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INDUSTRIAL BASE

Contractors Have Ability to Meet Requirements for Rations During Wartime



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National Security and
International Affairs Division

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August 9, 1994

The Honorable Ronald V. Dellums
Chairman

The Honorable Floyd D. Spence
Ranking Minority Member
Committee on Armed Services
House of Representatives

The Honorable John Spratt
House of Representatives

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In response to a requirement by the House Committee on Armed Services we reviewed the ability of the industrial base to surge to meet wartime requirements for individual rations called Meal Ready-to-Eat (MRE) and a group ration called Tray pack.¹ Also, as subsequently requested by Congressman Spratt, we also independently examined contractors' surge capacity, focusing our efforts on current assemblers in the MRE industrial base, and reviewed the difference between Desert Storm and current MRE wartime requirements.

Background

In a military operation, large numbers of deployed troops require significant quantities of rations that will not spoil during transit to the combat area. The Defense Logistics Agency's (DLA) Defense Personnel Support Center (DPSC) in Philadelphia, Pennsylvania, purchases and provides the armed services with MREs and Tray packs to fill that need. The demand for these rations is high in wartime and low in peacetime, since they are consumed primarily in field operations and training. To maintain an industrial base capable of a large surge in production to meet wartime needs, contractors need to (1) receive enough peacetime orders to keep them viable, (2) sell similar products commercially, or (3) do both. The operational ration industrial base includes MRE retorters (contractors that cook food in special ovens), MRE assemblers (contractors that assemble food pouches and accessories into food bags), and Tray pack retorters (contractors that cook and seal food in large pans).² In fiscal year 1993, DPSC obligated about \$90 million for 21.6 million MREs and about \$28 million for 1.4 million Tray packs.

¹The requirement is contained in the Committee's report number 103-200 on the National Defense Authorization Act for Fiscal Year 1994.

²Unlike MREs, which are assembled by contractors, DLA assembles Tray pack meal modules (pans placed into boxes and then onto pallets) at its depots. A Tray pack pan holds at least 5 servings and as many as 18 depending on the food type.

The Department of Defense's (DOD) current wartime scenario calls for deployment of 614,000 troops (excluding sailors, who eat on ships) to two areas of operations over a 150-day period. During this period, the troops are expected to consume about 276 million meals. The wartime scenario calls for 70 million meals (25 percent) to be MREs and 21 million meals (8 percent) to be Tray packs. The remaining 67 percent would be fresh (A rations) or canned food (B rations) or meals at home while troops wait to be deployed. Appendix I contains additional information on the rations required under DOD's current wartime scenario.

In September 1993, DLA awarded MRE assembly contracts to two of three competing contractors. The potential loss of surge capacity from the non-selected contractor raised concerns about the ability of the two selected contractors to meet wartime surge requirements.

A member of the House Armed Services Committee expressed concern that the requirement in the current wartime scenario for MREs may be understated because in December 1990, during the buildup for Operations Desert Shield and Desert Storm, the services requested that DPSC order 245 million MREs. DPSC subsequently terminated for convenience over half of the MREs on order and still had large quantities on hand and to be delivered.

In December 1991, DPSC began conducting surge capacity studies of the MRE contractors. DPSC staff evaluated each contractor's production facility. They observed and identified assembly processes and verified MRE equipment listed by the contractor. With the use of a production formula agreed upon by both DPSC and the contractors, an adjusted monthly surge capacity was calculated for each machine, assembly area, and the plant as a whole. The surge capacity requirement is included in DPSC contracts. Appendix II discusses DPSC's study in further detail.

Results in Brief

Data provided by DPSC and confirmed by our independent examination shows that the current MRE and Tray pack suppliers have surge capacity that substantially exceeds current wartime requirements. If the MRE contractors were to produce rations at maximum capacity for 150 days, not only would all the required MREs be produced, but the MRE inventory could be more than doubled. Similarly, the Tray pack inventory could be increased by more than 20 percent.

The current DOD wartime requirement of 70 million MREs is more realistic than the 245 million MREs ordered to support Operation Desert Storm because, for Desert Storm, the services ordered this large quantity to be delivered over a 12-month period. DPSC believes the services over ordered during Desert Storm because the war only lasted for several weeks rather than 1 year and the services have historically switched to A or B rations whenever possible.

Capacity to Meet Surge Requirements

Our review of DPSC data and visits to contractor plants revealed that MRE and Tray pack suppliers have a surge capacity that substantially exceeds wartime requirements. If the MRE contractors were to produce rations at maximum capacity for 150 days, not only would all the required meals be produced, but the MRE inventory could increase from 56 million to about 121 million meals.³ Similarly, the Tray pack inventory could increase from about 9.5 million to 11.3 million meals. Appendix III discusses the contractors' ability to meet surge requirements.

Causes of Differences Between Desert Storm and Current DOD Wartime Requirements

DLA officials told us that, in the fall of 1990, the services requested that DPSC award contracts to obtain as many MREs as possible in preparation for the possibility of a long war. DPSC ordered 245 million MREs in December 1990 for delivery over the next 12 months. DLA officials said that the services over ordered during Operation Desert Storm because the war ended after only a few weeks of combat and because the services switched to A and B rations as soon as the tactical situation permitted to maintain the troops' morale.

We compared consumption rates for Desert Storm and the current DOD wartime scenario. In the current wartime scenario, 25 percent of all meals are to be MREs. If the 614,000 troops were to eat MREs in a 12-month operation at the same rate (25 percent) as in the current 150-day scenario, they would eat 168 million MREs over 12 months.⁴ This amount is 31 percent less than the 245 million meals ordered for Desert Storm. The 245 million meal figure was based on service estimates of the number of MREs needed to support the next 12 months of the conflict.

We believe the current assemblers have the capacity to produce even more MREs if needed. If the current MRE base with two assemblers were ordered

³The limiting factor for MREs is the capacity of the assemblers.

⁴We arrived at this number by multiplying 614,000 service members by 3 meals a day by 365 days by the 25 percent MRE consumption rate.

to produce at maximum surge capacity for 12 months, they could produce substantially more than the 245 million ordered for Desert Storm.⁶ Also, there are currently at least 56 million MRES in DOD's inventory available for use in contingencies.

Current Actions Involving the MRE Industrial Base

DPSC has taken actions to ensure sufficient wartime surge capacity for MRES. For example, DPSC adopted a peacetime strategy to minimize the costs of maintaining this capacity by leveling off the fluctuations in peacetime demand and awarding contracts based on a best-value basis considering a combination of surge capacity, price, minimum sustaining rates, quality, past performance, and other factors. DPSC also plans to closely monitor the industrial base for MRES and Tray packs to prevent ordering unneeded rations and preclude maintaining unneeded and unaffordable contractor capacity.

Short-term decreases in the use of operational rations may occur due to fiscal year 1994 Army direction to conserve overall operations and maintenance funding by decreasing consumption of operational rations. An MRE or Tray pack meal costs about \$4 to \$5—more than twice the cost of A and B rations. The Army told us that they were reluctant to order more operational rations from DLA because they were having difficulty in consuming on-hand operational rations in peacetime due to cutbacks in training, reductions in personnel, and the anticipated adverse effect on troop morale of serving MRES in military dining facilities.

DPSC is encouraging contractors to obtain more commercial business because of anticipated reduced peacetime consumption of operational rations. One method being pursued is contractor participation in shared production agreements in which a contractor agrees in advance to shift from producing commercial items to producing government items when hostilities begin and therefore requires less dependence on government peacetime orders.

In its source selection process for assembler contracts awarded in September 1993, DPSC used a selection criteria that included, among other factors, comparing the contractor's wartime surge capacity to the minimum peacetime sustaining rate. High ratios indicated high wartime capacity and low dependence on government contracts. The larger the difference, the higher the score. Each of the three MRE assemblers had unique minimum sustaining rates and maximum surge capacities at the

⁶The maximum number is proprietary.

time of source selection. DPSC awarded contracts to two of the three assemblers and included an option clause in their contracts for fiscal years 1995 and 1996. DPSC is currently conducting a market survey to determine if (1) the options should be exercised or (2) the options should not be exercised and a new source selection process should take place for assembler contracts to be awarded in September 1994.

Scope and Methodology

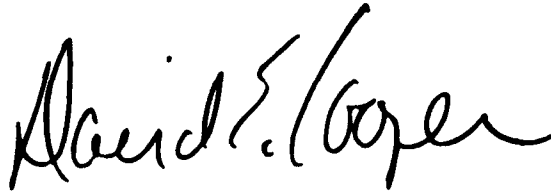
To accomplish our objectives, we reviewed DOD documents, interviewed appropriate DLA, Army, Navy, and Air Force officials, and visited DPSC. We also interviewed contractors including retorters, assemblers, and condiment suppliers. We relied on DOD data for ration consumption. We visited several retorters and Tray pack producers to gain an understanding of their processes.

As part of our independent examination of the MRE assembly surge capacity, we evaluated DOD's assessment of assembler capacity by reviewing DPSC's methodology and visiting plants to verify DPSC data. We also performed our own assessment of assembler capacity by visiting plants, observing and timing processes, identifying machinery, discussing process flows with supervisors and workers, and preparing estimates of plant capacity with managerial staff and quality assurance personnel. Appendix IV contains additional information on our independent examination, and appendix V provides a current list of MRE and Tray pack contractors.

We performed our work between December 1993 and July 1994 in accordance with generally accepted government auditing standards. Officials from the Office of the Secretary of Defense, Army, Navy, Air Force, and Defense Logistics Agency reviewed the information in this report and generally agreed with the facts as presented. We have incorporated the officials' comments where appropriate.

We are sending copies of this report to the Chairmen of the Senate Committee on Armed Services and the House and Senate Committees on Appropriations; the Secretaries of Defense and the Army, the Navy, and the Air Force; and the Director of the Defense Logistics Agency. Copies will also be made available to others on request.

If you or your staff have any questions concerning this report, please contact me at (202) 512-4587. Major contributors to this report are listed in appendix VI.

A handwritten signature in black ink, reading "David E. Cooper". The signature is fluid and cursive, with the first name "David" being the most prominent.

David E. Cooper
Director, Acquisition Policy, Technology,
and Competitiveness Issues

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Abbreviations

CINPAC	Cincinnati Packaging, Inc.
DLA	Defense Logistics Agency
DOD	Department of Defense
DPSC	Defense Personnel Support Center
MRE	Meal Ready-to-Eat
RAFCO	Right Away Foods Corporation
SOPAKCO	Southern Packaging and Storage Company

MRE and Tray Pack Wartime Ration Requirements

For Defense Personnel Support Center (DPSC) planning purposes, the military services require that meals be available for 614,000 troops that have been transported to operational areas over a 150-day period. Table I.1 shows the number of troops from each of the services that would be deployed under the Department of Defense's (DOD) wartime scenario.

Table I.1: Total Troops in DOD's Wartime Scenario

Service	Number of personnel
Army	300,000
Marines	130,000
Air Force	182,000
Navy	2,000 ^a
Total	614,000

^aSailors on ships are not included.

Source: DOD.

According to DPSC, many of the troops would be eating either at home until deployed or be eating A (fresh) or B (canned) rations in mess halls. A rations are both perishable and semi-perishable items and include meat, poultry, vegetables, and fruits. The perishable items require refrigeration, whereas the semi-perishable items do not. These items are used for everyday feeding. B rations do not require refrigeration and are prepared by trained food service personnel in organized food facilities.

Rations for troops entering combat areas include the Meal Ready-to-Eat (MRE), Tray pack, and A and B rations if available.

The MRE is used by the services to sustain individuals during operations that preclude use of organized food service facilities. The 12 different meals contain an entree and accessories.¹ The packaged foods are heat processed in airtight pouches. The Tray pack is designed to sustain the Army in mobile field situations with heat-and-serve meals. The meals are thermally processed, pre-prepared, shelf-stable foods that have been packaged in airtight, half-size steam table metal containers.² Since the Tray pack is pre-prepared, its use requires fewer food personnel and less preparation time, water, and fuel than A or B rations. Table I.2 shows the amount of funds that DPSC obligated for MREs and Tray packs in fiscal years

¹Examples of MRE entrees include pork, chicken stew, spaghetti, omelet, beef stew, ham slice, meatballs, and tuna. Accessories include utensils and condiments.

²Examples of Tray packs include omelets with sausage or bacon pieces, ham, hash, chicken breast, lasagna, pot roast, barbecue pork, beef strips, hamburger, spaghetti, and turkey.

Appendix I
MRE and Tray Pack Wartime Ration
Requirements

1990-93, and table I.3 shows the number of rations that DOD would require during wartime.

Table I.2: MRE and Tray Pack
Obligations for Fiscal Years 1990-93

Dollars in millions

	Fiscal year			
	1990	1991	1992	1993
MREs	\$150	\$ 943	\$137	\$ 90
Tray packs	52	150	20	28
Total	\$202	\$1,093	\$157	\$118

Source: DLA.

Table I.3: Number of Meals for 614,000
Troops for 150 Days

Figures in millions

Days	A and B rations and meals at home	A and B rations in war zone	MREs	Tray packs	Total
0-30	44.2	0.2	9.3	1.6	55.3
31-60	27.8	13.7	10.6	3.1	55.3
61-90	11.3	25.3	14.2	4.5	55.3
91-120	4.5	27.5	17.5	5.8	55.3
121-150	0	30.0	18.9	6.4	55.3
Total	87.8	96.7	70.5	21.4	276.4

Note: Figures may not add due to rounding.

Source: DLA.

DPSC's Study of MRE Assembler Capacity

The objective of the MRE assembly process is to assemble all of the separate food and accessory pouches into food bags that are cased for shipping. Assemblers do not cook (retort) the meals in the assembly plant; the meals arrive at the assembly plant already in their pouches. Some assemblers purchase prepackaged items (e.g., crackers or applesauce) if they lack in-house capacity. Generally, assemblers have functional staging and packaging areas (e.g., meal pouch staging area, cracker packaging, accessory packaging, and applesauce packaging). Once food and accessory items have been packaged in small plastic pouches, they are transferred to 1 of 12 menu lines. The pouches are placed into individual MRE bags and then sealed. The sealed MREs are placed on the final assembly line where the 12 different MREs are placed into a cardboard box for shipment. The cases are stacked on pallets and strapped for shipment.

DPSC sent the MRE assemblers and retorters a letter in December 1991 that informed them about DPSC's planned study on maximum capacity and requested specific data needed to conduct the study. DPSC project team members met with the contractors in January 1992 to brief them on such matters as DPSC's methodology and how each contractor's maximum production capacity would be used in future contracts.

The team members (1) toured each contractor's production facility to observe and identify unique processes and perspectives; (2) verified on-site plant equipment; (3) interviewed managers and employees; (4) timed production equipment in operation; (5) reviewed contractors' quality and inspection records, maintenance, and machine logs; and (6) interviewed on-site government inspectors. DPSC developed monthly maximum capacities for each machine or assembly point.

A minimum of 5 days production from the January to March 1991 period was analyzed to determine peak production rates during Operation Desert Storm. This figure was then compared to the calculated formula rates. In all cases, the lower of the two figures was used to obtain a conservative estimate. Operation Desert Storm production numbers were used to construct a contractor's capacity when formula factors were not obtainable.

An individual contractor's maximum capacity was determined using a verification process. An estimate of the contractor's maximum capacity was based on actual data, verified rates, and actual deficiencies. Once the contractor's capacity was formulated, DPSC then verified this figure further through the use of production records from Operation Desert Storm.

DPSC's Quality Assurance Division provided defect rates for the contractor. This data reflected the number of defects inherent in the contractor's production process. Data also included losses from product that failed acceptance inspection and were pulled out during lot rework. Defect rates were used to reduce the contractor's overall production capacity.

Contractors' Ability to Meet Surge Requirements

DPSC data and our examination showed that the production surge capacity of the MRE retorters and assemblers and the Tray pack retorters is more than the demand envisioned by the military services for a wartime scenario involving 614,000 operational troops. The MRE contractors generally agreed with DPSC's estimate of their surge capacity. If these contractors were to produce at maximum capacity, not only would the required meals be available but DPSC's MRE inventory could more than double from about 56 million to about 121 million meals at the end of the 150-day period. The inventory at the end of 150 days for Tray packs could be as much as 11 million meals.

DPSC Actions to Maintain the MRE and Tray Pack Industrial Bases

DPSC has taken actions to ensure sufficient wartime surge capacity for MRES. DPSC adopted a peacetime strategy to minimize the costs of maintaining this capacity by leveling off the fluctuations in the peacetime demand curve and awarding contracts based on a combination of surge capacity, price, minimum sustaining rates, quality, past performance, and other factors.

In July 1990, DPSC determined that peacetime demand for MRES would not support all contractors in the industrial base. DPSC's plan to downsize the industrial base was temporarily halted when Iraq invaded Kuwait in August 1990. In December 1990, DPSC ordered large quantities of MRES; however, the war ended much sooner than anticipated on February 28, 1991. DPSC either terminated MRE contracts for convenience or extended the delivery dates for the other MRE contracts, reducing the 245 million meals on order to 113 million meals. DPSC decided to maintain the entire MRE industrial base until individual contractor minimum sustaining rates and maximum capacity could be determined and new wartime service requirements were available.

In May 1992, DPSC started planning MRE procurements based on revised service requirements, minimum sustaining rate studies, and other factors. DPSC determined that a downsized MRE base could meet these requirements and be supported by peacetime MRE projected procurements. However, in September 1992, Congress directed DPSC to purchase about 35 million meals, significantly more than DPSC had planned to procure, which delayed DPSC's plans to downsize the industrial base. By leveling off the buys in fiscal years 1993-95 to about 21 million meals a year, DPSC has been able to maintain and stabilize the MRE industrial base.

In September 1993, DPSC awarded MRE assembler contracts to two assemblers—Cincinnati Packaging (CINPAC) and Right Away Foods Corporation (RAFCO). A third assembler, Southern Packaging and Storage Company (SOPAKCO) subsequently filed suit.¹ DPSC then performed retorter source selection, and contracts were awarded to all six retort offerers. Currently, DPSC is conducting new minimum sustaining rate studies on the MRE contractors. SOPAKCO informed us that it has lowered its minimum sustaining rate significantly; however, DPSC makes the final determination on what the minimum sustaining rate will be for source selection purposes.

DPSC has been concerned that the current capacity levels for MREs and Tray packs would be reduced because lower peacetime demand would result in a smaller industrial base. Contractors could be expected to respond by reducing capacity to lower costs to remain viable and competitive. The services were projecting lower utilization of operational rations and the services' overall operations and maintenance budgets were being reduced. Accordingly, DPSC has been encouraging contractors to participate in shared production agreements (i.e. contractors would shift to government production during a war) and diversify their operations by developing commercial markets. DPSC is also attracting new contractors that are not solely dependent on the government for their existence.

Army Concerns About the MRE and Tray Pack Industrial Bases

A single operational meal (MRE or Tray pack) costing about \$4 to \$5 is more than twice the cost of A and B rations. DPSC and Army officials told us that DOD budget cutbacks are impacting training, which is normally the major peacetime user of MREs and Tray packs. Short-term decreases in the use of operational rations may occur due to fiscal year 1994 Army direction to conserve overall operations and maintenance funding by decreasing consumption of operational rations.

Inventory managers at DPSC stated that the number of requisitions from some of the major Army training areas (e.g., Fort Irwin, California) were not being received at the same levels as last year. However, the peacetime sales figures, by month, for MREs and Tray packs show the services are using these items at approximately the same rate as last year.

¹On September 3, 1993, the Defense Logistics Agency (DLA) selected RAFCO and CINPAC to receive MRE assembler contract awards. SOPAKCO sought injunctions to prevent DLA from acting on contracts awarded to CINPAC and RAFCO. On December 8, 1993, the Federal Court in Philadelphia, Pennsylvania, stated that the applicable statutes and regulations were not violated and that the decision by DLA to award the contracts to RAFCO and CINPAC was rational.

Because the cost of a single operational meal is higher than A and B rations, the Army is contemplating developing a new ration type for group feeding called the Unitized Group Ration. This new ration might replace the Tray packs if it is cheaper to produce.

The Army believes that serving its troops large quantities of MREs in situations other than field training or combat (e.g., eating them in mess halls rather than A or B rations) will adversely affect morale. As a result, the Army told us that they were reluctant to order more operational rations from DPSC because they were having difficulty in consuming on-hand operational rations in peacetime due to cutbacks in training and reductions in personnel.

Contractor Concerns About the MRE and Tray Pack Industrial Bases

Even though data provided by DPSC shows that the industrial base can easily meet surge requirements, contractors stated that the rate of return used by DPSC in determining their minimum sustaining rates was too low. DPSC is currently conducting a study to determine if the minimum sustaining rates are still appropriate.

Contractors also said that DOD's continued shrinking budgets were having an adverse effect on a contractors' individual operations and the industrial base in general. The contractors added that unless DOD maintains a steady buying level for operational rations, firms will have to eliminate a large portion of the trained workforce.

Additional Information on Our Scope and Methodology

Our Evaluation of DPSC's Study

As part of our independent evaluation of the MRE industrial base, we reviewed the study done by DPSC on surge capacity for the three assemblers. We found that the same procedures were used by DPSC in all the analyses done for surge capacity.

We interviewed DPSC personnel to understand DPSC's methodology, processes, and procedures in conducting the surge studies. DPSC personnel explained their procedures and calculations in detail. They provided us with documentation for all of their assembly studies.

We visited the three assemblers (RAFCO, CINPAC, and SOPAKCO). We interviewed plant production personnel and discussed the validity of DPSC's studies. We compared the equipment on DPSC's lists to equipment in the plant and discussed changes, additions, and deletions to this equipment. We compared DPSC data on timing studies to current operations. We obtained current information on machine downtime and percent of defective product and compared it to DPSC data.

We reviewed DPSC's methodology and data and interviewed the DPSC personnel who performed the analysis to determine the adequacy and reasonableness of DPSC's efforts. We also checked some of the calculations for accuracy.

Our Methodology Used in Evaluating Surge Capacity

We examined the surge capacity of the two current MRE assemblers—RAFCO and CINPAC. We also examined the surge capacity of a former assembler, SOPAKCO. We did not evaluate the financial capability of these contractors because our review focused on actual production and contractor surge capacity.

We reviewed current capacity; the DPSC study dealt with capacity as it existed 2 years ago and was periodically updated. However, our results differed only slightly from DPSC's. We cross checked the evaluation results.

Before our visits to the contractors' plants, we requested that they provide us with the current total surge output for 1 month for each functional area (e.g., crackers, accessories, applesauce, menu lines, and final assembly).

During our plant visits, we timed functional operations when feasible to determine the reasonableness of the assemblers estimated maximum machine rate. In some cases, the functional area was not in operation.

While we were not able to perform time studies, we used historical data where possible.

At the two assembly plants in operation, we observed plant workers moving work-in-process inventory, placing it into bins and on conveyor belts, inserting pouches into MRE food bags, and sealing pouches and bags. We observed items in functional areas being sealed into pouches and MRE bags being stuffed and sealed. We also observed the MRE bags moving on menu lines and into final assembly where they were placed into boxes, sealed, and placed on pallets for shipment.

We observed quality assurance personnel performing their tasks and discussed rejection rates with these personnel, lineworkers, and Army Inspectors. We obtained Army inspection documents for critical failures and discussed the frequency of such failures with inspectors. We incorporated these rejection rates into our plant capacity evaluation formula.

At all three plants, we counted the number of machines to determine if they matched the number in the assembler's surge plan and, when possible, checked to see if the serial numbers on the machines matched those on the plants' inventory sheets. We compared our machinery lists with lists prepared earlier by DPSC.

We reviewed current surge hiring plans and compared them to actual hiring rates during Operation Desert Storm. We also reviewed some Desert Storm output data to compare surge capacity in that operation with current surge capacity. In addition, we reviewed the relationship between hiring during Desert Storm and production to determine the lag time between new hires and output.

List of Current MRE and Tray Pack Contractors

MRE Assemblers

CINPAC, Cincinnati, Ohio
RAFCO, McAllen, Texas
SOPAKCO, Mullins, South Carolina¹

MRE Retorters

Ameriquel Foods, Evansville, Indiana
Land O'Frost, Lansing, Illinois
Shelf Stable Foods, Evansville, Indiana
SOPAKCO, Mullins, South Carolina
Star Food Processing, San Antonio, Texas
CINPAC, Cincinnati, Ohio

Tray Pack Retorters

Huttenbauer, Inc, Cincinnati, Ohio
Miss Kings Kitchen, Sherman, Texas
Vaneer Foods, Berkeley, Illinois
SOPAKCO, Mullins, South Carolina

¹RAFCO and CINPAC have contracts for production in 1994 with options for 1995 and 1996. DPSC is conducting a market survey to determine if SOPAKCO should be allowed to compete.

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