, a HACCP policy/plan will be available for implementation, but also to achieve this, work on the development of cold chain strategies will be required. On this issue, the game industry has already had game meat returned from their export clients who have indicated that their color was unacceptable (refer to Page 12).

The Western Cape Department of Agriculture has indicated a desire for PFID-MSP to provide HACCP training to some of their members responsible for monitoring hygiene in abattoirs and other processing facilities.

C. Cold Chain Technology, Issues and Future Activities

PFID-MSP originally planned to use the firm Roelcor as a case study participant and the specific intervention was to hang plastic curtains in their freezers. The following have since come to light:

- The company would like to work with us and fulfill all our criteria.
- The hanging of curtains will not be suitable because the targeted stakeholder already began to hang curtains after the initial discussions before the team could monitor the impact and cannot measure individual energy usage per freezer.
- Most of the other meat plants already use curtains.

Something that has come out from this initial investigation (and was frequently alluded to in the reports from the experts during the past year) is the paradox within the meat industry in South Africa: that of having elements of both the first world and third world scenarios in terms of technology and food safety. PFID-MSP was initially focusing on the first world group and their activities to try and find an intervention that can be implemented with a minimum of costs yet save them substantial money. At the same time this must be a type of intervention that can be carried out in other plants as well. The problem lies in finding such an intervention as most of these abattoirs would already have adopted them.

Nonetheless the project is still seeking such potential topics and the following are USt suggestions that WFLO has favorably considered:

- 1) *Hot de-boning of Ostriches at Swartland Ostriches*. The research pertaining to this technique has been completed and the first scientific paper on this project has been published by USt in the South African Journal *Meat Science*. This research gives scientific credibility to the hot de-boning technology. When this technology is granted approval, the PHTC can help guide the stakeholder factory in the new technique. Of particular value will be the expertise of WFLO pertaining to the redesign of the cold rooms and the development of a chilling tunnel. At present, the general idea is to decrease the size of the first two cold rooms and increase the size of the de-boning area. The cold rooms then become containment areas to keep excess freshly slaughtered birds in, prior to them being de-boned. The added advantage of this is that the de-boning room could run at a temperature that is 2°C higher than at present (<8°C) which will result in greater worker comfort. After the warm muscles (most will still be above 20°C) are vacuum packed, the idea is to pass them through a cold water/ice chiller that is linked to the de-boning room and packaging plant so that they can be removed from this chiller at a temperature <2°C prior to being boxed and stored in the super chiller. Such a chiller would be similar but a lot smaller to that operating in broiler abattoirs.

- 2) *Electrical stimulation (ES)*. In this scenario there are two options: application to cattle and sheep and application to game. South African abattoirs are aware of the benefits of ES and most of the large abattoirs apply this on a regular basis. Dr. Hoffman of USt has noted though, that some of the smaller abattoirs either do not have the apparatus or do not use it. This may be a possible intervention where PFID-MSP can look at the costs of such an apparatus versus the improvement in chilling efficiency and better quality that can be gained. However, USt will need to find out how many abattoirs do not have such equipment. The second option is a longer term one that Dr. Hoffman has earmarked for a MS/PhD student who will be starting in 2007. This includes development of a suitable apparatus that can function off a vehicle in the bush at night (without scaring away the other game); issues to explore include time of application post mortem: duration of application: voltage/amp, etc. Dr. Hoffman has recently contacted the Department of nature Conservation and Tourism of the Free State Province who have indicated their likely approval of a research proposal. This will mean that the project will be able to get the required animals for free.
- 3) *Slaughter of pigs at night*. This should minimize Pale, Soft, and Exudative (PSE) meat. This is the result of a rapid post mortem pH decline while the muscle temperature is too high. This combination of low pH and high temperature adversely affects muscle proteins, reducing their ability to hold water (the meat drips and is soft and mushy) and causing them to reflect light from the surface of the meat (the meat appears pale). Muscles with a low pH in combination with a high muscle temperature lead to an increased protein break-down. Once more we would have to first see how many of the larger commercial abattoirs that slaughter pigs will be capable of changing to such a procedure. But it has possibilities. Dr. Hoffman has recently spoken to Winelands Pork in Cape Town, an export abattoir that is interested analyzing the effects of night slaughtering, particularly during very warm weather, to reduce heat stress losses.
- 4) *Spray chilling of carcasses*. This is an intervention study that is used internationally to help reduce the weight shrinkage that occurs in carcasses during post mortem chilling. Carcasses can lose up to 3-5% of their weight during this chilling period. Spray chilling of for example beef carcasses with an intermittent water mist (1°C, intermittent for 4-16 h) reduces carcass shrinkage (reduced by 0.08g per 100g per hour of spraying), without compromising quality or increasing spoilage losses; however, there should be sufficient time after the end of spray chilling to prevent the carcass from having an undesirable pale colour and wet surface, which would increase bacterial growth. Weak acid solutions can also be used to enhance the shelf life of spray chilled carcasses. A number of abattoirs have indicated an interest in this technology. The legal implications of this technology would also need to be evaluated.

As the year progresses, USt pick one or two of the preceding topics on which USt and WFLO will concentrate their efforts, based on the following criteria:

- Importance to food industry;
- Potential impact to the stakeholders, particularly the non First World types;
- Potential viability; and/or
- Relevance to the cold chain/role of WFLO.

Section IV. Nicaragua

PFID-MSP's day-to-day activities in Nicaragua are being coordinated by the Nicaraguan Chapter of the Cooperative League of the USA (CLUSA), Project's partner institution for that country. The Project Scope of Work commits PFID-MSP to address the following programmatic objectives in its Nicaraguan Component:

- Project Object # 1 - Food Safety, Quality and Security Compliance;
- Project Object # 2 – Post Harvest Technology for Value-Added Products (Scheduled to be addressed next year); and
- Project Object # 3 – Value Added Post-Harvest Technology – Cold Chain Technologies.

A. Cold Chain Technology

In this activity, WFLO specialists will promote modern cold storage and warehousing technologies to Nicaraguan stakeholder companies, leading to increased efficiency in the cold chain will be promoted to local companies. The process starts with Project staff and stakeholders identifying a link, or specific process, in the cold chain, the improvement of which can lead to increased operational efficiency and/or a higher value product. With guidance from WFLO, the staff and stakeholders conduct technical and economic case studies to determine the feasibility of that process. If such case studies have positive results, stakeholder enterprises are encouraged to adopt such a process on a commercial level.

1. Accomplishments

Dr. Robert Dickson, technical consultant to the World Food Logistics Organization (WFLO), conducted a market profile and project assessment for the Cold Chain Technologies (CCT) activity being conducted by WFLO. Mr. Dickson traveled to Nicaragua from October 30 to November 5 of 2005, working with PFID-MSP partners The Cooperative League, United States of America (CLUSA).

The purpose of the mission was to Conduct assessments for the following PFID (and WFLO-spearheaded) Project Activities:

- To conduct a review of the integrated Cold Chain industry in Nicaragua to better understand the unique constraints of the local marketplace, including review of processing, storage, distribution and retail sectors; and
- To conduct initial investigations into locating suitable technologies, and henceforth potential cooperators for the Value Added Post Harvest Technologies ~ Cold Chain Technologies (CCT) program, and to discuss activity components with local partners.

This assessment is documented in a report found in Annex E, the Combined Technical Assistance Narrative. It includes company profiles of the following two potential participants in the CCT program. These companies have expressed an interest in participating in the project, although no decision or offer has been made pertaining to possible participation.

- *Cainsa* is a producer of fine quality sausages and various cured meats, distributed city wide and to some outlying areas around the major metropolitan area. Dr. Dickson noted that the product cooling process from the time the product is removed from the

smokehouse until it reaches the desired storage temperature was not clearly defined. In order to adequately speed up the cooling process, chilled water (maximum 43- 45° F) should be used in the spray mist chiller as an assist in the chilling process. This can be done by using any one of the various types of chill assist units available on the market today, or by constructing a simple holding tank within a cooler unit with a mixing device that will provide adequate chilled water to the nozzles for cooling.

- The *Hiper La Colonia* is a modern multi-product supermarket serving the local retail population. The facility currently does only limited further processing of any food products. Currently, none of the doors leading to and from the stores' cold storage units has any sort of protective mechanism to prevent air exchange from the outside. The optimal choice for larger doors would be placing Air Curtains above each door which would be energized by remote switch each time the door is opened. Once energized, a blower mounted above the door causes a vertical draft of air in front of the door causing dynamic pressures to be formed at the door of the cold room.

2. *Issues and Future Activities*

In the process of reviewing the Dr. Dickson's trip notes and draft report and after considerable internal discussion with key staff, WFLO's management has concluded that the CCT project proposed for Nicaragua may not be the best fit for the needs of the market. In fact, after careful review of the commercial facilities in the various sectors of the industry, particularly in the processing and cold storage sectors, it became evident that many of the technologies needed for solid cold chain improvement are already in place or in the process of being purchased. However, Mr. Dickson noted on many occasions that technical training was needed, specifically training related to pre-HACCP programs, Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP). With the recent influx of new equipment in many of the larger processing plants, technical know-how on operational and sanitation procedures was needed than investment in new technologies.

Based on the strength of the potential CCT's and the input from Mr. Dickson, WFLO proposes to change WFLO's involvement in Nicaragua Plant-based Training and Technical Assistance (TTA) activity similar to that conducted in Moçambique under the USAID/RCSA-administered Associate Award. WFLO would first begin a rapid search for TTA stakeholders, asking CLUSA to distribute TTA application to several key companies in Nicaragua (identified during the CCT tour).

B. Other Activities

1. *Food Safety, Quality and Security Compliance, Accomplishments*

During the period of January 9 through 13, Dr. Kenneth McMillin of the LSU AgCenter's Department of Animal Science conducted an on-site assessment of meat and poultry plants in Nicaragua (see the following pictures). Analyses, conclusions, and recommendations were made on the hygiene, sanitation, and HACCP implementation. Visits also were held with government agency officials and industry personnel. Additionally, the degree of understanding and conformity with USDA Food Safety and Inspection Service Food Security Requirements was assessed, candidates for Train-the-Trainer instruction and subsequent courses for basic HACCP certification were evaluated, and potential candidates for a Nicaraguan Food Safety and Quality Organization were reviewed. The inspection system for meat and poultry is conducted by the

Nicaraguan Ministry for Agriculture and Forestry (MAGFOR) and the operation of inspection and compliance by the plants on sanitation, hygiene, and HACCP appeared fully compliant with USDA standards. The industry personnel and MAGFOR staff expressed interest in improving the training and hygienic standards to an even higher level.



Figure 2 - Pollo Estrella Processing Plant, Nicaragua



Figure 3 - San Martin Beef Processing Plant, Nicaragua

It is anticipated that the USDA Food Safety and Inspection Service will increase the scrutiny of individual plants for compliance with food security requirements for food processors. In this assessment, Dr. McMillin only had time to conduct cursory plant tours, rather than formal audits. Most of the plants did not have a written food security plan and did not distinguish between food security and aspects of hygiene, sanitation, HACCP, and traceability. The strong presence of MAGFOR government personnel in meat and poultry plans would facilitate communication on any security breaches. Control of entry and exit of personnel and products was evident at most plants. The security of individual items in the USDA voluntary checklist could not be easily determined in the cursory plant tours.

Some prospective candidates for participation in Meat and Poultry HACCP Train-the-Trainer instruction were identified. Only a few candidates were independent of industry or governmental obligations. There is already a high level of knowledge about HACCP and its implementation. PFID activities in this area must supplant existing knowledge and practices and strengthen industry, government, and academic institution linkages. Governmental officials and industry personnel had generally low regard for the ability of university personnel or programs to effectively assist them in improving food safety, implement technology, or provide needed training in processing or products. Virtually all meat and poultry companies and government agencies expressed an interest in having an independent and objective trade group to serve as a resource of unbiased information, be active in promoting industry goals, and serve to represent the industry on issues of common concern.

Dr. Jon Bell of the LSU AgCenter's Department of Food Science collected data for an initial assessment of the seafood processing industry and status of Seafood HACCP capabilities in Nicaragua from January 23 to 28, 2006. Activities included interviews with government officials and industry personal in addition to visits to finfish, shrimp, lobster, and value-added processing facilities. Dr. Bell assessed the current industry/regulatory relationship to providing HACCP training and determined an approach to identify two individuals with HACCP experience and English language capability as potential Train-the-trainer candidates

Dr. Bell found that the seafood processing industry in Nicaragua is primarily export driven, with primary markets in the U.S. and E.U. The domestic market is small, but considered to be growing and an opportunity by some processors. Temperature control and plant sanitation are strongly controlled for lobster, shrimp, and iced finfish from both coasts. Artisan trawling and under-developed pelagic (long line) fisheries on the Pacific coast were strongly identified as needing support and training in improved/modern fishing techniques and best handling practices to improve the viability for the fishermen and profitability of these sectors.

Plant sanitation was observed to be strong in most facilities visited, with strict compliance to internal processes demanded by management. Inspectors from Ministry of Agriculture and Forestry (MAGFOR) are under-staffed but strongly enforce FDA and EU HACCP and GMP requirements with plant inspections and product testing. MAGFOR has a vested interest in HACCP and plant inspection (having a Memorandum of Understanding - MOU with the EU) and as a facilitator of formal HACCP training courses. A significant variety of “HACCP” training, knowledge and implementation was identified and encountered throughout the assessment trip. Most respondents supported the advocacy of strong food safety and HACCP training and were interested in the AFDO Seafood HACCP training courses.

More discussion is needed to determine if an association could complete the needed activities of a progressive trade group and fulfill the requirements for providing needed food safety and processing education, training, and materials. A seafood processing industry association was identified (CAPANIC), but it was not described as an organization supportive to the industry members. Individual companies’ importers and MAGFOR currently provide support pertaining to bio-security requirements, food science and technology. The industry and government personnel generally do not believe that university faculty members provide useful technical information, with the exception of the University of Central America. The University’s Research Center of Aquatic Ecosystems (CIDEA is the Spanish Acronym) provides extension program for the shrimp aquaculture industry.

Dr McMillin’s and Dr. Bell’s findings and recommendations are more fully provided in their trip reports found in Annex E.

2. Issues and Future Activities

Dr. McMillin found a high degree of sanitation, hygiene, and HACCP practices and knowledge already exhibited in the Nicaraguan meat and poultry industries and regulatory agencies. This could serve as a background and basis for training on more advanced topics in sanitation standard operating procedures, HACCP implementation and food security plans. Introductory HACCP training with emphasis on prerequisite sanitation and hygiene programs would seem to establish a basis upon which additional information on HACCP and USDA regulations could allow more focused identification for additional HACCP training.

Candidates for Train-the-Trainer (TTT) in Meat and Poultry HACCP must be selected carefully to insure continuity and sustainability in training after the project. There is no meat or poultry trade association in place to provide support for sustained training and education of industry and government personnel. The employment of several of the qualified individuals for TTT in government agencies or commercial companies would seem to limit training efforts in some respects.

There was no evidence of food safety materials or training for retail food establishments. This would be an area where increased knowledge of personal hygiene and sanitation would benefit the food industry in particular and the country and its standard of living in general.

In the absence of an existing institution that would be appropriate to serve as a National Food and Safety Quality Organization (NFSQO), it is recommended that PFID-MSP establish a new organization. CLUSA's expertise in organizational building would be extremely useful in such an endeavor but CLUSA should take care in ensuring that this new organization is considered to be an independent entity. If yhr NFSQO is developed as a CLUSA organization, it might seem self-serving and if it is viewed that way by the clientele and cooperators, then the NFSQO will not be as successful in its mission as it could be, and the situation might even have the potential to cause damage to CLUSA's existing projects and programs.

Dr. Bell will provide a more detailed assessment report of Nicaraguan Seafood FSQ issues in the next SAR. He supported providing the AFDO Basic Seafood HACCP training structure to the industry via AFDO trained and certified instructors from Nicaragua. CLUSA should identify two candidates for the next AFDO Seafood HACCP Train-the-Trainer (TTT) course as soon as possible to be able to attend the course in Dallas, TX in April 2006. Additionally, the AFDO Basic Seafood Course will be conducted in Baton Rouge by the LSU AgCenter during the week prior to the TTT course in Dallas. Suitable and appropriate candidates that may have not been trained and certified in the AFDO Basic course could enroll in this class in Baton Rouge in April.

One candidate for the TTT course should be strongly considered from MAGFOR, *if* that English language ability can be identified and approved. Initial inquiries were not encouraging. Another candidate should be strongly considered from CIDEA at the University of Central America.

Dr. Bell had two main recommendations regarding potential FSQ organizations in Nicaragua. A seafood association could provide an infrastructure for continued education and training that would be independent of government inspection and compliance oversight. The existing CAMARA association may or may not be able or willing to take this role and this ability should be determined. Dr. Bell also concluded that involving CIDEA in seafood HACCP training beyond the farmed shrimp industry could provide a strong support structure to the current industry/MAG-FOR regulatory relationship. He concluded that efforts to facilitate the development of a functioning FSQO for the seafood industry in Nicaragua should continue.

Section V. USAID/RCSA – Funded Associate Award – Southern Africa

PFID-MSP has received an associate award funded by USAID's Regional Center for Southern Africa (USAID/RCSA). This Project is administered by the LSU AgCenter in conjunction with the following partner institutions:

- The World Food Logistics Organization (WFLO)
- Schaffer and Associates International, Ltd (SAIL)
- The University of Stellenbosch (USt), South Africa
- The Zambian Agribusiness Technical Assistance Centre (ZATAC)
- The University of Namibia (UNAM), and
- The University of Eduardo Mondlane (UEM), Maputo, Moçambique

A. Progress toward Meeting Project Activity Indicators

The Project's overall planning was one of the most important efforts during this quarter. The resulting submission of the Overall Assessment Report and Solution Strategy Paper (OARSSP) was one of the quarter's most significant results. After a summary of the key assessment findings, the OARSSP described the Host Country Partner Institutions' (HCPI's) development of country-specific interventions. Current work items are primarily dedicated to solution strategy formation and initial implementation. Other work items correspond to the following Project activities (full details are available in the Associate Award's 4th Quarterly Report of its 1st Year and the 1st Quarterly Report of its 2nd Year, already provided to USAID/EGAT):

Indicators	Highest Level of Progress
Project Activity - Food Safety, Quality and Security Compliance	
<ul style="list-style-type: none">• At least four future seafood HACCP instructors (as well as up to twenty other stakeholders) receive basic HACCP certification -• Documented product safety of 4 plants in Tier I countries and 3 plants in Tier II area; and• A documented activity plan including at least two training needs and at least one monitoring and audit procedure -• At least one food safety policy initiative will be advocated by the Project Partners up to passage by governing bodies -	<ul style="list-style-type: none">• A total of thirteen stakeholders received certification, including six¹ who were nominated for TTT instruction; and• Dr. Moody facilitated registration of the future TTT participants and HCPIs began visa procurement process.• Plant visits documented in travel report submitted by Drs. Ken McMillin and Michael Moody; and• Planned activities documented in OARSSP.• UNAM sent the completed FSIS questionnaire and accompanying documentation to Dr. Kenneth McMillin for review.
Project Activity - Post-Harvest Value Added Technologies	
<ul style="list-style-type: none">• Case studies of at least two post-harvest technology innovations involving alternative value-added use of available products in the region -	<ul style="list-style-type: none">• UNAM's Food Science Department will examine technical feasibility of seafood products• Ms. Sune Botha of USt will work with stakeholders on potential value added trout products

¹ Of these six, two South Africans are funded under the Leader Award; the rest under the Associate Award.

Indicators

Highest Level of Progress

Project Activity - Plant-Based Technical Training Assistance (TTA)

- Documented selection of at least one participating plant -

WFLO selected the “União Geral de Cooperatives”, a Women's Cooperative of Moçambique for the TTA Program and selected a Team Leader and Technical specialist.

Project Activity - Cold Chain Assessment and Recommendations

- At least two documented investment opportunities in the cold chain sector -

Five general investment recommendations were presented.

Project Activity - Association Development as a Way to Promote Group Marketing

- At least four national trade associations will be developed to provide marketing, advocacy and capacity building services to their members –
- Recommendations of how at least five producer based associations will be developed to provide marketing, advocacy and capacity building services to their members –

WFLO established criteria to select MSP Industry Associations for participation.

- OARSSP noted that PFID-MSP will conduct interventions to improve five target associations' capacity in regional collaboration and private sector collaboration; and
- Process of baseline data collection begun for targeted producer/processor associations/ cooperatives.

Project Activity - Producer-Processor-Market Linkages

- Three market studies –

Findings from five focus groups were collected in a report to USAID/RCSA

Project Activity - Investment Opportunities/Leveraging Resources

- An Action Plan that will identify at least two investment opportunities in the meat, seafood and poultry sectors in five target countries in Southern Africa, as well as outline measures to realize those opportunities –

- Project Assessment Planning and Action (PAPA) documents for three investment opportunities each in South Africa and Zambia were submitted with the OARSSP; and
- USt hired local a consultant who met targeted stakeholders and potential sources of finances to initiate leveraging of funds process.

B. Deviations from Targets and Additional Information

Some of the work item targets for these reporting periods were not yet completely met:

Indicator	Status
Project Activity - Food Safety, Quality and Security Compliance	
<ul style="list-style-type: none">At least four future HACCP instructors receive Train the Trainer (TTT) Instruction –	The Association of Food and Drug Officials (AFDO) rescheduled the course for April 2006.
<ul style="list-style-type: none">At least one food safety policy initiative will be advocated by the Project Partners up to passage by governing bodies -	CTO USAID/RCSA put this activity on hold in January

Project Activity 3 - Plant-Based Technical Training Assistance

- Travel report documented training and technical assistance provided by WFLO specialists with anticipated benefit to participating firm
- WFLO will have established the logistical schedule for implementing the TTA sometime next quarter; and
- Due to budget and travel constraints and based on successful TTA programs elsewhere, the benchmarking component of the TTA activity will occur just prior to the training phase - this change saves time and resources, yet does not diminish the potential impact of the program.

Project Activity 5 - Information Support and Outreach

- At least two documented Information Support Systems (ISS) design models –
- Based on guidance received at the Planning Meeting, the HCPIs decided not to continue with this as a stand-alone activity

Section VI. General Management Issues

A. Project Planning and Monitoring

The Project Monitoring Charts enable PFID-MSP management to track activity progress and provide the logical framework for the Annex A, the Project's Comparison Chart.

Activity planning for PFID-MSP's Year 2 Planning resulted in Annual Work Plans (AWPs) for each of the Project's three target areas (Eastern Europe/CIS, South Africa and Nicaragua) as well as an AWP for the USAID/RCSA-funded Associate Award. The AWPs outlined the following activities:

1) Eastern Europe/CIS

- a) *IIFSQ Expansion*, with emphasis on Logistical Expansion, Institutional and Programmatic Expansion (including course conduct), and Hazard Analysis Critical Control Point (HACCP) Audit Capacity Building;
- b) *Food Security Capacity Building*, with emphasis on a risk assessment seminar, follow-up and preparations for a regional risk assessment conference;
- c) *Better Process Control School*, including preparation, course conduct and follow-up; and
- d) *General activities* that cut across the objectives will include branding, monitoring, evaluation and planning.

2) South Africa

- a) *Post Harvest Technology Center (PHTC)*, with an emphasis on curriculum development and initial course conduct;
- b) *Food Safety, Quality (FSQ) and Security Compliance*, with an emphasis on seafood HACCP TTT and FSQ assessment for game meat; and
- c) *Value-Added Post Harvest Technology for Cold Chain Technologies (PHT-CCT)*, with an emphasis on technology selection and case study initialization.

3) Nicaragua

- a) *Food Safety, Quality (FSQ) and Security Compliance*, with an emphasis on establishment of an FSQ Organization, Seafood HACCP TTT and preparations for in-country capacity building
- b) *Post Harvest Technology (PHT) for Added Value Products*, with an emphasis on technology identification and methodology design; and
- c) *Plant-Based Training and Technical Assistance*, with an emphasis on participant identification and benchmarking.

B. Program Development

Based on Dr. Velupillai's November trip to Kazakhstan, as well as a previous partnership between the LSU AgCenter and the Pragma Corporation, the two organizations have agreed to explore cooperation in the areas of food safety regulations, establishing a functional food safety system to enable enhancement of Kazakh food industries to meet international norms, and create local capacity. As such, both organizations exchanged information on their current projects in the region. Based upon this exchange, the capability of the LSU AgCenter and its Eastern European partners in the food safety regulatory compliance area appears to fit into the Metrology, Accreditation, Standardization and Quality (MASQ) program that Pragma Corporation now implements for the Central Asian region. With this approach, the LSU AgCenter team and Mr. Nemeroff of the Pragma Corporation met with the local USAID Mission. Indications were that there would be an interest, and a joint proposal was prepared by the LSU AgCenter and Pragma Corp. The USAID Mission, it is understood, has a regional interest, and it appears that Kazakhstan, Tajikistan, and Kyrgyzstan would have to be the target countries. While the LSU AgCenter and the IIFSQ will draw on their PFID-MSP experience, their services provided under any future agreement with Pragma will be given outside of the Project. This proposal was submitted by the LSU AgCenter on December 22, 2005 with a copy to Ms. Carol Wilson, the Project's CTO. Pragma is currently reviewing this document.

In a related program, the LSU AgCenter submitted a proposal to the USDA in response to an RFA received in November 2005 to conduct an assessment of the food Safety status and to inspect meat and dairy plants in Armenia. By a letter dated January 27, USDA-Foreign Agricultural Service (USDA/FAS) awarded this assessment to the LSU AgCenter. However, USDA/FAS decided to retract the assessment on February 7, 2006.

Annex A

Summary Table Comparing 1st Annual Work Plan (Phase II) Indicators with Actual Results of Reporting Period

Activity	Planned Indicators	Actual Results	Notes: Reasons for Deviation, Corrective Action, Consequences, etc.
<i>Eastern Europe/CIS Component: Project Objective # 1 – IIFSQ Expansion</i>			
Assessment of HACCP Compliance	Conduct on-site assessment. Documented collection of data in each of Ukraine and three other countries, including identification of training participants (at least 40% of whom should be Ukrainians)	Assessment trip to Kazakhstan conducted on November 18-26 <ul style="list-style-type: none"> • Significant potential identified, as documented in Dr. Velupillai’s trip report • As a follow-up, a proposal was prepared and submitted to USAID through Pragma Corporation 	Assessment previously conducted in Georgia and Azerbaijan
Institutional Establishment	Documented identification of and negotiation with of ICS: <ul style="list-style-type: none"> • Determination of working terms between IIFSQ and ICSs • Signed subcontracts and draft Scopes of Work for ICSs 	Joint activities are negotiated with MCFQS: <ul style="list-style-type: none"> • Meetings and correspondence are on going • Potential joint efforts are identified, including co-writing of articles to be published in Ukrainian and Moldovan periodicals and giving certified Seafood HACCP training in Moldova Georgian ISC is selected; USAID/Baku mission gave its approval for the CCC	<ul style="list-style-type: none"> • Sub-contract with CCC will be prepared if donor funds for Year 2 are fully available • Moldovan FQSC wishes to participate in Year 2 activities, but its contract is over in 2006 • IIFSQ has had communication problems with Georgian ICS
	ICSs are registered as national FSQOs and have institutional capacity for same	MCFQS is implementing HACCP at three facilities: Private enterprise “Ion Bilba” (sausage processing), Corsor Ltd. (poultry slaughter and processing), Vesnicia Ltd (fresh water fish processing).	
HACCP Audit Course	Training report and two Ukrainian participant’s NFA certification of completion	NFA’s HACCP auditor training was attended by Dr.McMyroniuk and Oksana Dorofyeyeva - trip Report prepared by Dr.McMillin and reviewed by Dr.Myroniuk	Dr.Myroniuk and Oksana Dorofyeyeva didn’t receive certificates as the fourth day of training (final certification) exams was restricted to NSF International Auditors
	Initial planning document for HACCP inspection and certification in Ukraine and other countries	A planning document on HACCP audits was prepared	

Activity	Planned Indicators	Actual Results	Notes: Reasons for Deviation, Corrective Action, Consequences, etc.
<i>Eastern Europe/CIS Component: Project Object #2 – Food Security Capacity Building</i>			
Follow-up	<ul style="list-style-type: none"> • Plan outlining key personnel and roles is identified • Travel throughout Ukraine and to other countries for follow-up is scheduled 	Follow-up is planned for the next visit of Dr.Moody to Ukraine (May-June 2006)	
	Report of initial technical assistance provided in this area and recommendations	Breeze Ltd. received food security materials used at Dr.Moody’s seminars conducted in June	
<i>Eastern Europe/CIS Component: Project Object #3 – Better Processing Control School</i>			
2006 School in Region	Planning document including: <ul style="list-style-type: none"> • Revised program design (relative to 2005 BPCS) • Venue selection and logistical issues 	<ul style="list-style-type: none"> • Revised program design (particularly in terms of participants and instruction roles for IIFSQ) has been initiated • Venue for BPCS is selected (KNUTE) 	
<i>South African Component: Project Object # 1 - Post Harvest Technology Center (PTC)</i>			
Assessment	Documented agreement between WFLO and USt regarding assessment methodology	Discussion items included: <ol style="list-style-type: none"> 1. The types of measurements to be taken 2. Channels of communication between USt., local industry partners and trade groups to collect input pertaining to PHTC design and direction 3. Who the industrial partner(s) will be - or if it is too early, then the process for identifying the industrial participants 4. Possible mini-projects 	The PHTC has been established

Activity	Planned Indicators	Actual Results	Notes: Reasons for Deviation, Corrective Action, Consequences, etc.
	Documented collection of findings and recommendations for PHTC's program directions	<p>Some of the core functions of the PHTC were identified as follows:</p> <ol style="list-style-type: none"> 1. Ensure that the two USAID projects (and any new projects in South Africa) run concurrently and enhance their output. - Included in this function would be the HACCP training. 2. Develop and teach the Cold Chain Technologies course 3. Establish a workable methodology between the data-base at WFLO and the PHTC to facilitate the exchange of information. 4. Maintain and expand the data base applicable to meat composition. 	<ul style="list-style-type: none"> • Round table and industry discussions conducted on two occasions to plan for PHTC design and launch: (a) At the first meeting, WFLO was present; (b) They were not present at the 2nd meeting, but were aware of the meeting and had seen and approved the Agenda (this only applies to the training in cold chain) • Others might be identified as time goes on including a three year program developed along the lines of the WFLO Institute • Collaboration and coordination with SARDIS's capacity building activities will be stressed
<i>South African Component: Project Object # 3 – Value Added Post-Harvest Technology – Cold Chain Technologies</i>			
Assessment of South African cold chain and identification of potential technology	Documented identification of a potential technology	Technologies associated with cold storage sector pertaining to energy savings and temperature control were identified as initial areas of potential for the activity	<ul style="list-style-type: none"> • Roelcor, a stakeholder firm, has already installed plastic curtains in freezer rooms • Alternatives include hot de-boning of ostriches, electrical stimulation, slaughtering of pigs at night or spray chilling of carcasses • Overall Cold Chain Assessment prepared under USAID/RCSA-funded associate award but no additional technology was specifically identified in the report

Activity	Planned Indicators	Actual Results	Notes: Reasons for Deviation, Corrective Action, Consequences, etc.
Case Study Initiation	Approved methodology on proposed cold chain innovation case study, including provision of technical assistance from PFID-MSP in coordination with a stakeholder	Information pending for next year	Pending identification of technology (above) – case study methodology, potential partners and potential technology with measurable indicators will be identified by the end of the quarter.
Case Study Initiation (cont.)	Documented initialization of trail implementation of proposed technologies at plants	Information pending for next year	Case study initiation will continue into 2006 to determine the technology's overall feasibility
<i>General Project Monitoring and Management</i>			
Establishment of Monitoring/Evaluation procedures and work items	Establishment of Monitoring/ Evaluation procedures and work items to determine Project's M&E system	Project Coordinator proposed that the quarterly implementation of the Project Monitoring Chart (PMC) comprise the basis of the Project's M&E plan for South Africa	
Year 2 (6) Planning	Submission of 2 nd AWP	To be submitted by February 22	
<i>Nicaraguan Component: Project Object # 1 – Food Safety, Quality and Security Compliance</i>			
Assessment of HACCP Compliance	Documented collection of data and report for on-site assessment of seafood HACCP analysis with analysis, conclusions and recommendations	Availability of technical specialist delayed this trip until January 22-29	
	Documented collection of data and report for on-site assessment of Meat and Poultry HACCP analysis with analysis, conclusions and recommendations	Availability of technical specialist delayed this trip until January 8-14 but documentation are included in this SAR	<p>Key recommendations include:</p> <ul style="list-style-type: none"> • Existing high degree of sanitation, hygiene, and HACCP practices and knowledge can serve as basis for more advanced topics • TTT candidates were identified • PFID-MSP should establish a new FSQ Organization

Activity	Planned Indicators	Actual Results	Notes: Reasons for Deviation, Corrective Action, Consequences, etc.
Institutional Establishment	Documented identification of: <ul style="list-style-type: none"> • Existing FSQO to be enhanced or • New FSQO to be created 	Recent assessment trips have found no FSQO in Nicaragua but industry does work with Ministry of Agriculture (MAGFOR), which provides assistance on Food Safety and Quality issues including USDA certification required for export	MAG-FOR is planning to start an office of procedures and certification under an Inter-American Development Bank project in 2006 - This office will provide assistance and training on food safety <ul style="list-style-type: none"> • PFID-MSP could support this program with training • This office could be enhanced as an FSQO
	Draft Scope of Work for FSQO (and organizational checklist if necessary) Determination of working terms between PFID-MSP and FSQO (and terms of organization if necessary)	Information pending for next year	Delay due to postponed trip by LSU-based technical specialists
<i>Nicaraguan Component: Project Object # 3 – Value Added Post-Harvest Technology – Cold Chain Technologies</i>			
Assessment of Nicaraguan cold chain and identification of potential technology	Documented collection of data and report of on-site assessment of cold chain technologies with analysis, conclusions and recommendations	WFLO's four-sector analysis of the cold chain in Nicaragua was initiated in late October of 2005, with the assessment report submitted in December. Recommendations pertaining to potential cold chain technologies and potential participating companies were included in the assessment report.	WFLO recommends that this activity be changed to one pertaining to Plant-Based Training and Technical Assistance, similar to that being performed under the Associate Award in Moçambique - personnel will evaluate interested companies, working with CLUSA to identify appropriate companies and technologies
Case Study Initialization	Commitments from at least two companies to explore a cold chain innovation with the project	Information pending for next year	
	Approved case study methodology on proposed cold chain innovation case study	Information pending for next year	

Activity	Planned Indicators	Actual Results	Notes: Reasons for Deviation, Corrective Action, Consequences, etc.
<i>General Project Monitoring and Management</i>			
Establishment of logistics, office, communication facilities, etc.	Appropriate documentation	PFID-MSP operations will be managed at CLUSA's office	
Establishment of Monitoring/Evaluation procedures and work items	Project's M&E plan prepared and submitted in August SAR	Project Coordinator proposed that the quarterly implementation of the Project Monitoring Chart (PMC) comprise the basis of the Project's M&E plan for Nicaragua	
Year 2 (6) Planning	1 st Draft Submitted, Preparation of AWP	<p>CLUSA submitted Concept Papers/Planning Documents (CPPDs) for each of the following Project Activities:</p> <ul style="list-style-type: none"> • Food Safety and Quality • Post Harvest Technology – Value Added Products • Post Harvest Technology – Cold Chain Technology • Plant-based Training and Technical Assistance 	The CPPD for the Post Harvest Technology – Cold Chain Technology activity will be substituted for the one pertaining to Plant-Based Training and Technical Assistance

ANNEX B

HACCP Audit Planning Document

Background notes: Certification of a facility's HACCP system means recognition by a party deemed competent in verifying the system's compliance with requirements of a relevant national or international regulation on food safety, usually called a Standard (sometimes this procedure is referred as conformity assessment). On Sept.1, 2005 the first International Standard ISO 22000 was published, meaning that a globally recognized and unified set of requirements to food safety management systems is now available. Facility certification is a result of a positive audit of the implemented HACCP system. These audits are called certification or registration audits. Before HACCP implementation starts, the so called diagnostic audit is conducted to assess initial status of the facility, identify gaps and specific needs.

A strategic goal for IIFSQ is to become accredited (receive a recognition of its competency) to conduct facility certification for HACCP compliance. To achieve this goal, the following is necessary:

1. Have HACCP auditors trained, which was done in Ann Arbor in October 2005;
2. Draft a new National Standard on food safety based on ISO 22000, which was done in October-December;
3. Have competency of auditors conformed by an independent third party, and receive auditor certificates. Opportunities for this will be explored in 2006;
4. Develop auditor check-lists and verify them at diagnostic audits during 2006 (up to 5 audits during the year in Ukraine and other CIS countries);
5. Develop a package of documents outlining requirements, rules, and procedures for conformity assessment activities. At Ann Arbor HACCP Auditor Training, Dr.Myroniuk and Oksana Dorofeyeva received appropriate knowledge, and copies of draft ISO 22003 Standard "Requirements to Food Safety Management System Auditors and Bodies";
6. Upon approval of the National Standard and Audit Procedure, IIFSQ is going to train more auditors, submit an application to National Accreditation Body and get an authorization to conduct HACCP certification/registration audits. By achieving this, IIFSQ will be able to provide a full package of HACCP services to local and foreign food processors.

ANNEX C

HACCP Training for the Benefit of Consumers and Businesses

Note: this story was specially requested by USAID/Kyiv) and submitted to the mission where it was printed in its January 2006 Newsletter “USAID Insight”

What is HACCP, why do we need it and how to implement it – those were the questions asked by Ukrainian food processors and regulators several years ago, when food safety was not even in the vocabulary in Ukraine. Today for most of the industry people the answer is obvious: HACCP (Hazard Analysis and Critical Control Points food safety management system) is needed to make your business consistent, to facilitate joining WTO and EU, be eligible to sell food internationally, and to ensure food safety for consumers. Not only HACCP helps to prevent foodborne diseases; it also facilitates exploration of new markets: as almost all food markets targeted by Ukraine either have already made HACCP a precondition for export, or are completing its implementation, Ukraine has no alternative but to prepare national processors to fulfilling international requirements.

International Institute for Food Safety and Quality (IIFSQ) established in Kyiv in 2003 as a part of mandate of Phase I of the Partnership for Food Industry Development Project (PFID) and a current partner of LSU AgCenter in PFID Phase II, is proud to play one of the key roles in bringing a new level of best practices to Ukrainian food industry by addressing a lack of capacity, increasing food safety awareness, drafting and reviewing laws and regulations, developing appropriate methodological literature, providing consultations to food facilities, etc. However, the focus of all IIFSQ activities is training in HACCP food safety management systems.

Certified HACCP training courses offered by IIFSQ are unique not only for Ukraine but also for all CIS countries. IIFSQ is the only one authorized provider in CIS of Basic Seafood HACCP Training accredited within Seafood HACCP Alliance (USA), and of Basic Meat and Poultry HACCP Training accredited within International HACCP Alliance. These courses are commodity specific, meaning that they give participants in-depth knowledge of particular hazards associated with certain types of food, as well as of appropriate controls. IIFSQ has a team of 16 certified HACCP trainers, and supports training participants with 6 major HACCP manuals and guides translated into Russian. One of the strengths of the training is that it is highly interactive and includes practical sessions helping to get a hands-on experience in developing HACCP systems. Those who successfully complete final exams are awarded with internationally recognized certificates.

What do participants think about HACCP training provided by IIFSQ?

Antonina Polischuk, Chief technologist, Kovelsky Meat Processing Plant: “...I’ve been working in food industry for more than 30 years. Over long years of practice I attended numerous seminars, workshops, conferences and courses, and what I would like to say is that this seminar stands out among others because knowledge and skills acquired can be fully applied. And the most important is that our industry really needs HACCP plans development and implementation.

Sergey Matveyev, Director, Breeze Ltd., Berdyansk: “...To my opinion, this is an excellent training. I see good prospects of how to organize operation in a right manner using HACCP system”.

Up to date, IIFSQ has trained over 160 individuals at 8 Basic HACCP Training courses in Ukraine, Moldova and Azerbaijan; participants are food processors and regulators now speaking one food safety language. As a result, most of industry representatives have applied new HACCP skills in day-to-day operations and opened new business opportunities for their facilities, including new markets, higher efficiency, better prices, additional jobs, and increased wages. IIFSQ is always ready to support its alumni with follow-up consultations and expert assistance.

IIFSQ welcomes new members to food safety family for the benefit of consumers and private businesses.

ANNEX D

How to Become a Supplier to McDonald's: Cerealia Ukraine Ltd. Success Story

Cerealia Ukraine Ltd. is a member of Cerealia Group Corp., and processes and promotes food products made of cereal crops. In 1991 new APV-Baker fast breakfasts processing lines were installed at the plant facility. Since that time, for over 10 years Cerealia has produced cereal food. Thank to unique processing technologies and continued increase of product variety, Cerealia Ukraine today is the largest processor of convenience breakfasts in Ukraine and holds the leader position in three major segments of Ukrainian market of convenience breakfasts including ready-to-eat flakes, shaped products, and pads. Products of "Start!" and „AXA” trademarks are exported to Russia, Georgia, Kazakhstan, Uzbekistan, Moldova, Baltic countries, and Turkey, totalling almost 24% of Cerealia's output. However, further growth and expansion significantly depend on compliance with new national regulations and international requirements. As such, Cerealia Ukraine faces a challenge of food safety management system implementation derived from specifications of large foreign companies that require their suppliers to have HACCP implemented and from the vision to increase output capacity and explore new foreign markets.



In 2003 top management decided to develop an integrated quality and food safety management system based on international Standard ISO of 9001:2000 series, and on National Standard of Ukraine DSTU 4161-2003.

HACCP implementation started from bringing routine operations in compliance with requirements of Good Manufacturing Practices (GMP). The company went through several rounds of reconstructions, redesigned processing areas, renovated obsolete equipment, and changed the mindset and habits of personnel. The latter is particularly in relation to rigorous observance of sanitation and hygiene requirements. Realizing the need for additional knowledge and external help, Cerealia sent its specialists to HACCP courses conducted by the International Institute for Food Safety and Quality (IIFSQ), established under PFID Project in Ukraine and well known to have a large expertise in food safety and HACCP issues. Cerealia also invited IIFSQ staff as consultants for HACCP system development. These consultations concerned the HACCP approach including HACCP plan design and preparation of documents to the satisfaction of the National Standard on Food Safety Management Systems.

In 2003, as a result of initial HACCP implementation, Cerealia Ukraine became a supplier to McDonald's worldwide fast food network in Ukraine, and up to mid 2005, it supplied 56.1 tons of rice balls for McFlury at a total value of 295,700 UAH (\$58,500).

Another globally known food company, Kraft Foods Corp., is showing interest in Cerealia Ukraine's products, and negotiations on supply details are currently being conducted. As does McDonald's, Kraft Foods mandates implementation of HACCP system as a major requirement to all its suppliers. Having

inspected Cerealia's facilities, Kraft Foods' auditors recognized that Cerealia's food safety system complies with Corporation's criteria.

HACCP also has a positive impact on Cerealia's output capacity; in 2005 it increased its sales by volume 18% in comparison with 2004 due to new contracts and higher processing efficiency. In 2006 the company plans to increase the capacity by additional 30%, and to launch a new pasta processing department designed in accordance with GMP requirements.

Cerealia's lesson to the Ukrainian food industry is to address customer needs, find the appropriate information source on how to implement a relevant HACCP program, be ready to invest in the changes required by that program and enjoy a new market.

Annex E
Combined Technical Assistance Narrative: October 2005 – January 2006
List of Trip Reports

1. PFID Trip Report – HACCP Auditor Course, October 18-21, 2005 Ann Arbor, Michigan by Dr. Kenneth McMillin, LSU AgCenter Department of Animal Sciences, Gennadii Myroniuk and Oksana Dorofyeyeva, International Institute for Food Quality and Safety
2. The Integrated Cold Chain in Nicaragua: Cold Chain Technologies Assessment Report and Recommendations, by the World Food Logistics Organization, November 2005
3. Trip Report and Recommendations: Trip to Ukraine and Kazakhstan, November 14-30, 2005 by Dr. Lakshman Velupillai, LSU AgCenter International Programs
4. Trip Report – Collection of Data and Report for On-site Assessment of Meat and Poultry HACCP Analysis – and Nicaragua Trip Log, January 2006 by Dr. Kenneth McMillin, LSU AgCenter Department of Animal Science
5. Travel Report - Collection of Data and Report for On-site Assessment of Seafood HACCP, February, 2006 by Jon W. Bell, LSU Ag Center Department of Food Science

**PFID Trip Report – HACCP Auditor Course
October 18-21, 2005 Ann Arbor, Michigan**

Kenneth McMillin, Professor of Animal Sciences, LSU AgCenter
Gennadii Myroniuk, Director General, International Institute for Food Quality and Safety
Oksana Dorofyeyeva, Director, Organization and Training, International Institute for Food Quality and Safety

This activity was conducted as part of the USAID Partnership in Food Industry Development project phase II Eastern Europe/CIS Component: Project Objective # 1 – IIFSQ Expansion under the Leader-with-Associates Agreement No: PCE-A-00-01-00012-00 funded by the United States Agency for International Development USAID M/FM/CMP.

The HACCP Auditor course was conducted by the National Sanitation Foundation (NSF) Center for Public Health Information with emphasis on auditing standards and practices related to Codex Alimentarius and International Standards Organization guidelines for sanitation, hygiene, and Hazard Analysis Critical Control Point (HACCP).

Dr. Myroniuk and Ms. Dorofyeyeva traveled from Kiev, Ukraine on Sunday, October 16 to Ann Arbor, Michigan via Paris, France. Dr. McMillin traveled from Baton Rouge, Louisiana via Dallas, Texas. Upon arrival at the Detroit Metropolitan Airport, Dr. McMillin got the reserved rental car and awaited the arrival of Dr. Myroniuk and Ms. Dorofyeyeva. They were delayed because their Paris to Atlanta flight had returned to Paris due to an ill passenger. After several hours of waiting in the airplane and the airport, Dr. Myroniuk and Ms. Dorofyeyeva arrived at the Detroit airport on a direct flight from Paris at about 10:30 pm (EST). The travelers drove to Ann Arbor, Michigan and checked in at the Hampton Inn North hotel.

The next day, Monday, October 17, the travelers met for breakfast, drove to the NSF building to learn the course schedule, and drove to the Detroit airport to change Ms. Dorofyeyeva's return ticket. After two and a half hours of discussions with Delta Airline, Air France, and Louisiana Travel personnel, the travelers returned to Ann Arbor.

The course started at 8:30 am. Ms. Christine Bedillion, NSF International HACCP Program Coordinator and Auditor Course Instructor introduced herself and gave a brief outline of the course (course schedule is attached). Each course participant introduced himself or herself and explained why they were in the course. The course generally proceeded with the instructor providing information about the topic followed by experiential learning of the practices by participants. Information presented the first day emphasized evaluation, monitoring and auditing practices and included suitability of guidelines, Codex Alimentarius CAC/RCP 1-1969 Rev. 4-2003 Recommended International Code of Practice General Principles of Food Hygiene Annex A Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application, hazards, and validation of critical limits. Direct evaluation and auditing experiences were gained through class exercises on citing of elements of standards using Codex General Principles of Food Hygiene, analysis of hazards, and critical limit validation. At the end of the afternoon session, an assignment to be completed before the next day on a validation case study was given.

The second day began with a discussion of the homework assignment of the validation case study. Information was presented on ISO 9001 – 2000 Quality Management Systems – Requirements elements. It was explained that the focus was on management and customers with a program that everyone knows what and how is to be done. Equivalent sections of ISO 9001: 2000 and Codex hygiene were discussed. Principles of auditing were reviewed in the context of comparison to standards. ISO 22000: 2005 Food safety Management Systems – Requirements for any organization in the food chain was discussed. Class exercises were to identify correlations between elements of ISO 9001: 2000 and Codex Alimentarius General Principles of Food Hygiene and dealing with barriers to collecting audit information.

The third day of the course was initiated with descriptions of opening and closing audit meetings with company representatives and a review of general auditing practices. This was followed by information on audit notes and evidence collection, corrective action requests, and desk audit reports. Information was provided on ISO 19011: 2002 Guidelines on Quality and/or Environmental Management Systems Auditing. Class exercises were on reviewing and analyzing corrective action requests, writing a corrective action request, documenting audit information through audit notes, conducting a desk audit and preparation of an audit report.

The course was concluded with a summary of the topics that had been covered during the three days. Additionally, the instructor gave Dr. Myroniuk and Ms. Dorofyeyeva a copy of ISO/TC 34 N1157 2005-08-30 Food safety management systems- Requirements for bodies providing audit and certification of food safety management systems.

Travelers left the hotel at 8:45 am on Friday, October 21 for the Detroit Metropolitan Airport. At the rental car agency, Dr. McMillin caught a shuttle to Smith Terminal to catch his airline flight while Dr. Myroniuk and Ms. Dorofyeyeva rode shuttles to McNamara Terminal to travel to their destinations.

Attached to this report are a schedule of the materials covered in the course, a copy of the NSF International HACCP Auditor Course PowerPoint presentations, and the front pages of entire documents that were given to participants. The full documents of Codex Alimentarius CAC/RCP 1-1969 Rev. 4 – 2003 Recommended International Code of Practice General Principles of Food Hygiene (31 pages), ISO 9001: 2000 Quality Management Systems – Requirements (23 pages), ISO 22000: 2005 Food Safety Management Systems – Requirements for any Organization in the Food Chain (32 pages), ISO 19011: 2002 Guidelines for Quality and/or Environmental Management Systems Auditing (32 pages), and ISO/TC 34 N1157 2005-08-30 Food safety management systems- Requirements for bodies providing audit and certification of food safety management systems (45 pages) are available upon request.

It is believed that the benefit of the training course would have been higher if the course had provided an opportunity for the three PFID participants to confirm their competency as auditors by registering, passing final exams (conducted on the fourth day), and getting certificates. Dr. Myroniuk and Oksana Dorofyeyeva will prepare initial planning documents for HACCP audits and certification procedures in Ukraine and other countries.

**THE INTEGRATED COLD CHAIN
IN NICARAGUA**

PARTNERSHIPS FOR FOOD INDUSTRY DEVELOPMENT (PFID)

Cold Chain Technologies Assessment Report and Recommendations



November 2005

Additional information regarding this report can be obtained from the
World Food Logistics Organization (WFLO)

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Section I. Introduction & Project Background

A. Introduction

The production of a safe and wholesome food supply should take the highest priority of any supply, manufacturing, distribution or preparation entity within the food chain. However, even in spite of a tremendous knowledge base on the causes and preventions of foodborne diseases, there are still incidents of negative food events occurring within our food supplies. Of the identified causes, some may be a result of cultural and/or social influences on the population, while others may result from environmental conditions present in a particular area or region of the country and/or world. Management of the cold chain (product temperature) through the steps of harvesting, processing (both hot & cold), distribution and final sales either by retail or through food service outlets has been identified by world leaders in the food processing areas as one of the most important means to help reduce the incidence of illness from food. Within the confines of this report, this will be known as the “Integrated Cold Chain”.

Nicaragua is a geographically diverse country with the majority of its 4.5 million people inhabiting its pacific and central mountainous zones while a small population inhabits the eastern zone of the country. It is estimated that population of the Nicaraguan capital of Managua has over 1 million inhabitants and is growing rapidly. As growth of the area has continued and modern improvements have been made, residents of the area have found themselves caught between two different worlds. One is the traditional culture and practice of the “Open Air” market with its small booths of fresh meat, poultry and fish brought to the market and displayed for the consumer without the aid of refrigeration. The other, the more modern and managed food distribution and market place with its cold display counters, service centers and prepackaged foods.

The red meat, poultry and seafood industries find themselves in the same situation. On one hand are the small, unregulated back yard types of operations which operate mainly within the confines of the open air markets. At the other end of the spectrum are the modern, highly mechanized commercial operations that have a clear understanding of the need to operate the cold chain in an efficient and orderly manner from harvest to consumption. These operations are well established and are operated in a very clean and sanitary manner, embracing the principles of both the Hazard Analysis of Critical Control Points (HACCP) and the ISO standards. It should be noted that all of the larger processors had a totally committed physical plant and some of the most modern refrigeration equipment available with more on order. Each facility also had at least one and sometimes two backup electrical generators for those times when power supply was interrupted.

Inspection oversight of these operations is handled by personnel from the Nicaraguan Ministry of Agriculture (MAG-FOR) in a very cooperative manner with neither side acting in an adversarial role. The HACCP stamp of approval is highly sought after by food industry management within the country and recognized by customers throughout the retail sector as demonstrating good processing techniques and as a sign of safe food production.

B. Mission Objectives and Scope of Work

This document describes the travel of Robert Dickson, technical consultant to the World Food Logistics Organization (WFLO), on the PFID-MSP project funded by the Center for Economic Growth, Agricultural & Trade of the United States Agency for International Development (EGAT/USAID). Mr. Dickson was hired to conduct a market profile and project assessment for the Cold Chain Technologies (CCT) activity being conducted by WFLO. Mr. Dickson traveled to Nicaragua from October 30 to November 5 of 2005, working with PFID-MSP partners The Cooperative League, United States of America (CLUSA).

The purpose of the mission was to Conduct assessments for the following PFID (and WFLO-spearheaded) Project Activities:

- To conduct a review of the integrated Cold Chain industry in Nicaragua to better understand the unique constraints of the local marketplace, including review of processing, storage, distribution and retail sectors;
- To conduct initial investigations into locating suitable technologies, and henceforth potential cooperators for the Value Added Post Harvest Technologies ~ Cold Chain Technologies (CCT) program, and to discuss activity components with local partners.

The travel itinerary for Mr. Dickson was as follows:

<u>DATE(S)</u>	<u>LOCATION</u>	<u>ACTIVITY</u>
Sunday, October 30		Arrival in Managua, Nicaragua
Monday, October 31	Managua	Meetings with local partners
Tuesday-Friday, November 1-4	Country-Wide	Industry tours and meetings
Saturday, November 5	Managua	Depart Nicaragua for U.S.

C. Cold Chain Technologies Project Overview

WFLO technical specialists will participate in the development, launch and evaluation of a “**Cold Chain Technology**” program, whereby modern cold storage and warehousing technologies leading to increased efficiency in the cold chain will be promoted to local companies. In this activity, host country Project staff and stakeholders identify a link, or specific process, in the cold chain, the improvement of which can lead to increased operational efficiency and/or a higher value product. With guidance from WFLO, the staff and stakeholders conduct technical and economic case studies to determine the

feasibility of that process. If such case studies have positive results, stakeholder enterprises are encouraged to adopt such a process on a commercial level.

In the short term, implementation of proposed technologies will require labor to ensure success. In the long term, addressing inefficiencies in the integrated cold chain through this menu item will ultimately increase the food industry's capacity to expand production and employment opportunities in a sustainable manner.

An example of such an activity in the meat, seafood and poultry processing sector could be the investigation and adoption of specific animal handling mechanisms and practices that would provide measurable and significant reductions in pre-slaughter stress of animals in the processing chain. Reduction of stress would measurably improve the quality of the carcass meat, improve processing attributes (color, water holding capacity and pH) and significantly improve the quality, safety and value of the raw material entering into the cold chain.

Another example could be the investigation and adoption of carcass cooling procedures and methods designed to push the integrated cold chain further back towards slaughter, extending the usable shelf life of perishable products and resulting in measurable and significant product quality, safety and efficiency attributes. Other examples include retrofits and small field refrigeration units.

Examples in the warehouse sector could include installing rubber strip curtains for enhanced cold chain management and energy efficiency or implementation of modern warehouse management practices for improved profitability and efficiency.

This activity would include a three-step process for implementation and evaluation, including the following steps:

- **STEP ONE: ASSESSMENT & IDENTIFICATION.** With guidance from PFID-MSP specialists, in-country support offices and stakeholders will identify a process or technology that addresses a critical cold chain need. Priority will be given to processes that increase energy efficiency or improve a product's quality in relation to a market standard. Including the acceptance of written applications for participation and a subsequent review, by local partners and U.S.-based specialists, to determine that the facility is indeed a worthy candidate for the program.

THIS STEP WILL BE CONDUCTED DURING YEAR 1 OF THE PROJECT

- **STEP TWO: CASE STUDY ANALYSIS.** The in-country office will secure a commitment from selected stakeholders to test the technology on an experimental level, thus determining the technical feasibility of the procedure. The case study will continue with palatability tests (if needed) and cost/benefit analysis to determine the technology's overall feasibility.

THIS STEP WILL BE CONDUCTED DURING YEAR 2 OF THE PROJECT

- **STEP THREE: PROMOTION OF COMMERCIAL LEVEL ADOPTION.** If the identified technology is determined to be feasible, the in-county support offices will share this information with stakeholders and with potential consumers. It is anticipated that the commercial prospects will be readily apparent to the stakeholders, particularly to those who participated in the case studies. At this point, the Project’s role will be to provide technical assistance as needed, monitor results and impact (energy savings, reduced expenses, product quality, etc.) and advocate the expansion of the process when possible.

THIS STEP WILL BE CONDUCTED DURING YEAR 3 OF THE PROJECT

D. Facility Selection Criteria

Facilities wishing to participate in the WFLO Cold Chain Technology program must meet the following requirements:

1. In order to apply for the CCT program, the facility must produce or handle red meat, poultry and/or seafood products as a primary source of revenue. Alternative products are allowed, provided they represent less than 25 percent (25%) of the business sales volume.
2. In order to be eligible to apply for the CCT program, the facility must be operating at least at 70 percent (70%) of normal capacity during the time of the facility review and during the time of the CCT activity. Facilities should be operational at least 4 days per week during the evaluation and training period, and should not operate on a seasonal or sporadic basis.
3. Company management must be willing and able to incorporate suggestions and recommendations from CCT experts into daily working practices. Company must have the financial, physical and practical means to incorporate suggestions and recommendations. Company management must make a “good faith” effort to embrace and utilize the advice and recommendations from the CCT specialist.
4. Company management must understand that the CCT program is not a “no cost, low cost” evaluation program, and that it involves investing in technology that will enhance quality, safety or efficiency programs, and that those changes are likely to create a significant return on investment.
5. Company must be willing to allow WFLO and local partners to disclose the magnitude of improvement and financial incentive for adopting the CCT technology to the local industry. Specific details of post-program performance measures will be used for comparison purposes only, and will remain a confidential part of the program (not to be shared with outside sources or competitors). *The primary goal of the CCT program is to promote commercial adoption of cold chain technologies, so it is reasonable to expect that any*

success stories demonstrated during the CCT program will need to be promoted to the industry as an incentive for commercial adoption.

6. Company must devote adequate time, resources and personnel to the project, and provide CCT specialists with adequate assistance and support during the project.
7. Company must be willing to share “success stories” with CCT specialists, understanding that appropriate components of the “success stories” will be shared with the local industry to demonstrate the potential impact of the program.
8. Company must allow for photography and video footage to be collected during all phases of the program, including before, during and after the CCT program.

Section II. Overview of the Processing Sector

The processing sector is defined for the purposes of this report, as those companies involved in the production of red meat, poultry, seafood as well as manufacturing facilities which operate under the guidelines of HACCP and/or ISO regulations as governed by the Minister of Agriculture (MAG-FOR) of Nicaragua. These companies convert raw material into finished product ready for consumer use. In many cases, processing companies are vertically integrated such that cold storage, distribution and sales functions are conducted as part of a larger corporate effort. As such, efforts to profile those components of the industry will be included at the end of this section.

A. Current Status

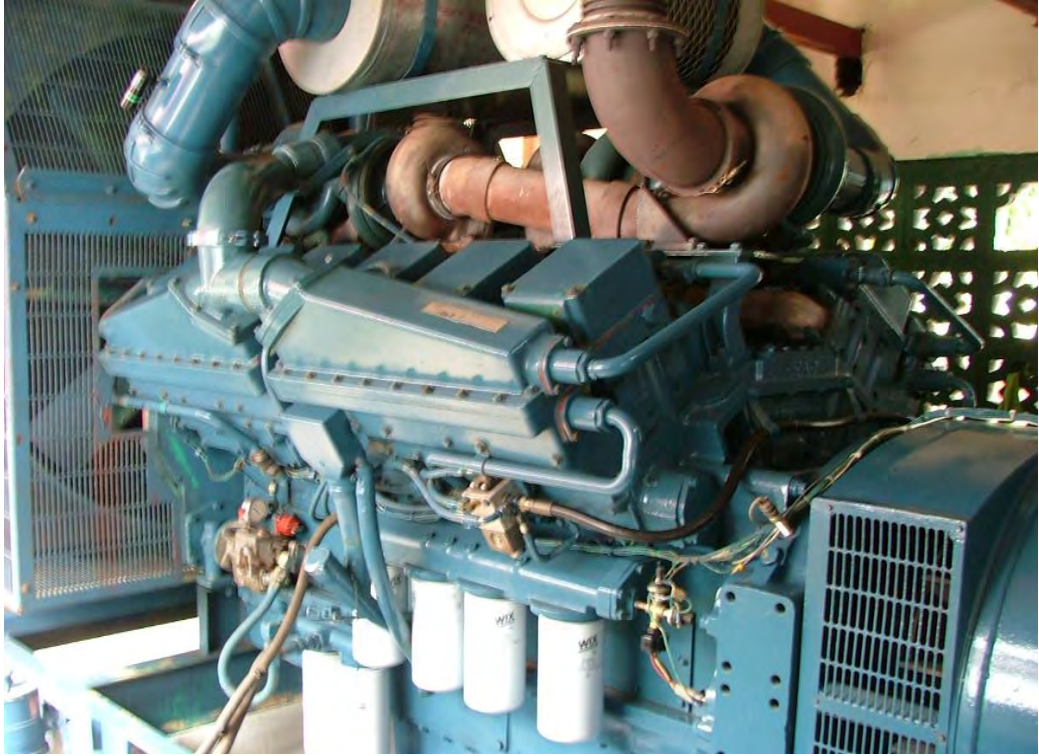
The harvest and processing industries within the Nicaraguan Pacific Region are a diverse collection of commercially licensed and unlicensed operations. Officials of the Nicaraguan government estimate that approximately 85% of the animal protein which is harvested for food is consumed within the countries borders, with the remaining 15% exported to countries such as the United States and the European Union. It can be assured that those products which are being exported have been processed under the very strictest of export guidelines regarding the chilling and cold storage practices which are an embedded part of the HACCP and ISO guidelines. However, there is no way to know how much of the remaining 85% is processed by unlicensed operators and sold direct to the public in open air markets since these are a virtually unregulated market channels.



Of the licensed facilities handling slaughter and processing of beef and poultry, further processing for sausage manufacture, and seafood operations, it is very apparent that these companies have a good understanding of cold chain technologies. These operations are well established and are operated in a clean and sanitary manner, embracing the principles of both Hazard Analysis of Critical Control Points (HACCP) and the ISO standards. It should be noted that all of the larger processors had a totally committed physical plant and some of the most modern refrigeration equipment available with more

on order. Each facility also had at least one and sometimes two backup electrical generators for those times when power supply was interrupted.









Not only have these facilities improved their slaughter and processing facilities, but they have vertically integrated by providing their own shipping to market and setting up small warehouse/retail outlets with refrigeration equipment and a supply of product to individual contract sales force within the metropolitan and regional area. As well, they supply the larger markets, restaurant trade and export markets.

B. Integrated Cold Storage Capabilities

Cold storage requirements within each facility varied depending on species, product type, size and volume. Within each facility, different sectors of the cold chain were well identified and utilized. The harvest sector employed two primary methods of initial chilling to remove body temperature from carcasses immediately after slaughter.

For beef, the primary means was cold ambient air in conjunction with intermittent spray chill of cold water. Air temperature was kept between 0° – 4° C and relative humidity of 90-95% in the first 24 hours. Deep muscle chilling is usually completed within 36 – 48 hours of slaughter depending on the carcass size. Carcasses are considered to be completely chilled and ready to process when deep muscle temperature reaches 7° C. For poultry, carcasses are staged in a three stage immersion bath chilling from ambient water temperature of approximately 24° C to refrigerated water temperatures in the final stage of 0° C with a maximum final carcass temperature of 7° C within a 60 minute period.

The processing sectors of each facility utilized processing rooms which were maintained at temperatures between 4° and 8° C to avert any possibility of product temperature increase during processing.

Once package, product moves into either cold storage (0-4⁰ C) for holding and batching for distribution or into frozen (-12⁰ C or lower) storage where it is frozen to meet specific shipping needs such as export or long term transit.

C. Integrated Distribution Capabilities

Distribution of raw product is done almost exclusively by either refrigerated or insulated trucks depending on the cargo and the distance they must cover to get product to its destination. For frozen product that is not going to be held for extended periods of time in transit, insulated trucks without refrigeration are employed. For fresh product and those products destined for export markets or extended transit times, refrigeration units are provided and utilized. As well, because of the congestion associated with the metropolitan areas, smaller more maneuverable trucks and vans are utilized to limit time in congestion.

D. Integrated Sales Capabilities

The sale of product directly to consumers has taken one of two specific routes for the integrated processors. As is mentioned earlier in this report, not only do these companies distribute to export markets, major retailers, restaurants and food service units, they also have set up individuals with proper refrigeration equipment and financial backing helping them establish customer sales and service. This may be as limited as a store front where customers would purchase prepackaged meat products, or it could be as extensive as having product delivered directly to them using small refrigerated or insulated vans.

E. Sector Summary

The commercial processing sector as outlined above has a very good knowledge of and effectively uses the concepts of “Cold Chain” technology. They have acquired a very good knowledge of refrigeration and are sending this down line by providing support and information to their integrated retail outlets. Assistance for these small outlets in the form of specialized information packets and/or training programs which could be delivered through the parent company or the Health Ministry would be greatly beneficial. Specific recommendations for future programs or initiatives could include:

1. Technical training on operational programs to improve quality, safety & processing efficiency
2. Train-the-trainer programs for HACCP and pre-HACCP certification
3. Educational seminars to communicate new or innovative safety & sanitation information

Section III. Overview of the Cold Storage Sector

The cold storage sector includes those facilities whose primary objective is to maintain temperature controlled areas where product may be consolidated into common unit sizes, destination points, prepared for export, or simply held until ready for distribution to the

final customer. These facilities may also provide as a value to the customer base both pick-up and delivery services to and from the facility.

A. Current Status

As it was relayed to the technical team, there is virtually no publicly accessible cold storage (public refrigerated warehouses or PRW's) within the region. Any reasonable cold storage is already integrated into facilities already under production loads, or as part of the export program. The exception to this is an Export Station located at the Managua International Airport.

B. Airport Export Station

It should be noted that there are no major ocean shipping ports on the west coast of Nicaragua and only a minor port in the eastern region. There are, however, ports accessible to the north in Honduras and El Salvador that can be utilized. Another available yet expensive option for exporters is air freight. A major export and cold storage area is maintained at the Managua airport which can be utilized by companies for direct shipment of fresh foods such as seafood and fresh vegetables produced in the region. The facility maintains 6 cold storage rooms where product can be staged and prepared for shipment. Each room has the capability to be used at normal refrigeration temperatures (32-50° F), or can be converted and used as frozen storage (<32° F) prior to shipping. This facility also has the ability to ship and receive vaccines and medicines which must be kept refrigerated in secure storage units. In addition, the facility also has refrigerated truck units that are used for delivery and pickup within the metropolitan area and the surrounding region.



Although they did not have final approval from the MAG-FOR for their HACCP plan during our visit, the facility did have a working program in place and should have final approval by the time this report is published. The facility maintains a complete laboratory for testing and two staff from the MAG-FOR offices to assist processors and producers in securing the proper paperwork and permits to assure export procedures move without incident.

C. Sector Summary

As indicated above, the facilities having cold storage associated with them are very well managed and maintained. All are operated or will be operating within HACCP/ISO guidelines in the future and are operated under the guidance of the Ministry of Agriculture.

Specific recommendations for future programs or initiatives could include:

1. Technical training on operational programs to improve safety & energy efficiency programs
2. Capacity building efforts to encourage growth in the public refrigerated warehouse (PRW) sector
3. Educational seminars to communicate new or innovative safety & sanitation information

Section IV. Overview of the Distribution Sector

For the purposes of this report, the distribution sector shall be limited to the transportation of raw and further processed meat, poultry and seafood products within the cold chain network.

A. Current Status

The distribution of meat, poultry and seafood products to the retail markets or consumers is handled almost exclusively by company owned refrigerated or insulated trucks. The insulated trucks are generally used for frozen products which will be delivered within one or two stops. Fresh or unfrozen product is always shipped under refrigeration. Product distribution is currently considered to be direct to the retail or food service outlet. However, the aggressive integrated processors have begun setting up small wholesale/retail outlets who maintain a small retail outlet as well as build service routes and make deliveries to the smaller retail and food service outlets. In this way, they can utilize smaller delivery vans and trucks within the metropolitan area where traffic would be difficult to maneuver with larger units. They have also begun using motorcycles with engineered hotboxes similar to those used by pizza delivery units in the U.S. to deliver fried chicken orders within their prescribed time limits.







B. Sector Summary

The current practices and procedures within the companies reviewed were excellent. They were very cognizant of keeping food temperatures in their proper ranges for hot and cold holding and all applied the principles of HACCP which are used in other parts of the parent companies.

Specific recommendations for future programs or initiatives could include:

1. Technical training on operational programs to improve safety & energy efficiency programs
2. Capacity building efforts to encourage growth in the refrigerated distribution sector
3. Educational seminars to communicate new or innovative safety & sanitation information

Section V. Overview of the Sales Sector

This section will include discussions surrounding the delivery of food directly to the consumer. This food may be in the raw form for further cooking at home by the consumer, or may be precooked and ready to eat. This category shall also include those more traditional types of markets (open air, sidewalk) as well as the more modern types of fast food fare such as the independent deli or fast food chains.

A. Current Status



The retail sector is divided into two different types of practices, each occupying positions at opposite ends of the operational spectrum. At one end of the spectrum, are the open air markets where fresh meats, poultry and seafood can be purchased. These open air markets may or may not take advantage of any type of cooling or refrigeration. Although there was refrigeration equipment in some of the displays, it was evident in most cases that it was not in use, or only partially used during overnight storage as a security effort. Meat sold within the market came from animals that were usually harvested in some type of unregulated slaughter facility or back yard environment, and was usually done either the evening before or in the morning prior to being brought to the market for display and purchase by the customer. It was apparent with most of the customers that freshness was a major goal when purchases were made, as products in the open air markets were displayed for easy inspection by the consumer. An extreme downside to this was that the ready to purchase products are often held in close proximity of live animals which could also be purchased and harvested immediately after the transaction occurred. In the case of

smaller animals, it was not uncommon for the harvest activity to actually take place right in the booth at the market. It would be safe to say that a larger portion of the older population still shop in this manner because of the cultural and social aspects of participating in this type of market, but there is no way to know exactly how much of the population purchases food in this manner. When questioned, some of the vendors ventured a guess of between 50-60% of the population still uses these types of markets. At the other end of the spectrum is the development of the modern supermarket and warehouse foods concept. These markets have been developed and rival their counterparts in the U.S and Europe for safety, sanitation and ability to properly maintain a cold environment while enhancing product display. The Store managers indicated that the average age of the store populations which they serve is less than 40 years of age.



As was the case in the open air market, the majority of fresh meat was purchased by weight and portions cut at the time the consumer ordered the product (similar to a service case in the U.S.). Products were also brought into the store prepackaged and ready for sale so the store did not have to do anymore than open the container packaging and place

the product in the display. Consumers had the option to purchase from a service case as shown above, or could choose to purchase prepackaged cuts from upright open faced refrigeration or frozen food cases or island pedestal types of cases. Although it was an option to purchase frozen product, most items sold were sold from the fresh cases. This may still arise from the fact that many people shop on a daily basis. I also found it quite notable that the supermarket stocked traditional Nicaraguan fare such as chicken feet/heads for cooking, and a more traditional blood & rice patty in case ready packaging along side some of what might be considered traditional fare around the world.

Nicaragua, and especially the Pacific region, are seeing a profound economic growth in the retail and business sector. This is evidenced by the amount of new construction of retail space, business offices, car dealerships, shopping malls and fast food outlets. The economic status of the population is beginning to rise at a rapid rate within the metropolitan areas of Managua and other larger population areas in the region, and to a lesser extent in the rural regions. As their economic status begins to rise, the general population is beginning to eat out more often than in the past. Traditional restaurants still provide the classic outdoor accommodations that have been common in the region, but the level of safety and sanitation is suspect in some and the chance for illness is high especially in the outlying rural areas where there may or may not be a potable water source available for the preparation of food and cleaning of utensils. Of the facilities that I visited in Managua, all provided quality home cooked traditional style meals that are usually purchased or served by the plate with many different choices of foods that may accompany a main entrée. Of importance was the fact that all foods meant to be consumed hot, were hot when they were delivered to the customer and not just warm.



New to the region, are the fast food types of restaurants such as McDonalds and Burger King which are located in close proximity to new mall construction, movie theaters or in combination with supermarkets in the area. These establishments were very often frequented by teenagers or families with young children and had very similar menus as those in the U.S. As well, local integrated poultry processors have added their own flair by building 4 restaurants which serve only there product line and a narrow menu of

chicken products which are processed similar in manner to products which can be found in the U.S. It is also possible to get home delivery of the very same products by calling the restaurants and requesting product be delivered to the home. In order to keep efficiencies in the delivery business, all orders for home delivers in the metropolitan area are routed to 1 of three preparation centers where the order is cooked, packaged in hot holding containers and delivered to the customer. It is generally considered that delivery to the customer is usually not more than 15 minutes after the product has been cooked and bagged.

A third area of consideration that has developed recently is the concept of the fast food mini-mart/gas station. These types of operations have proliferated the metropolitan area and regionally throughout the area. These facilities provide prepackaged foods, drinks and often have some sort of cooking area that specializes usually in a chicken wing/thigh/leg type of combination meal with some sort of fries and a drink. Some are integrated with major processors indicated above, while others act independently. Although most were operated in a very hygienic manner, some left much to be desired as to the training their employees received. I counted several times when the attendant to the facility served food having a pair of plastic gloves on and then followed that by either handling money, or going outside the facility to do something else without ever having removed their gloves. This type of activity was more apparent as we moved into the rural sector of the region.

Final considerations should be given to the upscale dining establishments that are being developed within the metropolitan areas. These facilities offer high end gourmet dining and are influenced by both the U.S. and European demands for quality, taste and product safety as many of the head chefs were trained in these areas and have brought considerable experience to their home restaurants. It was interesting to see the development of different styles of cuisine (Italian, French) that was occurring within the city and the extreme popularity of each.

B. Sector Summary

The presence of the “Open Air” market and outdoor restaurant are both a traditional and cultural/social icon of the area and this style is often copied and duplicated in the streets and cities world wide in the form of the Sidewalk Café and the Farmers Markets. It would be travesty to discontinue this type of marketing mechanism for the small producers of the region, possibly taking away from their livelihood. However, the degree of potential contamination cannot be ignored or discounted. Efforts should be taken to begin providing guidance to shop and restaurant owners about the needs for increased sanitation procedures, facility construction, proper hot/cold holding techniques and procedures for fresh or cooked product, and marketing. There would also be merit in providing information and training on proper personal hygiene and procedures for handling hot or cold ready to eat food to prevent cross contamination.

The larger food service outlets, chains and the high end eateries were not a concern as they already had very sophisticated training and operating programs and equipment for food preparation.

Section VI. Potential CCT Projects

The following companies have been toured by the WFLO technical consultant and are being reported as potential participants in the CCT program. These companies have expressed an interest in participating in the project, although no decision or offer has been made pertaining to possible participation. These companies are being offered for consideration and discussion by WFLO and partnering groups, including LSU and CLUSA.

A. Company Profile

CONTACT INFORMATION:

Company Name: Cainsa
Contact Information: Aida Gurdian
Managua, Nicaragua
505-278-0243

PROFILE:

Cainsa is a producer of fine quality sausages and various cured meats such as bone in and boneless hams, cured pork chops and several varieties of cooked sausage. The company's products are distributed to retail and food service outlets and may be sliced, chunked or whole depending on the final customer's desires. These products are distributed city wide and to some outlying areas around the major metropolitan area.

CURRENT STATUS

The product cooling process from the time the product is removed from the smokehouse until it reaches the desired storage temperature was not clearly defined. The manager indicated that product was removed from the smokehouse and placed in an ambient water spray to set product skin and to assist in product cooling. Once cooled for a specific time, the product was then moved to a specific cooked meat cooler where it was held until it could be processed. It was indicated that there are times when the cooling process does not proceed as fast as it should and the cooler must "work extra hard" to get the product chilled to the proper temperature.

PROPOSED TECHNOLOGY

In order to adequately speed up the cooling process, chilled water (maximum 43- 45° F) should be used in the spray mist chiller as an assist in the chilling process. This can be done by using any one of the various types of chill assist units available on the market today, or by constructing a simple holding tank within a cooler unit with a mixing device that will provide adequate chilled water to the nozzles for cooling. Either type of unit would be satisfactory.

JUSTIFICATION

As critical as the cooking process is to food safety, so is the cooling process. Initial chilling processes are of greatest importance and should proceed rapidly, while sustained chilling at the lower temperatures are secondary in importance due to product

pasteurization and can proceed at a slower pace. USDA guidelines for cooling indicate that product temperatures should be chilled from 130 ° F to 90 ° F within 90 minutes of reaching the 130 ° F mark. Chilling should then continue from 90 ° F to below 40 ° F and be completed within 5 hours of reaching 90 ° F. Exemptions are made for intact whole muscle product containing Sodium Nitrite to be chilled for longer periods of time.

Incorporating brine chill or cold water rapid chill technology will enhance the chilling procedure significantly. Using water that is chilled by already operating cold storage units can significantly reduce chilling time by as much as 10% depending on product size and diameter, plus reduce demand on cooling units which are not having to remove as many BTU's from the product once in the cooler unit.

B. Company Profile

COMPANY INFORMATION:

Company Name: Hiper La Colonia
Contact Information: Ernesto Mayorga – Manager
Managua, Nicaragua
505-270-2385

PROFILE:

The Hiper La Colonia is a modern multi-product supermarket serving the local retail population with both local and imported products, natural product lines and home convenience items. The facility currently does only limited further processing of any food products.

CURRENT STATUS

Warehouse storage (Chilled/Frozen) rooms in the stores receiving and processing area open directly into an ambient temperature room located at the rear of the store. Each time a door is opened; there is an extensive change of cold air for the outside ambient air. Currently, none of the doors leading to and from these cold storage units has any sort of protective mechanism associated with it to prevent this exchange of air.

PROPOSED TECHNOLOGY

There are two viable options that could be used to correct this situation. The optimal choice for larger doors would be placing Air Curtains above each door which would be energized by remote switch each time the door is opened. Once energized, a blower mounted above the door causes a vertical draft of air in front of the door causing dynamic pressures to be formed at the door of the cold room. This pressure balances the pressure exerted by the cold air in the cold room against that of the warm ambient air outside and prevents their exchange. An advantage to this type of system is that there are no portions of the curtain which would touch product, employees or equipment as it enters or leaves the room.

A second less expensive method, and one that work well with the smaller unit doors in this facility, would be to install rubber strip curtains inside the door opening. These also

act to prevent the exchange of air at the balance point of the door, but are substantially less expensive. However, it should be noted that extra attention to sanitation detail should be taken as the strips do make contact with the product, employees and equipment which move through the door opening.

JUSTIFICATION

As energy costs rise, the ability to maintain and keep energy use down is paramount. Values for energy savings by simply installing and properly maintaining fit of rubber strip curtains have been estimated to be as high as 35% savings over the period of a year. Conservative estimates of a 15 – 18% reduction in compressor repair have been found in the same situations because compressors are not continually cycling in order to cool ambient air introduced each time the doors are opened.

~ END OF REPORT ~

Trip Report and Recommendations
Lakshman Velupillai, Genadii Myroniuk, and Anna Vasylenka
Trip to Ukraine and Kazakhstan
November 14 ~ 30, 2005

Summary

The trip was undertaken jointly by the PFID-MSP Director from the LSU AgCenter, Lakshman Velupillai, along with representatives of PFID-MSP partner in Ukraine, the IIFSQ, Dr. Gennadii Myroniuk, Director General and Ms. Anna Vasylenko, Director, International Relations. This was a planned approved activity, and is a part of the current First Annual Work Plan for PFID-MSP Phase II. The purpose of the trip was to assess the food safety systems in place in the country, look at buy-in potential by discussing PFID-MSP interventions at the local USAID Mission; to visit government, private sector and non-governmental entities to learn more about the food industry in general, and food safety/regulatory compliance in particular; and to visit with other USAID programs and projects in the country.

Based upon a previous partnership between the LSU AgCenter and the Pragma Corporation, the two organizations have agreed to explore cooperation in the areas of food safety regulations, establishing a functional food safety system to enable enhancement of Kazakh food industries to meet international norms, and create local capacity. As such, both organizations exchanged information on their current projects in the region. Based upon this exchange, the capability of the LSU AgCenter and its Eastern European partners in the food safety regulatory compliance area appears to fit into the Metrology, Accreditation, Standardization and Quality (MAS Q) program that PRAGMA now implements for the Central Asian region. With this approach, the LSU AgCenter team and Mr. Nemeroff of the Pragma Corporation met with the local USAID Mission. Indications are that there would be an interest, and a joint proposal could be submitted soon. The USAID Mission, it is understood, has a regional interest, and it appears that Kazakhstan, Tajikistan, and Kyrgyzstan would have to be the target countries.

Meetings with local meat processors, GosStandart, the Ministry of Agriculture representatives, and others reveal that Kazakhstan is in the early stages of understanding and commitment of food safety as it is practiced internationally. Plants visited indicated that they are complying with national standards for quality. Some companies are ISO 9000 compliant. The concept of HACCP, for example is not currently in the dialogue, and only one company, the largest in the country is thinking of applying HACCP. Most individuals expressed great interest and desire to implement food safety standards. There is a great deal of interest in the food sector from many viewpoints. The one relevant to this report is the supply of food items including meats and seafood to the foreign oil companies that operate in the region. Although they are committed to buying at least 40% of their food requirements from local producers and firms, there are difficulties with the local suppliers meeting standards acceptable to the oil companies. A similar situation exists with local food supply to the military base in Kyrgyzstan. It appears that the oil companies see the value in supporting and bringing the local suppliers to international standards, and may even support such activities.

Both the Kazakh Standards Committee and the Ministry of Agriculture are interested in supporting any training, general capacity building activities, and support through technical assistance to the industry in the overall food safety and standards area.

Introduction and Background

The above trip was undertaken as a part of the requirements for Phase II of the PFID program in the Eastern Europe/CIS region. The scope of work under the program for this region included limited expansion of Phase I activities to Georgia and Azerbaijan, exploration of potential in Kazakhstan, and the continuation of activities in Ukraine and Moldova. The scope of work included the utilization of the capabilities and influence of the International Institute for Food Safety and Quality (IIFSQ) in Ukraine established under the auspices of the PFID Phase I program in the Eastern European/CIS region,

establish In-country Satellites (ICS) in Georgia and Azerbaijan, as well as explore the possibility for food safety related interventions in Kazakhstan.

Summary of Visits and Discussions

Kyiv, Ukraine, November 17 ~ 18

As a stop over point on the way to Kazakhstan, Lakshman stayed two days in Kyiv to meet with IIFSQ staff to prepare for the trip, meet with the World Laboratory, and meet and execute an MOU with the Kyiv National University of Trade and Economics. At the MOU signing, Lakshman met with Ms. Natalia Stepanets, from the USAID Kyiv Mission and liaison officer for PFID. On Friday evening (18th), Lakshman and the IIFSQ team left for Almaty, arriving early morning of the 19th.

Almaty, Kazakhstan

November 19-20, 2005

Week end

Monday November 21, 2005

1. Meeting at Pragma Corporation Offices: The first meeting for the day was with Mr. Ed Nemeroff and staff. At this meeting, they (PRAGMA Corporation) gave a presentation on each of their current programs in the Central Asia region, including the Quality Management Center (a potential future partner with PFID or the IIFSQ?, and a spin off from the Enterprise development project currently being implemented by Pragma for USAID) activities, Assistance in the MAS-Q area (Metrology, Accreditation, Standardization and Quality), and the Enterprise Development program (EDP). Pragma works in all five Central Asian countries with a total staff of 265 persons, and 14 offices in the region. They have 6 offices in Kazakhstan. EDP is involved in enterprise development, accounting reform, association development, and quality management. They are also involved in another effort known as the Trade Facilitation and Investment (TFI) program.

2. Meeting at USAID Offices with Mr. Dave Besch: At this meeting, we were introduced by Mr. Nemeroff of Pragma, stating that the PFID program thrust proposed by the LSU AgCenter and its Eastern European partners was a natural fit with the MAS-Q program of Pragma under the auspices of the EDP project. While they (Pragma) are addressing the 'business' end of things, we (LSU AgCenter) could effectively introduce and implement the 'technical' aspects such as HACCP and other principles. Mr. Besch, himself a HACCP specialist, understood our program approaches well, and asked about the quality revolution in Eastern Europe. We concluded that the advent of the PFID program in Ukraine moved it from a 2 or 3 to a 6 on a scale of 10, while in Kazakhstan the revolution is just starting, and can be given a score of 2. Another aspect of the discussion was on certification issues. Mr. Besch stated that there are currently no rules for this process. Mr. Besch also emphasized the role of three key players, the government, GosStandart, and the private sector. Mr. Nemeroff then proposed that we (LSU AgCenter and Pragma) consider submitting a proposal to address food safety and quality issues. Mr. Besch stated that we would have to address the issue of developing the value chain (meats and dairy sectors), take a regional approach (Kazakhstan, Tajikistan, and Kyrgyzstan), and propose concepts/ideas through the existing EDP program.

3. Meeting with the Kazakhstan Institute of Nutrition: We met with the Director General and Nutrition laboratory staff to explain our mission. We also discussed the potential role of the Institute in any future program on food safety in Kazakhstan.

4. Meeting at Pragma: At the end of the day we met again at Pragma with Mr. Nemeroff and staff to explore ways and means to develop the joint proposal. Ideas were based upon three key areas of intervention for the LSU AgCenter and its Eastern European partners. These are Policy Reform

Assistance (PRA), Food Safety and Quality (FSQ), and Technical training and Assistance (TTA) for the processing sector. It was agreed that Pragma would provide office space and logistics support for any proposed effort, and a two-year program be developed by the LSU AgCenter. This proposal is currently being developed at the LSU AgCenter, and should be submitted to Pragma before the holidays. They (Pragma) also thought that there would be interest in the cold chain as power is available in Kazakhstan without interruptions.

Tuesday, November 22, 2005

1. Visit with Ardager Co. (meat processing facility in Almaty)

We met with the Director, Malik Sarsenov of the above company, a medium size meat, and processing facility in Almaty. The following are key points:

- Ardager is the most advanced company in country in terms of equipment used;
- Located at the premises of a former bakery;
- Import-substituting facility: among other items, process deep frozen frankfurters earlier imported from Russia and Canada; also process sausages (around 100 types);
- Is a part of Aksai Holding;
- Use a lot of mechanically deboned meat as a raw material most of which is imported from the U.S. and Europe (France);
- All equipment is of foreign origin: U.S., France;
- They don't export, however, food safety is a priority: foreign oil companies located in Kazakhstan refuse (or will soon refuse to buy food from companies that don't have ISO);
- The absence of certified slaughterhouses is seen by the company as a key problem.

Based on a walk through of the facility by Dr. Myroniuk and Anna, they noted that sanitary conditions are not too bad (HACCP implementation would not require significant investments in reconstruction), however, the facility needs improvement. Mr.Sarsenov is committed to food safety and is willing to participate in a future project that would help him improve plant food safety.

2. Meeting at Union of Producers – food and processing Industries of Kazakhstan

At this meeting we met Ms. Nina Bezruckova, Vice President, who explained the workings of the union, which is a non-governmental body. Ms. Bezruckova explained that the meat processors joined the union in 2004, discussed many other issues. The following are some key points of the discussion:

- a. Meat processing companies are not all aware of ISO or even HACCP requirements. When some large companies were broken up into smaller ones, they are reluctant to apply ISO or HACCP fearing high costs associated with implementing these protocols. Dr. Myroniuk explained this issue of costs to Ms. Bezruckova.
- b. She stated that she is aware of ISO and HACCP principles, and that the Union, some four years ago provided seminars on this subject to members.
- c. They are planning on a large Trade Show in April 2006, and thought that this may be an opportunity to provide awareness seminars on food safety issues.
- d. Currently only the confection industry is interested in ISO certification (ISO 9000), and only one meat processor (Bekker and Company, see next meeting discussion) is ISO 9000 certified.
- e. According to the Ministry of Agriculture, currently only 27 out of approximately 3000 industries are ISO 9000 compliant. Another 70 are said to be working towards this goal.
- f. Total membership of enterprises at the Union is 57 at this time. Of this approximately 15 are in the meats sector. We noted two universities in the membership and inquired about it. We were told that the reason is that the universities are trying to 'get closer' to the industries through membership in the union.

- g. Ms. Bezruckova pointed out that currently Kazakhstan doesn't have a web-based food facility data base that could be accessed for facility contact information by other facilities or associations; the Ministry of Statistics compiles such information upon request on fee basis, and in most cases contact information they provide is outdated.
- h. The discussion revealed what we found to be a common understanding in the industry- that is a notion that quality and safety are one and the same thing. In fact we saw several articles that discussed HACCP and other principles with this notion.

3. Visit with Mr. Victor Fedoseyev, Director, Bekker and Co. meat processing company

This company, we were told is the largest meat and food product manufacturing company in the country, The team didn't tour the facility, as the meeting was organized in a hotel lobby where Mr. Fedoseyev and his staff were attending HR training.

The following points are noted from the discussion with Mr. Fedoseyev:

- This company is the largest meat processor in country. Output (per month): 240 tons of meat products; 40 tons of frozen ready-to-serve food; 20 tons of bread.
- Raw material: mainly local, but some is imported from Europe (Poland);
- Bekker is the first food processing company to implement QMS ISO 9001 in Kazakhstan;
- They plan to start implementation of ISO 22000 and ISO 14000 (environment safety management) next year;
- The former Director on Quality of Bekker, Ms. Kosenko is claimed to be a leading expert in HACCP in the country (she moved to the States, received training there-what kind of training, is unclear-, and came back). She is a frequent visitor at Bekker and other food facilities;
- Mr. Fedoseyev has interest in HACCP but sees the problem in that currently it is impossible to control the whole food chain starting from the very beginning (slaughter operations);
- 2 years ago FAO/WHO (Codex Alimentarius Commission) gave a seminar and assessed the facility. Their conclusion was that Bekker was almost ready to start FSMS (food safety management system) implementation;
- Mr. Fedoseyev believes that food safety is very topical and in demand, as local food industry is growing rapidly;
- Bekker's motivation for HACCP is not willingness to export, but rather self-consciousness and a desire to ensure safety of food for local consumers to keep its high reputation: main product is cooked (boiled) sausage with storage life of 72 hours, and Bekker is interested in keeping its safe till it gets to consumer.

Conclusions:

- Mr.Fedoseyev seems to be the most HACCP aware person the team met; sees the difference between quality and safety;
- Bekker is interested in HACCP and is going to implement it. However, regarding its willingness to participate in the project prefers to wait for proposal first and see conditions for his participation before giving the company's consent.
- Seems to have preliminary arrangements with Ms. Kosenko as a consultant;
- Bekker is referred by everybody as the best and most advanced facility in the country. On the one hand, this could make pilot HACCP implementation rather easy from the point of view of prerequisite programs (sanitary procedures and GMP), general preparedness of workers; also, as it has ISO 9000, it would not be difficult to develop a record-keeping system at this company.
- On the other hand, the facility may appear too large to calculate the impact and may be limited as far as showing significant efficiency increase from TTA.

4. Visit with Bizhan meat processing facility

The third meeting for the day was at a small meat processing plant. The owner/representative was Ms. Bizhan, and she provided a good explanation of the facilities, the process, and their aspirations. The following are relevant:

- Bizhan is a medium company: its output is up to 1.5 – 2 tons per day;
- It is a private business run by a women; established 7 years ago;
- Processes involve cooked (boiled), half-cooked, and raw-smoked sausage, and meat delicacy products;
- Staff is 13-15 persons; operate on 1 shift;
- They obtain raw material from small farmers and HPOs in Northern Kazakhstan through packers; have been working with same farmers for a long time, so are confident in quality of the supplied meat;
- Sell in Almaty and 1 month a year to Baykonur (space launching site);
- Facility complies with local laws and regulations;
- Equipment is old (manufactured during Soviet times), and partially hand-made;
- Have done some innovations recently;
- However, sanitary condition is rather poor (floors, ceiling, walls, wooden utensils), as well as other issues, like environment temperature control, etc.
- Ms. Bizhan is not very well aware of HACCP but showed very positive attitude;

Conclusions:

- Selecting the Bizhan facility would satisfy USAID gender policy;
- We know nothing about Bizhan income; they might have no funds to invest in proposed TTA solutions and HACCP implementation; on the other hand, they are going to do additional renovations anyway;
- At the same time, the facility is small and flexible; top management appears to be easy to deal with and is interested in being a pilot facility for any project we might develop;

5. Visit with World Bank:

We met with Ms. Zhana Balgabayeva, Agricultural Economist, to discuss their Agriculture Competitiveness Project, a five-year 83 million dollar program. We learned that safety and quality of agricultural products is a focus of this program. Among others, they will assist in public and private sector laboratory modernization, and standardization issues. Ms. Balgabayeva explained that the World Bank is mainly acting as a knowledge provider rather than a financier because there are sufficient public and private funds available in the country. Making appropriate investments is key, and the World Bank is supplying this expertise for the ag sector under this program. We were told that there is private ownership of agricultural land as well as oil producing properties.

Wednesday, November 23, 2005

In the morning, we met to debrief at Pragma and then traveled from Almaty to Astana. At the debriefing at Pragma, we provided a few key points about our visits to the processing facilities, our overall impressions (thus far) on awareness of food safety, potential for interventions, and willingness/interest of the industry. We also discussed details and timelines for the LSU AgCenter and partners to prepare a draft proposal to be submitted to Pragma.

Astana, Kazakhstan

Thursday, November 24, 2005

1. Visit with the Ministry for Agriculture

At this meeting, several members of the Ministry of Agriculture, Government of Kazakhstan met with us. Their names (not all names are available as many did not have business cards) and titles are as follows:

- Kanat Idrisov, Deputy Head, Department of Animal Husbandry;
- Representative of Department of Foreign relations;
- Niazbekov, President, Union of Poultry Producers;
- Head of Department of Animal Husbandry Products Processing ;
- Ms. Razamazova, Department of Market Regulation;
- Representative of Department of Science;
- Representative of Fisheries Committee.

The following key points emerged from our discussions:

Mr. Idrisov, Deputy Head, Department of Animal Husbandry:

- A lot of work is conducted in the area of harmonization of national requirement with international ones;
- A lot of consulting companies offer their services;
- Individual, outside experts can participate in harmonization area (harmonization activities are funded through State Program of Normative and Methodological Support for AgSector, foreign experts are allowed to bid, provided they have local partners);
- If we are going to work closely with the AgMinistry, the more efficient way is to do this through Oblast Departments than through AgMinistry's Head Office, which is responsible mainly for developing strategies and drafting laws, while all operational functions are performed by Oblast departments;
- AgMinistry can not provide any funding, though it would be glad to participate in activities funded by other sources;
- In general, they recognizes the importance of food safety and are ready to participate;

Representative of Fisheries Committee:

- Fish industry in Kazakhstan is familiar with HACCP. In 2000-2002 TACIS did a project on harmonization of fish industry standards. As a result, 8 local fish facilities were approved to export to EU and received EU veterinary certificates (*Note: the so called "european number", or EU veterinary certificate, is actually an approval to export fish products to EU; An "european number" can either be given to individual facilities directly by EU, or a "national competent authority", whatever it is, could be given the right to issue "european numbers" to local facilities. Neither Ukraine as a country nor any of Ukrainian fish facilities have the "european number".*
- Main fish product exported to EU is pike-perch fillet;
- They are interested in assistance in drafting Law on Food Safety and Quality (the Law is being drafted now);

Conclusions:

- The AgMinistry is supportive of potential food safety activities, including training and policy components;
- Fish industry is the more advanced in HACCP in comparison to the other industries;

- Officials confuse safety and quality which might be an impact of TACIS project (IIFSQ had noticed a similar confusion among people who attended TACIS activities in Ukraine);
- Need to note if they really send a memo as promised – could be a sign of seriousness and reliability.

2. Union of Poultry Producers

At the above group meeting, the President of the Union of Poultry producers (Mr. Nurmahan Niazbekov) was present. He later took us to his office in the ministry building to explain more on how the union operates. The key points from this meeting are provided below:

- Union of Poultry Producers: 24 poultry producing and processing companies out of a total of 38 are members of the Union;
- As of July 1, 2005, 31 companies, including 3 poultry companies, have ISO 9000 certification, and 73, including 20 poultry companies, are developing QMS, but are not yet certified;
- Currently 66% of poultry processing depends upon imported raw material; objective is to achieve over 90% of substitution of imported by locally produced raw material;
- The annual demand is around 200,000 tons of poultry and poultry products, and the local supply only meets about 60%. In comparison, 800,000 tons of beef, pork and horse meat are produced annually in Kazakhstan;
- The annual per capita consumption of poultry is around 43 Kg
- The industry is said to be constructing additional processing plants to meet demand;
- They are interested in value added;
- When inquired about the impact of the Avian Flu on the poultry industry, Mr. Niazbekov replied that it has had no impact thus far, and that the consumption of poultry has not declined.

3. Visit with Aprel Ltd. (meat processing facility)

The following Aprel representatives met with us:

Ighor Golub, Director General
Stanislav Typa, Deputy Director on Production
Boris Golub, Director, Culinary and Confectionary Complex

The following points/findings emerged from the discussions:

Aprel is a private full cycle processing complex that processes and sells through its own outlets. They deal with four main types of products:

1. Sausages (up to 70 types);
2. Ready-to-cook food;
3. Confectionary products;
4. Culinary (ready-to-serve) food.

Company structure, location and output:

a) Two sausage processing facilities, each with its own slaughterhouse:

- Astana:
 - Rather obsolete facility, currently being partially renovated;
 - Output is 5 tons/day = 80% of total output capacity;
 - Equipment from Germany and U.S.;

- Slaughterhouse output: 200 (cattle) head/shift; 50-60% of animals coming from individual HPOs, others from larger farms.
- Karaganda
 - New facility (launched in March 2005), more advanced than in Astana;
 - Output is 4 tons/day = 40% of a total output capacity;
 - Equipment from Germany and Finland;
 - Slaughterhouse output: 70 (cattle) and 100 (hog) head/shift, with 99% of hog coming from two large hog producers.

b) ready-to-cook facility located in Astana; includes deep frozen and refrigerated products;

c) Confectionary facility (cakes -jelly and butter, pastries, cookies), located in Astana, with a new patisserie to be opened in Karaganda;

d) 4 shops and 4 supermarkets in Astana and Karaganda; additionally to other food, supermarkets produce culinary products (ready-to-serve food).

Company staff includes 700 persons in Astana and 150 persons in Karaganda.

Currently April distributes its products only for the local market and is not interested in exporting.

Food safety issues:

- Mr. Golub is extremely interested in HACCP, but doesn't know much and never tried to implement management systems, including QMS (ISO 9000);
- Motivation for HACCP is a desire to enhance their position at the local market;
- Realizes that HACCP implementation requires significant efforts and is time consuming; doesn't want simply to 'buy' a HACCP certificate, instead, wants a working HACCP program;
- Given HACCP requirement to control suppliers, sees this as one of the major constraints to a reliable food safety management system in high competition between local and Chinese meat producers, though locally produced pork (on bone) is much better controlled, its cost is 370 tenge/kilo (133.0 tenge = 1.00 dollar), while already deboned pork of Chinese origin costs 300 tenge, however, the Chinese supplier in most cases is unknown. According to Mr.Golub, 90% of meat processing facilities that have ISO 9000, use imported raw material; also, local suppliers sometimes are unable to have control over quality and safety of raw material;
- Wants to have his people trained, is going to attend HACCP training personally;
- Ready to invest in implementation of food safety solutions, provided that consultants would be paid by the project;
- Ready to hire additional staff for food safety needs;
- Asked to be contacted in 2 months for update on project start-up if any.

IIFSQ promised to e-mail Mr.Golub some documents, including Model Food Safety Policy Decree (a document by which Facility Manager announces intention to implement FSMS and sets up its goals), and basic texts, like GMP.

Conclusions:

In general, April Ltd. seems to be a very promising candidate for TTA and demonstrational pilot HACCP implementation because of the following: positive attitude and support by the management; readiness to invest money in improvements and create new jobs; potential for good impact (conditions at the facility are such that changes, and impact will be measurable).

Friday, November 25, 2005

1. **World Bank** – we had set up an appointment with Mr. Talimzhan Urazov. However, upon arrival we were told that he had left for the airport on a trip. We then spent some time with the librarian/information officer discussing documents and other matters. We were able to obtain many useful documents on Kazakhstan.

2. **Visit with GosStandard** (State Committee for Technical Regulation and Metrology)

GosStandard Representatives:

- Vasiliy Mikhailchenko, First Deputy Head;
- Head of State Supervision Department

Discussion points/findings:

- Our hosts have had previous experience in attending activities organized by USAID (attended training in ISO 17025 (accreditation of testing labs) and are very satisfied with Western approach towards adult learning (strict control over attendance, tests and final exams, etc.);
- Are very much interested in the proposed project; said that food safety was a topical issue and HACCP was very needed;
- Ready to provide estimated cost of training, including transportation of participants to two sites (Almaty and Astana), accommodation of participants, and premises;
- Believe that approximately 50% of training participants should be officials from control bodies;
- Advised that the training component of the project should include costs to cover transportation and accommodation at least for officials;
- Advised us to speed project preparations, as to their knowledge, one of the TACIS projects is currently exploring opportunities in food safety area;
- Tried to push Bekker and Co. as a candidate for TTA and pilot HACCP;
- Large part of discussion was about Dr. Myroniuk's former position and current developments in technical regulation and certification/accreditation areas in Ukraine;
- Asked to be updated in two months.

Conclusions:

- Are not aware of ISO 22000 at all.
- Extremely supportive about the idea of participating in training and having their own trainers.

Saturday/Sunday November 26/27, 2005

At Kyiv

Monday November 28, 2005

Discussions at IIFSQ

The team met in the morning to prepare for the afternoon meeting with the Mission Director at USAID/Kyiv; and to discuss the outline and components of a proposal to be developed jointly with Pragma to be submitted to USAID/Almaty.

Preparations for the meeting included plans to discuss the following:

1. Briefing on PFID Phase I with a packet of information including success stories;
2. Information on PFID Phase II, with an emphasis on what the IIFSQ would accomplish in Ukraine;

3. Discussion of our “GUAM foodnet” concept; and
4. Our potential role in the Avian Influenza program of the Mission.

Discussions on the proposal outline included the following topics:

The proposal would include three main components:

1. Policy reform
2. Food safety and Quality (FSQ) – awareness and capacity building
3. Technical Training and Assistance (TTA) at the plant level to make processors import/export ready

We also discussed a minor fourth component on Information Support Systems.

Meeting with Mr. Earl Gast, Mission Director

The meeting at the Mission also included Mr. Bohdan Chomiak from the Economic Growth Office, and Ms. Natalia Stepanets (also of the Economic Growth Office), Liaison Officer for the PFID project.

The meeting with the Mission director went quite well. The original plan to meet for 30 minutes was extended for over an hour. The MD asked many relevant questions and clarifications on our activities. We covered the points for discussion referenced earlier, and the MD expressed surprise about what has been accomplished under the PFID umbrella. The MD showed specific interest in our Guam Foodnet concept and wanted details. We provided the major points for this concept. They (the Mission) showed a great deal of interest in our response to Washington on the Avian Influenza matter. Lakshman provided a copy of our response, as well as the LSU AgCenter biosecurity plan for poultry producers in Louisiana. Bohdan indicated that they would introduce our plans to the Mission task force and provide any feed back to Lakshman. Given the current budget scenario at the Mission (a recent 25% cut), no discussion on potential buy-ins was held at this meeting.

**PFID Trip Report – HACCP Auditor Course
October 18-21, 2005 Ann Arbor, Michigan**

Kenneth McMillin, Professor of Animal Sciences, LSU AgCenter
Gennadii Myroniuk, Director General, International Institute for Food Quality and Safety
Oksana Dorofyeyeva, Director, Organization and Training, International Institute for Food
Quality and Safety

This activity was conducted as part of the USAID Partnership in Food Industry Development project phase II Eastern Europe/CIS Component: Project Objective # 1 – IIFSQ Expansion under the Leader-with-Associates Agreement No: PCE-A-00-01-00012-00 funded by the United States Agency for International Development USAID M/FM/CMP.

The HACCP Auditor course was conducted by the National Sanitation Foundation (NSF) Center for Public Health Information with emphasis on auditing standards and practices related to Codex Alimentarius and International Standards Organization guidelines for sanitation, hygiene, and Hazard Analysis Critical Control Point (HACCP).

Dr. Myroniuk and Ms. Dorofyeyeva traveled from Kiev, Ukraine on Sunday, October 16 to Ann Arbor, Michigan via Paris, France. Dr. McMillin traveled from Baton Rouge, Louisiana via Dallas, Texas. Upon arrival at the Detroit Metropolitan Airport, Dr. McMillin got the reserved rental car and awaited the arrival of Dr. Myroniuk and Ms. Dorofyeyeva. They were delayed because their Paris to Atlanta flight had returned to Paris due to an ill passenger. After several hours of waiting in the airplane and the airport, Dr. Myroniuk and Ms. Dorofyeyeva arrived at the Detroit airport on a direct flight from Paris at about 10:30 pm (EST). The travelers drove to Ann Arbor, Michigan and checked in at the Hampton Inn North hotel.

The next day, Monday, October 17, the travelers met for breakfast, drove to the NSF building to learn the course schedule, and drove to the Detroit airport to change Ms. Dorofyeyeva's return ticket. After two and a half hours of discussions with Delta Airline, Air France, and Louisiana Travel personnel, the travelers returned to Ann Arbor.

The course started at 8:30 am. Ms. Christine Bedillion, NSF International HACCP Program Coordinator and Auditor Course Instructor introduced herself and gave a brief outline of the course (course schedule is attached). Each course participant introduced himself or herself and explained why they were in the course. The course generally proceeded with the instructor providing information about the topic followed by experiential learning of the practices by participants. Information presented the first day emphasized evaluation, monitoring and auditing practices and included suitability of guidelines, Codex Alimentarius CAC/RCP 1-1969 Rev. 4-2003 Recommended International Code of Practice General Principles of Food Hygiene Annex A Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application, hazards, and validation of critical limits. Direct evaluation and auditing experiences were gained through class exercises on citing of elements of standards using Codex General Principles of Food Hygiene, analysis of hazards, and critical limit validation. At the end of the afternoon session, an assignment to be completed before the next day on a validation case study was given.

The second day began with a discussion of the homework assignment of the validation case study. Information was presented on ISO 9001 – 2000 Quality Management Systems – Requirements elements. It was explained that the focus was on management and customers with a program that everyone knows what and how is to be done. Equivalent sections of ISO 9001: 2000 and Codex hygiene were discussed. Principles of auditing were reviewed in the context of comparison to standards. ISO 22000: 2005 Food safety Management Systems – Requirements for any organization in the food chain was discussed. Class exercises were to identify correlations between elements of ISO 9001: 2000 and Codex Alimentarius General Principles of Food Hygiene and dealing with barriers to collecting audit information.

The third day of the course was initiated with descriptions of opening and closing audit meetings with company representatives and a review of general auditing practices. This was followed by information on audit notes and evidence collection, corrective action requests, and desk audit reports. Information was provided on ISO 19011: 2002 Guidelines on Quality and/or Environmental Management Systems Auditing. Class exercises were on reviewing and analyzing corrective action requests, writing a corrective action request, documenting audit information through audit notes, conducting a desk audit and preparation of an audit report.

The course was concluded with a summary of the topics that had been covered during the three days. Additionally, the instructor gave Dr. Myroniuk and Ms. Dorofyeyeva a copy of ISO/TC 34 N1157 2005-08-30 Food safety management systems- Requirements for bodies providing audit and certification of food safety management systems.

Travelers left the hotel at 8:45 am on Friday, October 21 for the Detroit Metropolitan Airport. At the rental car agency, Dr. McMillin caught a shuttle to Smith Terminal to catch his airline flight while Dr. Myroniuk and Ms. Dorofyeyeva rode shuttles to McNamara Terminal to travel to their destinations.

Attached to this report are a schedule of the materials covered in the course, a copy of the NSF International HACCP Auditor Course PowerPoint presentations, and the front pages of entire documents that were given to participants. The full documents of Codex Alimentarius CAC/RCP 1-1969 Rev. 4 – 2003 Recommended International Code of Practice General Principles of Food Hygiene (31 pages), ISO 9001: 2000 Quality Management Systems – Requirements (23 pages), ISO 22000: 2005 Food Safety Management Systems – Requirements for any Organization in the Food Chain (32 pages), ISO 19011: 2002 Guidelines for Quality and/or Environmental Management Systems Auditing (32 pages), and ISO/TC 34 N1157 2005-08-30 Food safety management systems- Requirements for bodies providing audit and certification of food safety management systems (45 pages) are available upon request.

It is believed that the benefit of the training course would have been higher if the course had provided an opportunity for the three PFID participants to confirm their competency as auditors by registering, passing final exams (conducted on the fourth day), and getting certificates. Dr. Myroniuk and Oksana Dorofyeyeva will prepare initial planning documents for HACCP audits and certification procedures in Ukraine and other countries.

Travel Report February, 2006

Collection of Data and Report for On-site Assessment of Seafood HACCP

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**Partnerships for Food Industry Development
A U.S./Nicaraguan Partnership
Leader-with-Associates Agreement No: PCE-A-00-01-00012-00
Funded by the United States Agency for International Development
USAID M/FM/CMP
1300 Pennsylvania Avenue, N.W.
Washington, DC 20523-7700**

**To International Programs
Louisiana State University Agricultural Center
Baton Rouge, Louisiana**

Introduction

The initial collection of data and information for the assessment of the seafood processing industry and status of Seafood HACCP capabilities in Nicaragua was performed during the period of January 23 through 28, 2006. Activities included interviews with government officials and industry personal in addition to visits to finfish, shrimp, lobster, and value-added processing facilities. These activities were planned to provide as broad a scope as possible in this one-week period, and included visits to offices and plants in Managua, Leon, Chinandega, and Puerto Cabezas. Assessment of the Seafood HACCP status in Nicaragua was focused on the following five objectives.

- 1) Initiate the identification of potential candidates for the AFDO Seafood HACCP Train-the-Trainer instruction and certification: An approach to identifying potential candidates was briefly discussed with the CLUSA PFID project coordinator, and the process will continue between CLUSA and LSU AgCenter.
- 2) Assess the degree to which the provisions of PHSBTPRA are understood and followed by processors in Nicaragua: Exporters to the United States were aware of, and compliant with, the currently enforced requirements of this regulation, similar to level of HACCP compliance, due to the actions of their U.S. importing partners.

- 3) Assess the scope of the industry needs, including spatial distribution of processing facilities: The inspection system for seafood is conducted by MAG-FOR and the operation of inspection and compliance by the plants on sanitation, hygiene, and HACCP appeared fully compliant with FDA standards. Continued training via this project was supported by most industry and inspection personnel. The need for improved Best Handling Practices training for the harvest sector was identified and emphasized by processors.
- 4) Assess the opportunity to build and facilitate industry/regulatory HACCP and export compliance networks: Seafood HACCP compliance and training is well-developed in the exporting companies, due to U.S. importing partners, and the activities of MAG-FOR to bring in outside training groups and support by plant inspectors. An opportunity to strengthen this industry/regulatory relationship is to involve an identified university extension agency (CIDEA) and effort that is currently involved with the shrimp growing industry.
- 5) Provide Guidance in identifying a Nicaraguan Food Safety and Quality Organization to be developed by PFID-MSP: An industry chamber was identified (CAMARA) which includes the larger 10-15 seafood processors as members. Does not act as an FSQO, not much support to industry. Currently food safety and quality input comes from U.S. importers and MAG-FOR, but not on an industry-wide basis.

Summary of Trip Activities and Findings

- Visited with directors and staff at three governmental agencies (Ministry of Agriculture and Forestry, Department of Fisheries – ADPESCA/CIPA, and Fishing and Agriculture Cluster)
- Visited with faculty Environmental Sciences and the Center for Aquatic Ecosystems Investigations at the University of Central America
- Visited and toured 5 mixed finfish, shrimp, and lobster processing companies; 2 mixed species plants with value-added operations; and 2 farmed shrimp processors.
- Assessed the current industry/regulatory relationship to providing HACCP training and determined an approach to identify two individuals with HACCP experience and English language capability as potential Train-the-trainer candidates

The seafood processing industry in Nicaragua is primarily export driven, with primary markets in the U.S. and E.U. The domestic market is small, but considered to be growing and an opportunity by some processors. Product quality is evaluated at receiving at processing plants, with lower quality product being reserved for local restaurants/markets. Products exported to the U.S. consist of mostly fresh via Miami, with some frozen, finfish (groupers, snappers, and some mahi mahi), fresh and frozen lobster tails, and frozen shrimp. Fresh, iced snappers and groupers from the Pacific coast Nicaragua routinely reach Miami within 24-48 hours of capture, and are considered of premium quality and price in the U.S. market. Processed and frozen shrimp from aquaculture facilities near Chinandega are also considered to be high quality product. Lobster tails are high value products, and are harvested and processed on both coasts of Nicaragua. Pacific coast lobsters are mostly trapped and can be shipped in ice to the U.S. Lobsters on the Caribbean coast are harvested by divers, and are frozen for export. Temperature control and plant sanitation are strongly controlled for lobster, shrimp, and iced finfish from both coasts. Artisan trawling and under-developed pelagic (long line) fisheries on the Pacific coast were strongly identified as needing support and training in improved/modern fishing techniques and best handling practices to improve the viability for the fishermen and profitability of these sectors.

Plant sanitation was observed to be strong in most facilities visited, with strict compliance to internal processes demanded by management. Inspectors from Ministry of Agriculture and Forestry (MAG-FOR) are under-staffed and spread out, but strongly enforce FDA and EU HACCP and GMP requirements with plant inspections and product testing. MAG-FOR inspectors also provide practical, in-plant explanation and training of food safety and sanitation requirements to processing plant personnel. Additionally, MAG-FOR managers have provided HACCP training courses to their inspectors and industry personnel by inviting outside experts to provide training courses (including University of Florida – for the shrimp farming and processing industry, Canada’s Department of Fisheries and Oceans, and consultants from Mexico and Columbia) in Nicaragua. Most industry, regulatory, university personal visited supported the philosophy of strong food safety and HACCP training, and were interested in receiving or participating in the AFDO Seafood HACCP training courses.

Therefore, a significant variety of “HACCP” training, knowledge and implementation was identified and encountered throughout the assessment trip. This variety and its background were brought into focus during the final interview of the visit on Friday afternoon when visiting with the Director of Food Safety of MAG-FOR. MAG-FOR has a strong and vested interest in HACCP and plant inspection (having an MOU with the E.U.) and as a facilitator, if not direct provider, of formal HACCP training courses. Involvement with, and support of, our program was linked to FDA participation in the basic training provided in Nicaragua (which is planned) and to MAG-FOR participation in the Train-the-Trainer course and certification.

A seafood processing industry association was identified (CAMARA), but it was not described as a very strong and technically supportive organization to the industry members. The association director was not available for interview. It may or may not have or want the capability to function as a formal food safety and quality organization (FSQO). Currently, in areas such as biosecurity requirements, food science and technology and other information, individual companies’ partnering importers and MAG-FOR are the entities providing some of this support. Discussion is needed to determine if an association could complete the needed activities of a progressive trade group and fulfill the requirements for providing needed food safety and processing education, training, and materials.

The industry and government personnel generally do not believe that university faculty members provide useful technical information, with one notable exception. The University of Central America has developed a strong extension program for the shrimp aquaculture industry, providing certified (U.S. and E.U. approved) environmental and product sampling and a range of laboratory analysis to this industry. This institute, CIDEA, is also expanding their presence with the shrimp farming industry in Nicaragua by partnering in the global market mandated training and implementation of Good Aquacultural practices that are supported by the industry and MAG-FOR. Involvement of CIDEA in seafood HACCP training beyond the farmed shrimp industry could provide a strong support structure to the current industry/MAG-FOR regulatory relationship.

Conclusions and Initial Recommendations

Strong sanitation, hygiene, and HACCP practices and compliance are already exhibited in the seafood processing industry, with inspection and training support by MAG-FOR. Providing the structure of the AFDO Basic Seafood HACCP training course to the industry via AFDO trained and certified instructors from the Nicaragua industry and regulators would be an appropriate and productive outcome of this PFID project. LSU AgCenter support must be given to CLUSA to identify two candidates for the next AFDO Seafood HACCP Train-the-Trainer (TtT) course as soon as possible to be able to attend the course in Dallas, TX in April 2006. Additionally, the AFDO Basic Seafood Course will be conducted in Baton Rouge by the LSU AgCenter during the week prior to the TtT course in Dallas. Suitable and appropriate candidates that may have not been trained and certified in the AFDO Basic course could enroll in this class in Baton Rouge in April. An application form and CV requirements for the TtT course will be given to CLUSA and International Programs.

One candidate for the TtT course should be strongly considered from MAG-FOR, if someone with proper English language ability can be identified and approved. Initial inquiries were not encouraging. Another candidate should be strongly considered from CIDEA at the University of Central America. Dr. Agnes Saborio Coze has done a very impressive job of developing the CIDEA institution, and has embraced extension components based on the U.S. Sea Grant program. Recommended involvement in the PFID program should strengthen the Seafood HACCP training program for Nicaragua. If both candidates can not be identified from these two organizations (one person from each), then other individuals should be considered from companies that would allow for this participation. Potential candidates were identified at LAMVINIC, NICALAPIA, and Sahlman Seafood. CLUSA may also become aware of additional candidates during continued evaluations. Training and certification in the AFDO Basic Seafood HACCP course can be provided in Baton Rouge to candidates that are approved for the TtT course.

Establishment of a seafood association could provide an infrastructure for continued education and training that would be independent of government inspection and compliance oversight. A strong association could also assist in improving the relationships and trust between university faculty members and programs and industry and government personnel. The existing CAMARA association may or may not be able or willing to take this role, and this ability should be determined. However, any organization that is going to act as a Nicaragua FSQO will need to be able to work and coordinate with MAG-FOR and their support activities.

Future planned activities include the instruction of the AFDO Basic Seafood Course in Nicaragua with AFDO certified trainers from Nicaragua, if they have completed the TtT course. Efforts to facilitate the development of a functioning FSQO for the seafood industry in Nicaragua should continue. Additionally, a visit to the southern Pacific coast is recommended to assess the near-shore pelagic long line fisheries for development.

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