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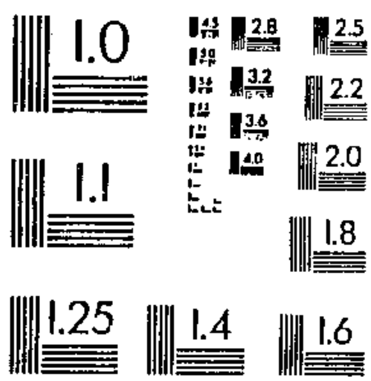

United States
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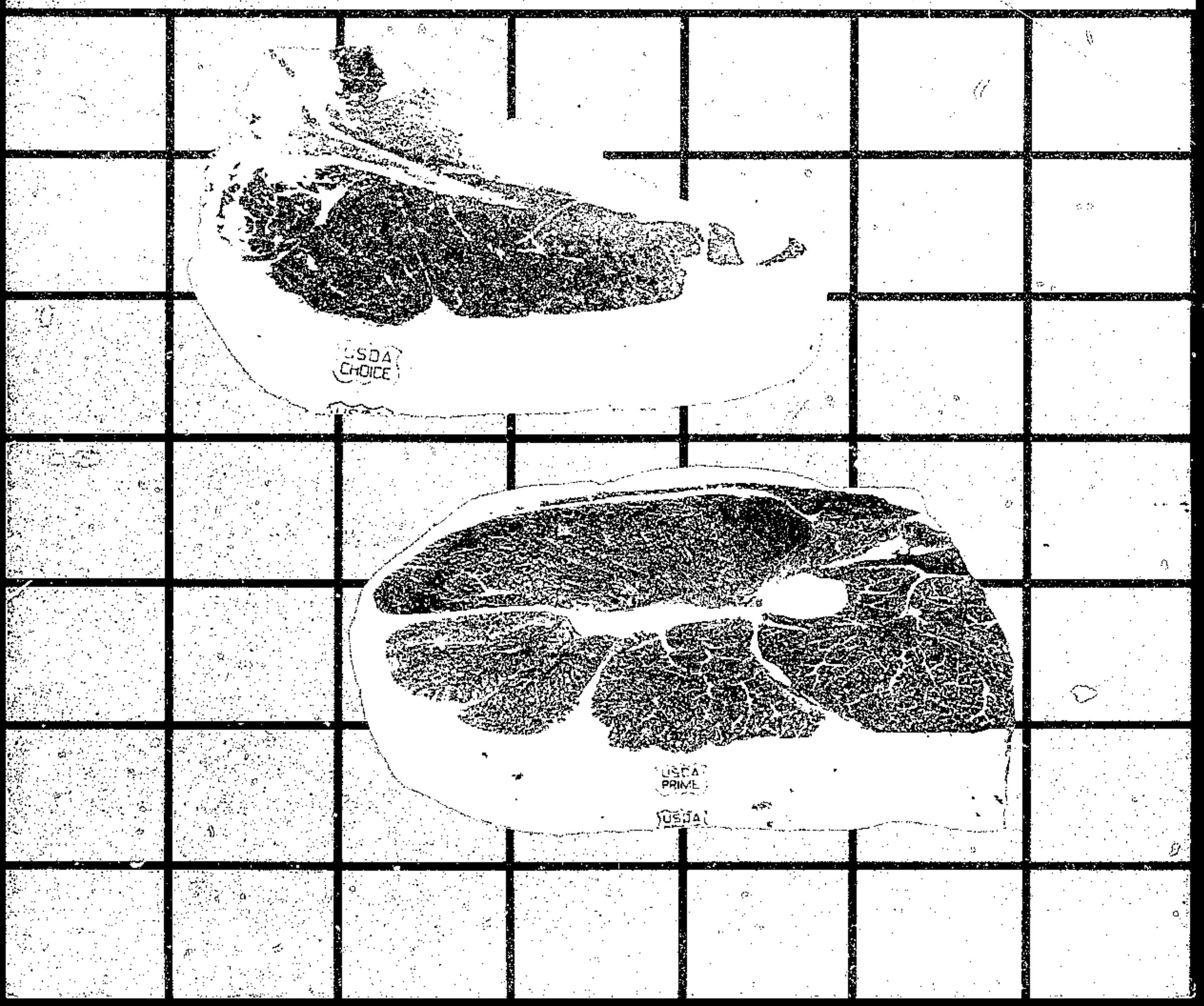
Number 1704

Costs of Retail Beef-Handling Systems:

A Modeling Approach

Lawrence A. Duewer



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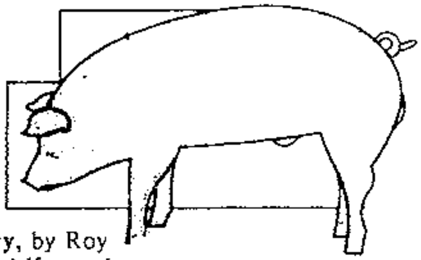

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The U.S. Poultry Industry: Changing Economics and Structure, by Floyd A. Lasley. AER-502. July 1983. 32 pp. $3.25. Order SN: 001-000-04342-1 from GPO.

An excellent overview of changes in the U.S. poultry industry over the last 25 years. Examines why per capita consumption of poultry meat in 1981 nearly doubled since 1960, but retail prices rose only 74 percent for broilers, 67 percent for turkeys, and 59 percent for eggs. Vertical integration and technological advances are largely responsible for improved production and efficiency in the industry, enabling producers to hold down costs.

The U.S. Turkey Industry, by Floyd A. Lasley, William L. Henson, and Harold B. Jones. AER-525. March 1985. 72 pp. $3.00. Order SN: 001-019-00385-5 from GPO.

Discusses trends in the thriving turkey industry, an industry which skyrocketed from a modest enterprise with a gross farm value of $270 million in 1950 to a complex agribusiness with a gross farm value of $1.25 billion in 1982. Turkey is now consumed year round, currently about 10.8 pounds per capita annually. The further processed product such as turkey rolls, pot pies, and frozen dinners is the fastest growing sector of the industry.

Livestock and Meat Statistics, 1983. SB-715. December 1984. 184 pp. $4.50. Order SN: 001-019-00369-3 from GPO.

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Costs of Retail Beef-Handling Systems: A Modeling Approach. By Lawrence A. Duewer. National Economics Division, Economic Research Service, U.S. Department of Agriculture. Technical Bulletin No. 1704.

ABSTRACT

To keep beef-handling costs as low as possible, retail grocery chains should have their central warehouses cut and package beef carcasses into retail cuts for delivery to local stores, according to this computer simulation of 10 systems. When the analysis seeks the highest returns, however, two different systems emerged as best: boxed beef, the system now used by most grocers, and tray-ready beef, a new system whereby the packer slices the beef in retail cuts and the retailer has only to repackage it for sale. Large stores and large chains both show economies of size compared with smaller units.

Keywords: Beef fabrication, boxed beef, centralized beef cutting, tray-ready beef, retailer beef costs.

ACKNOWLEDGMENTS

The model used was originally developed by Terry Crawford and Grace Simon. It was updated, revised, and expanded for this report. Appreciation is extended to Diana L. Claytor for typing this report.

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Washington, D.C. 20250 June 1985

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GLOSSARY

Bloom--The bright red color (considered desirable) taken on by beef when exposed to the air (oxygen).

Boxed beef--Beef cut to primals, subprimals, or both, and vacuum-wrapped, and placed in cartons by the packer.

Capital budgeting--Series of decisions by individuals and firms concerning how much and where resources will be obtained and spent, setting standards for project acceptability, evaluating individual projects, and determining the source of capital to be used.

Carcass proportion--Relative amounts of each cut found in a beef carcass. When analyzing retail cuts to obtain an accurate composite price, the user must weight all cuts in the same proportion as they are found in the carcass.

Central breaking--The cutting of carcasses to primals or subprimals, assumed, for this study, to take place at the retailer's central warehouse. (In fact, though, other firms also break beef for grocers.)

Central cutting--Meat cut completely to retail cuts and packaged before delivery to local stores. Done by various firms, but assumed here to be done at retail chain warehouses.

Chain warehouse--Central plant used by the chain to assemble, store, and distribute the product to local stores. In several of the systems examined, this facility fabricates beef.

Composite price--Weighted average price of cuts with the price of each cut weighted by its respective weight in the carcass.

Cost per retail pound--Cost per pound of beef sold at retail. The records of pounds entering the retail store differ by system. Entering them all on a retail pound basis facilitates comparisons of various systems.

Fabrication--A general term referring to all breaking and cutting of beef from carcasses or primals into retail cuts, regardless of where it is done and whether done partly or entirely.

Fed beef--Beef from animals fed rations that were largely grain for a period before slaughter. Usually Choice grade.

Industrial engineering approach--Application of engineering techniques for collecting data on the operation of a large plant.

Labor coverage--Minimum labor required at store for customer service and to meet union agreements for staffing.

Merchandising slow-moving cuts--Changing prices to move cuts in proportion to purchases and to prevent losses from product deterioration.

Nonfed beef--Beef from steers and heifers mainly fed grass or roughage, with little or no grain.

Physical coefficients--Basic, physical input; for instance, minutes of labor to do a job.

Primals--Major divisions of the carcass, such as rounds, loins, chucks.

Retail cuts--Cuts sold by retailers and purchased by consumers.

Subprimals--Division of primals into smaller cuts, but not to retail cuts; for instance, primal round cut to top round, bottom round, and knuckle.

Systems--Methods or channels of product flow, and locations of meat cutting, selected for analysis.

Tray-ready beef--Beef that is trimmed and cut to retail cuts (steaks and roasts), but kept together in subprimal units and vacuum wrapped and placed in cartons at the packing plants. This beef is ready for traying, wrapping, weighing, and pricing at the retail store.

SUMMARY

To keep beef-handling costs as low as possible, retail grocery chains should have their central warehouses cut and package beef carcasses into retail cuts for delivery to local stores, according to this computer simulation of 10 systems. But that tells only part of the story. Firms want to maximize returns as well as minimize costs. When the model was analysed for highest returns, it showed a different picture.

The systems yielding the highest returns from the computer simulation were one of the boxed-beef methods and the tray-ready method. Most grocers now use some variation of the boxed-beef system. In the boxed beef systems, carcasses are cut into primals or subprimals before leaving the packing plant. They are also vacuum-wrapped and placed in cartons (boxes) by the packer.

The tray-ready system is a recent development. In it, the packer goes further than with the usual boxed beef system. Before vacuum wrapping the primals or subprimals, the packer trims and cuts the beef to retail cuts. Thus, all the retail store needs to do is package the meat for retail sale. When sales of beef and excess bone and fat are added, and costs subtracted, the tray-ready system showed the largest profit margin of the 10 systems considered.

Two of the boxed-beef systems and the tray-ready system allowed stores to purchase cuts in noncarcass proportions; that is, the store can buy more of certain cuts than can come from one carcass and the stores do not have to buy all the cuts that come from a carcass. Noncarcass proportion boxed-beef systems showed higher profit margins than systems where boxed beef had to be purchased in carcass proportions.

The model also looked at the effects of other costs involved in the retail system. Simulations varied transportation costs (distance of retailer from the meatpacker), size of store, size of the chain, wage rates at the warehouse and at the store, return on investments, premiums paid for boxed beef and tray-ready beef, product prices, and different levels of sales of ground beef.

Transportation costs for shipment of beef carcasses are significant, and the boxed-beef and tray-ready systems become more favorable the farther the retailer is from the packer. Delivery of both boxed and carcass beef to a grocer's central warehouse is less costly than direct delivery to stores.

Costs decline per pound sold as store size increases and as more stores are added to the chain. Larger stores, however, indicated more economies than larger chains.

Cutting the meat before it reaches the retail level, either at the packer or at the warehouse, seems to save labor and investment costs. While many manufacturing concerns put products together, the beef industry essentially takes the carcass apart. This disassembly process at the warehouse or packer is more time efficient and wages are usually lower than if done at the retail store.

Costs of Retail Beef-Handling Systems:

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Lawrence A. Duewer

INTRODUCTION

Boxed beef is now the chief form in which fed beef leaves packing plants. In 1982, 58 percent of all federally inspected steer and heifer slaughter of plants reporting to the Packers and Stockyards Administration (USDA) left the slaughtering plant as boxed beef, compared with 43 percent in 1979 (15). 1/ In addition, in 1982 nonslaughtering fabricating plants boxed 11 percent and food chain fabricators boxed 14 percent of steer and heifer slaughter (2). Thus, over 83 percent of all fed beef is fabricated before arriving at the local store (7). Some question remains as to who can break the beef most economically--the packer, the retail chain warehouse, or a wholesaler-purveyor. A new form of boxed beef, tray-ready beef, was also introduced recently. This study examines, from the retail grocer's viewpoint, the costs, advantages, and disadvantages of alternative methods of purchasing and handling beef. The central part of the analysis is a computer program that will facilitate processing information.

An earlier ERS study assumed that beef moved in carcass proportions in all systems (9). That assumption is not consistent with current practices of most chainstores. The research reported here thus both updates and expands on the earlier work. Objectives of the current study are:

1. To organize previous techniques and information into a computer program that not only summarizes data and estimates costs but also simulates changes in costs and other variables.

2. To update and analyze current cost comparisons of the seven previously used alternative methods for the handling of beef by supermarkets.

3. To add alternatives that allow analyses of stores selling noncarcass proportions of boxed beef cut at either the retailer's warehouse or in the store. Another alternative added is to pre-cut boxed beef (tray-ready).

1/ Underscored numbers in parentheses refer to items in the references at the end of this publication.

4. To compare study results with current trends and use the study results to explain current trends.

5. To provide a continuing vehicle to keep data current and to respond to policy questions.

RESEARCH AND LITERATURE REVIEW

The Economic Research Service (ERS) has monitored boxed beef production and adoption by retailers for many years. Specific research in the area by ERS began when a private consulting firm (Case and Co.), in cooperation with the National Association of Food Chains (now the Food Marketing Institute), was given a contract in 1973 to provide information on variable cost components (mainly labor) for handling meat by retail grocery chains (5). Time and motion studies were used to determine meat cutting and handling times. Another contract, completed in December 1975, looked specifically at the economics of alternate fresh and frozen beef distribution systems by supermarkets (6). From these and related information, ERS published an article in 1977 providing information for that time period similar to material presented in this manuscript (9).

Case and Co., in 1977, updated their 1975 material in a contract with Iowa Beef Processors Inc. (now IBP, Inc.) (4). During the midseventies, several other studies were made of boxed beef and beef handling by retailers (10, 12, 13). A Cornell publication summarized and appraised boxed-beef marketing in 1980 (11). The Cryovac Division of W. R. Grace & Co. has completed a series of studies on the extent to which beef is fabricated before it enters retail stores. The latest in this series was released in 1983 (7). The Packers and Stockyards Administration, now collects data on boxed-beef production and has released a summary of the 1979 data (14).

Beef is not the only boxed meat product. Boxed pork is available too, but its volume is still small. Pork has for years been cut into primals at the slaughter plant, but it was not vacuum packed until recently. The boxed pork products recently introduced have generally been smaller cuts intended for sale as retail cuts without further cutting and packaging by the retailer.

PROCEDURES AND ASSUMPTIONS

Specifications of alternative handling methods or systems studied are similar to those in ERS's previous publication (9) with the addition of three systems using noncarcass proportions. These systems go further than just boxed beef. The tray-ready alternative is subprimals that are trimmed and cut into steaks and roasts and then vacuum wrapped at the packers. The meat is ready to be repackaged and sold in the retail store. The popularity and acceptance of boxed beef may just be a step toward an eventual movement to tray-ready beef or to cutting and packaging retail cuts and perhaps freezing these cuts before they enter the retail store. Several other systems could be envisioned, but the 10 selected for this study from the retailer's viewpoint are as follows:

1. Carcasses from packer delivered directly to the retail store without going to the retailer's warehouse,

2. Packer-cut primals (boxed beef) delivered directly to the retail store without going to the retailer's warehouse,

3. Packer-cut primals (boxed beef) distributed through a retailer's warehouse to retail stores,

4. Carcasses from packer, usually moving as quarters, fabricated to primals at the retailer's central warehouse with retail cuts prepared at retail stores,

5. Carcasses from packer fabricated to subprimals at the retailer's warehouse with retail cuts prepared at retail stores,

6. Carcasses from packer fabricated to fresh retail cuts at the retailer's warehouse before distribution to the stores,

7. Carcasses fabricated to frozen retail cuts at the retailer's warehouse before distribution to the stores,

8. Packer-cut primals (boxed beef) in noncarcass proportions distributed through a retailer's warehouse to retail stores,

9. Packer-cut primals (boxed beef) in noncarcass proportions fabricated to fresh retail cuts at the retailer's warehouse before distribution to the stores, and

10. Packer precut subprimals (tray-ready beef) distributed through a retailer's warehouse to retail stores.

Economic engineering and capital budgeting were used to determine the costs of each system. Costs by system were then compared. In addition to an overall incremental cost for the system, costs were identified for many individual cost items. Not all costs were identified, however, because not all costs are affected by a change in the beef-handling system. For example, beef's share of the store's cost of providing a parking lot for its customers is not included. Costs not affected by the choice of the system were not studied, such as checkout labor, trays and film, display cabinets, and various overhead costs.

This study examines only retailer costs. Costs of packers, transportation firms, and others in the meat distribution chain are not included except as they are reflected in prices at different levels in the system. Costs of the product purchased do, however, reflect or represent returns to other firms; a purchase premium (over carcass price) is used for the boxed-beef and tray-ready systems to reflect these differences. Intangibles such as management convenience or labor relations problems were not included in the analysis. Attempts were made, however, to handle inventory differences by system and flexibility in sales plans.

Quantities of beef handled by size of stores and number of stores per chain are presented in table 1 for the first seven systems. Quantities assumed for systems 8, 9, and 10 are presented in table 2. Simulations were completed for all combinations of three store sizes (small, medium, and large), three specifications of numbers of stores per chain (50, 80, and 100), and three distances of the chain from packers (125, 600, and 1,000 miles).

Table 1--Beef sold per week, and prices, by store size and chain size, systems 1 through 7 1/

Price and quantity elements	Unit	Small stores: With chain sizes of -- 50	80	100	Medium stores: With chain sizes of -- 50	80	100	Large stores: With chain sizes of -- 50	80	100
Carcass equivalents sold per store	Number	7.5	7.5	7.5	15	15	15	22.5	22.5	22.5
Front quarters	Do.	750	1,200	1,500	1,500	2,400	3,000	2,250	3,600	4,500
Hind quarters	Do.	750	1,200	1,500	1,500	2,400	3,000	2,250	3,600	4,500
Total quarters	Do.	1,500	2,400	3,000	3,000	4,800	6,000	4,500	7,200	9,000
Additional trim purchased (boxed-beef system also purchased the 87 pounds per carcass unit to bring carcass units purchased up to carcass equivalent) 2/	Pounds	32,250	51,600	64,500	64,500	103,200	129,000	96,750	154,800	193,500
Steaks and roasts 3/	Do.	147,400	235,840	294,800	294,750	471,600	589,500	442,150	707,440	884,300
Retail packages 3/	Number	58,950	94,320	117,900	117,900	188,640	235,800	176,850	282,960	353,700
Ground beef 3/	Pounds	69,350	110,960	138,700	138,700	221,920	277,400	208,050	332,880	416,100
Retail packages	Number	27,750	44,400	55,500	55,500	88,800	111,000	83,200	133,120	166,400
Total sales:										
Per chain 3/	Pounds	216,728	346,764	433,455	433,456	693,529	866,911	650,183	1,040,293	1,300,366
Per store	Do.	4,335	4,335	4,335	8,669	8,669	8,669	13,004	13,004	13,004
Retail price:										
Thick cuts	Dollars/lb	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
Thin cuts	Do.	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Ground beef	Do.	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

1/ These factors also apply whether retailers are 125, 600, or 1,000 miles from packer. 2/ This base run assumes that 32 percent of beef sales are ground beef. 3/ The program printed steak and roast and ground beef pounds per store; when these were multiplied by the number of stores, a rounding error occurs. Steaks and roasts plus ground beef should equal total retail pounds sold.

Table 2--Beef sold per week, and prices, for three chainstore situations, systems 8-10 1/

Price and quantity elements	Unit	50 small-store chain			80 medium-store chain			100 large-store chain		
		System 8	System 9	System 10	System 8	System 9	System 10	System 8	System 9	System 10
Carcass equivalents sold per store	Number	7.5	7.5	7.5	15.0	15.0	15.0	22.5	22.5	22.5
Front quarters	Do.	878	878	878	2,808	2,808	2,808	5,265	5,265	5,265
Hind quarters	Do.	622	622	622	1,992	1,992	1,992	3,735	3,735	3,735
Total quarters	Do.	1,500	1,500	1,500	4,800	4,800	4,800	9,000	9,000	9,000
Trim (includes portion bought to obtain carcass unit)	Pounds	67,125	67,125	69,375	214,800	214,800	222,000	402,750	402,750	416,250
Steaks and roasts 2/	Do.	147,400	147,400	147,400	471,600	471,600	471,600	884,300	884,300	884,300
Retail packages 2/	Number	58,950	58,950	58,950	188,640	188,640	188,640	353,700	353,700	353,700
Ground beef 2/	Pounds	69,350	69,350	69,350	221,920	221,920	221,920	416,100	416,100	416,100
Retail packages	Number	27,750	27,750	27,750	88,800	88,800	88,800	166,400	166,400	166,400
Total sales:										
Per chain 2/	Pounds	216,728	216,728	216,728	693,529	693,529	693,529	1,300,366	1,300,366	1,300,366
Per store	Do.	4,335	4,335	4,335	8,669	8,669	8,669	13,004	13,004	13,004
Retail price:										
Thick cuts	Dollars/lb	2.70	2.70	2.80	2.70	2.70	2.80	2.70	2.70	2.80
Thin cuts	Do.	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Ground beef	Do.	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

1/ Only three of the nine combinations involving store size and number of stores per chain are given as examples. Factors would apply whether retailers are 125, 600, or 1,000 miles from packer. 2/ The program printed steak and roast, and ground beef pounds per store. When these were multiplied by the number of stores a rounding error occurs. Steaks and roasts plus ground beef should equal total retail pounds sold.

Noncarcass Proportions

One of the big advantages of retailers buying beef cut into primals, subprimals, or tray-ready beef is that their purchases can reflect their needs; they are not forced to buy cuts of meat in the proportion found in a carcass; they can buy only the cuts that their customers want. For computing purposes here, the proportions they prefer are assumed and set constant. In reality this preference might change from week to week in relation to the firm's advertising and promotion program. The poundage of each noncarcass "unit" was adjusted to the weight of a carcass so the movement of meat would be the same through the retailer, regardless of whether it sold in carcass or noncarcass proportions.

Carcass proportions means that there are two each of loins, chucks, rounds, and ribs. For noncarcass proportions, I assumed these primals would be sold in the proportion of 2 chucks to 1.5 ribs to 1.5 rounds to 1 loin. In addition, the carcass proportion was assumed to include 51 pounds of thin cuts (plate, flank, brisket, and shank) while the noncarcass proportion assumed only 17 pounds of thin cuts. Thus, per carcass equivalent, the noncarcass proportion is 376 pounds of thick cuts and 17 pounds of thin cuts. The carcass proportion is 342 pounds of thick and 51 pounds of thin cuts. Both total 393 pounds.

Since the computer model figures some of the labor costs by front and hind quarters and the noncarcass proportions by primals, the carcass equivalent had to be proportional to front and hind quarters. The proportions used were 1.17 front quarters to 0.83 hind quarters.

Cost Categories and Concepts

Relevant costs in evaluating the best meat-handling system are those that would vary depending on the system used. These were divided into three cost categories:

Investments: Capital for both for the central retail warehouse and the store.

Operations: Labor at retailer's warehouse and at store; warehouse and store support; transportation from warehouse to store; price difference for buying carcasses, boxed beef in carcass proportion, and boxed beef and tray-ready beef in noncarcass proportion; shrinkage loss; and bone and fat salvage values.

Other factors: Merchandising slow-moving cuts through price discounts, labor coverage at stores, quality control, and general administrative costs.

The source or development of data used fall into two or more types. General data are the sort derived for an assumed average situation. The size designation for a medium-size store is general data, as is the number of miles the chain warehouse is from the packer. These data values require general knowledge of real situations and are selectively set to provide a range of situations representative of the industry.

Situation specific data, the second type, are data such as the price of a meat grinder, a cooler, or other equipment. This type also includes the cost of buildings, wage rates, and transportation costs. Situation specific data were collected from equipment manufacturers, contractors, the U.S. Department of

Labor, and numerous other sources. Data on equipment included years of estimated life and installation costs. Some situation specific data may also have some subjective aspects.

Investment Costs

Investment costs are the value of the building and equipment in a retailer's central warehouse (where applicable) and in the stores. Retail warehouse investment comprises five cost categories: (1) receiving and shipping dock; (2) holding cooler for carcass or boxed beef; (3) processing area; (4) selection area; and (5) administrative and general items. Both warehouse and store investment costs were divided into a number of subcategories 2/. Store investment cost components studied include: receiving scales, rails, pallet jacks, cooler building shell and rails, cutting room building shell, slicers, tenderizers, saws, grinders, tables, platters, platter carts, knives, wrapping area building shell and equipment, pricing equipment, display area building shell, and display cabinets.

The investment in each piece of equipment or in floor space was spread over its expected life and depreciated at 15 percent per year. (The model allows this percentage to be changed easily.) Costs are based on costs of new stores and equipment. Annual costs were divided by pounds sold per year to estimate cost per pound. Investment items constituted between 5 and 20 percent of all costs considered. Note that costs used in the model may not immediately apply if a retailer switches from one system to another because some space and equipment can be converted when existing stores are converted.

Operational Costs

Labor requirements for the retail store were determined from standards for each of several direct labor categories and for maintenance and sanitation (table 3 and footnotes in table 11). Estimates are based on typical hourly costs in 1984 for the base run. (Varying labor costs are examined later and reported in table 11.) Similar standards were established for central retail warehouses. Direct labor usage was estimated from time and motion studies conducted for ERS by Case and Co. Cooperating packers and retailers either supplied data or allowed economic engineering studies of their operations. These standards allow for short rest breaks and delays. Fatigue and delay factors of 20 percent at the central plant and 30 percent at the store are included. The greater amount of downtime among meatcutters at the stores is partly due to the need to respond to customers and to fill the display case.

Shrinkage costs vary by system and method (table 4). Retailers usually pay according to the weight of meat as it leaves the packer. The in-transit shrinkage of carcass beef is included in the model in the days assigned to shrink at wholesale prices.

The rates of shrinkage by retail product weight sold are 0.42 percent per day for fresh nonvacuum-wrapped meat; 0.35 percent for primals the packer vacuum wraps, until the package is opened; and essentially none for frozen meat (for programming convenience 0.01 was used). These rates are typical of rates in

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2/ For example, under "selection area" in warehouse costs, the following were considered: share of building shell; rack slots; carts for tote boxes; tote boxes; forklifts; forklift batteries and chargers; and pallets.

Table 3--Store labor standards in workhours per unit and formulas used 1/

Item	Direct to retailer		To retail warehouse for further processing into --							
Leaves packer as--	Carcass	Primals	Primals	Carcass	Carcass	Carcass	Carcass	Primals 2/	Primals 2/	Tray-ready 2/
	System 1 3/	System 2 3/	Primals, system 3	Primals, system 4	Subprimals, system 5	Fresh cuts, system 6	Frozen cuts, system 7	Primals, system 8 2/	Fresh cuts, system 9 2/	Tray-ready, system 10 2/
	Hours per unit									
Receiving:										
Per quarter	0.014	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per retail pound	NA	0.000024	0.000024	0.000024	0.000024	0.000031	0.000031	0.000024	0.000031	0.000024
Per pound of lean beef	.000021	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cutting:										
Per front quarter	1.16	1.01	1.01	1.01	.82	NA	NA	1.01	NA	NA
Per rear quarter	1.15	.99	.99	.99	.75	NA	NA	.99	NA	NA
Steak tenderizing:										
Per front quarter	.02	.02	.02	.02	.02	NA	NA	.02	NA	NA
Per rear quarter	.15	.15	.15	.15	.15	NA	NA	.15	NA	NA
Grinding, per pound	.0023	.0023	.0023	.0023	.0023	NA	NA	.0023	NA	NA
Wrapping, per package: 4/ 5/										
Fully automatic	.0015	.0015	.0015	.0015	.0015	NA	NA	.0015	NA	.0015
Manual	.0023	.0023	.0023	.0023	.0023	NA	NA	.0023	NA	.0023
Pricing, per package: 5/										
Fully automatic	0	0	0	0	0	NA	NA	0	NA	0
Semi-automatic	.0015	.0015	.0015	.0015	.0015	NA	NA	.0015	NA	0
Display, per package	.0015	.0015	.0015	.0015	.0015	.0015	.0015	.0015	.0015	.0015
Maintenance labor per week	6/.042xA	6/.042xA	6/.042xA	6/.042xA	6/.042xA	6/.042xA	6/.042xA	6/.042xA	6/.042xA	6/.0336XA
Sanitation labor per week	6/.17xA	6/.17xA	6/.17xA	6/.17xA	6/.17xA	6/.17xA	6/.17xA	6/.17xA	6/.17xA	6/.0136xA

Note: NA = Not applicable. 1/ Wages per hour used were $12.50 per hour for receiving, cutting, steak tenderizing, and grinding; $11.40 per hour for maintenance; and $10.00 per hour for wrapping, pricing, display, and sanitation. 2/ Non-carcass proportions. 3/ Delivered direct to store; does not go through warehouse. 4/ Case and Company calculates that the fully automatic wrapper is the least expensive to own and operate at greater than 2,300 packages per week. Below 2,300, the manual is the least expensive. (This assumes that for each beef package there is one nonbeef package wrapped). 5/ The fully automatic is used with the fully automatic wrapper, and the semi-automatic, with the manual wrapper. 6/ A = Beef cutting, grinding, tenderizing, wrapping, and pricing labor hours per week.

Table 4--Shrinkage costs, by system, for an 80-outlet chain of medium stores 600 miles from packer

System	Nonvacuum wrapped, 0.42 percent loss per day: Days kept before cutting	Nonvacuum wrapped, 0.42 percent loss per day: Days kept after cutting	Vacuum wrapped, 0.35 percent loss 1/ at wholesale prices	Total
	-- No. of days --			Cents/pounds
1. Packer direct to store as carcass	2/2	1	NA	1.83
2. Packer direct to store as primals	NA	1	Yes	1.33
3. Packer to warehouse to store as primals	NA	1	Yes	1.33
4. Packer to warehouse as carcass, warehouse to store as primals	2/2	2.5	NA	3.29
5. Packer to warehouse as carcass, warehouse to store as subprimals	2/2	2.5	NA	3.29
6. Packer to warehouse as carcass, warehouse to store as retail cuts (fresh)	2/2	2	NA	2.80
7. Packer to warehouse as carcass, warehouse to store as retail cuts (frozen)	2/2	3/.01	NA	.87
8. Packer to warehouse to store as primals (noncarcass proportion)	NA	1	Yes	1.33
9. Packer to warehouse as primals, warehouse to store as retail cuts (noncarcass proportion)	NA	2	Yes	2.30
10. Packer to warehouse to store as precut subprimals (noncarcass proportion)	NA	1	Yes	1.34

NA = Not applicable. 1/ This is shrinkage loss from time put in bag until it comes out. 2/ Includes any shrink that occurs during transportation if payment is made on the shipping packers weight. 3/ There is essentially no loss on frozen meat, but to keep from multiplying by 0 a small value (0.01) was used.

the meat industry (10). Average purchase cost of beef in carcass form at the packer was $1.00 per retail pound, reflecting 1984 price levels.

The periods for which the meat is held are indicated in table 4, except for the vacuum-wrapped column which assumes the same loss regardless of the time held before the package is opened. Wholesale prices apply to both carcasses and boxed beef until cutting begins.

Three distances between the packer and retail chain warehouses were considered: 125 miles, 600 miles, and 1,000 miles. Transportation costs for carcasses in the base runs were 1.55 cents per pound for those shipped 125 miles, 3.06 cents for those shipped 600 miles, and 5.08 cents for carcasses shipped 1,000 miles. For the same distances, boxed transportation costs for boxed meat were 1.45 cents, 2.94 cents, and 4.92 cents. Boxed rates are slightly lower because boxes can be handled more easily and the trucks do not require rails. However, these small differences in cost per pound are magnified when the pounds shipped are considered. Fat and bone staying at the packing plant per carcass unit was 83 pounds for regular boxed beef, 56 pounds for noncarcass proportion boxed beef, and 150 pounds for tray-ready beef. Beef trim, whether trimmed off at the packer or not, was shipped to supply the retailer with raw material for ground beef. In all systems the same number of pounds were sold at retail, but the weight of the carcass unit transported varied. Table 6 indicates the difference in transportation costs per retail pound for carcass equivalents shipped 600 miles from the packer to a retailer. Transportation costs per pound for carcasses shipped from packer to wholesaler were 3.9 cents; for noncarcass proportion boxed beef, 3.46 cents; for regular boxed beef, 3.38 cents; and 2.98 cents for tray-ready beef.

Transportation from warehouse to local store is a factor for eight systems. Unloading costs are included with warehouse-to-store transportation costs. Two trucks (one 20 feet and one 40 feet) are used depending on the volume involved. Firms with larger stores have lower costs than those with smaller stores because each delivery is larger.

Other Costs

The higher price per retail pound normally paid for regular and tray-ready primals than for carcasses appears in the model as a cost (called purchasing premium) to the retailer. The higher price reflects the additional services purchased. This study assumes beef for all systems is priced the same with all charges for cutting, trimming, and vacuum packaging in the purchase premium. At the same time, transportation savings can reduce costs, since fewer pounds are shipped when beef is cut to primals at the packing plant.

During 1975, the retailer apparently paid an average of about 5.77 cents more per retail pound for boxed beef (9). This difference would be the return to the packer for fabrication, vacuum packaging, and putting the primals in cartons. In the case of precut subprimals (tray-ready), costs also include trimming and cutting to retail cuts. It is difficult and somewhat subjective to match equivalent products to estimate the price difference between purchasing a carcass and buying the same quantity cut into primals and other cuts. The base run charges a purchase premium of $32.50 per carcass equivalent (5 cents per pound) for boxed beef and $97.50 per carcass equivalent (15 cents per pound) for tray-ready beef. A later section of this report, "Purchase Premiums," examines alternative ways of handling the additional cost to the retailer of boxed and tray-ready beef. Included is a way for the retailer to determine how much the extra services of an alternative system will cost. Table 7 provides the costs using different purchasing premiums so the user can apply a schedule of price differences from 3-7 cents per pound for boxed beef and 10- to 20-cent price differences for tray-ready beef.

Retailers usually buy beef by the pound, and maintain their accounting records by purchase weight. However, to compare different systems, I converted all costs to the basis of retail pounds sold.

An estimate of the retail price is combined with the physical coefficients to estimate the cost due to product shrinkage and the cost of merchandising slow-moving cuts. Computations and results are based on a composite retail price. Altering retail prices affects costs in the systems. The effect of higher and lower retail price assumptions on shrinkage estimates is easily seen. While shrinkage could have been handled by adjusting the number of pounds sold, the cost adjustment by use of price made programming easier. Systems that make retailers buy carcasses have more shrinkage loss than comparable systems allowing retailers to buy vacuum-packaged primals. Thus, shrinkage costs of the boxed-beef systems are less than those of the other systems.

Computerization

Simulation of different systems, and the effects of various changes on the costs of these systems, were also included. A computer program was developed to take all the data and the necessary equations and procedures to summarize results of each system and situation. Program development requires a large effort, but it saves time when the program is used repetitively. Once the program functions, different systems and situations can be simulated easily and the results analyzed.

The model or program was developed by use of the 1975 and 1977 reports of Case and Co. as a guide. The program was written in FORTRAN and written so that elements of the program could be changed easily by inputting a small set of new data (see appendix for program).

The program used three main types of variables. Variables starting with F are used to denote functions or equations that calculate physical quantities. Variables beginning with C are used to denote equations that derive costs. Variables beginning with P are the technical coefficients, prices, wage rates, and so on for the model. Thus, the program begins with the physical calculations of meat quantities, machines needed, supplies needed, and transportation elements. The costs are then computed by use of the F and P variables. Costs are then summarized and printed out in table form.

Some of the mechanics of the program include the liberal use of DO loops to determine or compute the same set of functions for all systems, sizes of stores, distances from packers, and numbers of stores per chain. Comment statements in the program allow someone looking at the program to understand it better. The program allows periodic updates of cost estimates.

RESULTS

In order to examine cost details, the size of store, size of chain, and mileage from packer to retailer must be identified. The percentage of total beef sales accounted for by ground beef and the purchase premium level also need to be specified.

Total costs for each store size and mileage category are indicated in table 5. Table 6 provides more detailed cost and revenue data for the 80-outlet chain of medium size stores 600 miles from the packer. Tables 7 through 11 give different purchasing premium levels, different ground beef percentages, different returns on investment, and the results of price changes and wage rate changes.

Total Cost Results of Base Run

The choice of handling methods is affected by the purchase premium levels more than by the characteristics of store size, chain size, and distance from packer (table 5). However, the purchase premium levels used in the base run were selected as they seem to be typical for 1984. For that reason, the comparisons of systems shown in table 5 are useful even though they may not apply to a specific firm situation.

The lowest cost system for all base run situations (table 5) is central packaging of retail cuts (system 6). That is where carcasses are cut to retail cuts at the retail firm's central warehouse before transportation to the store. Costs of labor at the warehouse and store combined are lower than for the other carcass-purchased systems (table 6). Costs for store support and slow-moving cuts are also low for system 6. The purchase premium paid for primals and tray-ready beef adds to their costs even though some items of their costs are lower. System 6, however, is not a common handling method in the industry. A few firms tried it, and most discontinued it in favor of boxed beef. They have either stopped central warehouse cutting to retail cuts entirely, or cut back to central cutting only a few cuts. Evidently they have encountered problems with shelf life and meat quality. The shelf turnover rate is critical. In cutting to retail cuts, quality control is a major problem. A firm's ability to keep the meat clean and to get the right meat to the right place at the right time must be exceptional. In some cases, labor problems also discouraged centralized cutting.

The next lowest cost system is system 7 (central cutting to retail cuts and freezing before delivery to the local store). The cost savings occur for items similar to those in system 6. Costs for shrinkage and slow-moving cuts are lower in system 7, than for any other system. Warehouse support costs are higher than for other systems because of the freezing costs. Many in the industry had predicted a trend to more frozen meat and the costs shown here would justify such a trend. Several firms, however, tried selling frozen cuts, but most switched back to fresh. Originally there was a packaging problem with frozen meats, but technology has mostly solved that. The real problem is lack of consumer acceptance of frozen meat. Consumers are unwilling to purchase frozen beef even though many freeze it at home. Food service firms seem to have accepted frozen beef better than retail grocery store customers.

The third lowest priced system is system 9 (primals purchased from the packer and cut to retail cuts at the retail warehouse). This system also ships meat in noncarcass proportions. Thus, systems 6 and 9 are essentially the same

Table 5--Beef-handling systems for supermarkets, all costs 1/

Chain description	Carcass	Primals	Primals	Carcass	Carcass	Carcass	Carcass	Primals 2/	Primals 2/	Tray-ready 2/
	Leaves packer as--									
	Direct to retailer		To retail warehouse for further processing into --							
	System 1 3/	System 2 3/	Primals, system 3	Primals, system 4	Subprimals, system 5	Fresh cuts, system 6	Frozen cuts, system 7	Primals, system 8 2/	Fresh cuts, system 9 2/	Tray-ready, system 10 2/
	Cents per retail pound									
Small stores:										
125 miles from packer--										
50 stores	33.76	34.05	32.15	33.16	31.90	27.04	28.24	31.24	30.27	32.04
80 stores	33.73	34.02	32.12	33.08	31.80	26.82	27.59	31.21	30.06	32.02
100 stores	33.72	34.01	32.10	33.06	31.77	26.52	27.15	31.19	29.76	31.99
600 miles from packer--										
50 stores	35.68	35.76	33.86	35.08	33.82	28.96	30.16	32.99	32.03	33.55
80 stores	35.65	35.73	33.84	35.00	33.73	28.74	29.51	32.97	31.82	33.53
100 stores	35.64	35.72	33.81	34.98	33.69	28.44	29.07	32.94	31.52	33.50
1,000 miles from packer--										
50 stores	38.25	38.04	36.14	37.65	36.39	31.53	32.73	35.32	34.36	35.56
80 stores	38.22	38.01	36.12	37.58	36.30	31.31	32.09	35.30	34.14	35.53
100 stores	38.21	38.00	36.09	37.55	36.26	31.01	31.64	35.27	33.85	35.51
Medium stores:										
125 miles from packer--										
50 stores	33.43	33.72	31.52	32.48	31.19	26.12	26.70	30.61	29.36	31.41
80 stores	33.41	33.70	31.49	32.46	31.15	25.94	26.31	30.58	29.18	31.38
100 stores	33.41	33.70	31.48	32.48	31.17	25.93	26.23	30.56	29.14	31.36
600 miles from packer--										
50 stores	35.35	35.43	33.24	34.40	33.12	28.04	28.63	32.36	31.12	32.93
80 stores	35.33	35.42	33.20	34.39	33.07	27.86	28.23	32.33	30.94	32.89
100 stores	35.33	35.41	33.19	34.41	33.09	27.86	28.16	32.32	30.90	32.87
1,000 miles from packer--										
50 stores	37.92	37.71	35.51	36.97	35.69	30.61	31.20	34.69	33.45	34.93
80 stores	37.91	37.69	35.48	36.96	35.64	30.43	30.81	34.66	33.27	34.89
100 stores	37.90	37.69	35.47	36.98	35.66	30.43	30.73	34.65	33.23	34.88
Large stores:										
125 miles from packer--										
50 stores	33.29	33.58	31.28	32.25	30.93	25.87	26.24	30.37	29.11	31.17
80 stores	33.28	33.57	31.25	32.26	30.94	25.75	25.98	30.34	28.96	31.14
100 stores	33.28	33.57	31.24	32.25	30.93	25.69	25.88	30.33	28.90	31.13
600 miles from packer--										
50 stores	35.22	35.30	32.99	34.17	32.86	27.79	28.17	32.12	30.87	32.68
80 stores	35.21	35.29	32.97	34.18	32.86	27.67	27.91	32.09	30.71	32.65
100 stores	35.20	35.29	32.96	34.17	32.85	27.61	27.80	32.09	30.65	32.64
1,000 miles from packer--										
50 stores	37.79	37.58	35.27	36.75	35.43	30.36	30.74	34.45	33.20	34.68
80 stores	37.78	37.57	35.24	36.75	35.43	30.24	30.48	34.42	33.04	34.66
100 stores	37.78	37.56	35.24	36.74	35.42	30.18	30.37	34.41	32.98	34.65

1/ Ground beef 32 percent of volume and purchase premiums of $32.50 (boxed) and $97.50 (tray-ready). 2/ Noncarcass proportions. 3/ Moves direct from packer to retail store.

Table 6--Detailed cost breakdown and margin analysis for chain of 80 medium-size stores 600 miles from packer selling 32-percent ground beef with a boxed-beef purchase premium of $32.50 and a $97.50 purchase premium for tray-ready 1/

Costs and margins considered	Leaves packer as--									
	Carcass	Primals	Primals	Carcass	Carcass	Carcass	Carcass	Primals 2/	Primals 2/	Tray-ready 2/
	Direct to retailer		To retail warehouse for further processing into --							
	System 1 3/	System 2 3/	Primals, system 3	Primals, system 4	Subprimals, system 5	Fresh cuts, system 6	Frozen cuts, system 7	Primals, system 8 2/	Fresh cuts, system 9 2/	Tray-ready, system 10 2/
	Cents per retail pound									
Warehouse or plant costs:										
Investment	0	0	0.41	1.83	2.08	3.53	3.81	0.41	3.32	0.28
Labor	0	0	.32	1.85	3.56	8.68	8.68	.32	7.50	.27
Support 4/	0	0	.15	1.53	1.33	1.35	4.16	.15	1.13	.12
Total warehouse	0	0	.88	5.21	6.97	13.56	16.65	.88	11.95	.67
Store costs:										
Investment	2.44	2.17	2.17	2.17	1.90	.71	.71	2.17	.71	1.46
Labor	12.97	11.54	11.54	11.54	9.68	.64	.64	11.46	.64	2.15
Support 4/	4.36	4.12	4.12	4.12	3.80	2.20	2.23	4.11	2.20	3.70
Labor coverage 5/	0	.21	.21	.21	.49	1.85	1.85	.23	1.85	1.62
Total store	19.77	18.04	18.04	18.04	15.87	5.40	5.43	17.97	5.40	8.93
Transportation costs:										
Packer to store	8.70	7.11	0	0	0	0	0	0	0	0
Packer to wholesale	0	0	3.38	3.90	3.90	3.90	3.90	3.46	3.46	2.98
Wholesale to store	0	0	.64	.64	.64	.77	.83	.64	.77	.64
Total transportation	8.70	7.11	4.02	4.54	4.54	4.67	4.73	4.10	4.23	3.62
Merchandising costs:										
Purchasing premium 6/	0	5.62	5.62	0	0	0	0	5.62	5.62	16.87
Shrinkage 7/	1.83	1.33	1.33	3.29	3.29	2.80	.87	1.33	2.30	1.34
Slow-moving cuts 8/	4.34	2.79	2.79	2.79	1.93	1.06	.19	1.93	1.06	1.06
Total merchandising cost	6.17	9.74	9.74	6.08	5.22	3.86	1.06	8.88	8.98	19.27
Administrative costs:										
Quality control 9/	.31	.12	.12	.12	.09	0	0	.12	0	0
General administrative 10/	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39
Total administrative cost	.70	.51	.51	.51	.48	.39	.39	.39	.39	.39
Total costs considered	35.33	35.42	33.20	34.39	33.07	27.86	28.23	32.33	30.94	32.89
Margin analysis:										
Sales 11/	223.66	223.66	223.66	223.66	223.66	223.66	223.66	228.95	228.95	235.46
Fat and bone resale 12/	.61	.27	.27	1.14	1.38	1.60	1.60	.38	.99	0
Purchase cost 13/	129.57	129.57	129.57	129.57	129.57	129.57	129.57	130.07	130.07	130.54
Net beef sales 14/	94.70	94.36	94.36	95.23	95.47	95.69	95.69	99.26	99.87	104.92
Net sales minus costs considered 15/	59.37	58.94	61.16	60.84	62.40	67.83	67.46	66.93	68.93	72.03

1/ Costs that do not vary by type of handling system are not included in most cases. 2/ Noncarcass proportions. 3/ Moves direct from packer to retail store. 4/ Includes maintenance, sanitation, carbon dioxide, electricity, and so on. 5/ Minimum labor required at store by union and for customer service. 6/ The extra cost of buying primals or tray-ready beef rather than a carcass. In a sense, the payment to the packer for cutting, trimming, and vacuum wrapping. 7/ Shrinkage is explained in table 4. 8/ Includes the need to modify cut prices to move cuts in the proportion purchased and display case pullbacks because of cut deterioration. 9/ Costs incurred when consistent product trim is not maintained. 10/ This reflects the chain costs associated with beef buying, accounting, etc. It does not include overall chain administration costs. 11/ Gross returns of meat sales. Pounds sold times (for this base run) $2.70 composite thick cut price, $1.50 hamburger price, and $1.80 composite thin cut price. The composite thick cut price used for tray-ready was $2.80 to reflect more boneless cuts. 12/ Fat and bone trimmed off. Fat at the warehouse is priced at 10 cents per lb. and at the store 3 cents. Bone at the warehouse is priced at 4 cents per lb. and at the store 2 cents. 13/ Cost is based on a carcass equivalent basis. The purchase premium adjusts the boxed beef and tray-ready purchase costs. Prices per pound purchased used in the base run were $1.00 per lb. for carcass equivalent $1.15 for lean trimmings, and $1.10 for ground beef. 14/ Sales and fat and bone resale-purchase cost. 15/ Returns over costs included in the study. Some costs such as checkout labor, trays and film, display cabinets, and various overhead costs are not affected by the choice of the system and therefore are not included.

except that the retailer buys boxed beef in noncarcass proportions rather than carcasses as in system 6.

System 8 is the fourth lowest cost system. It is the same as system 3 except it allows retailers to buy in noncarcass proportion. System 8 is about 0.6-0.8 cent per pound less costly than system 3. This results mainly because of a reduction of slow-moving cuts (table 6). By purchasing a mix of cuts that more nearly matches past movement, fewer cuts need to be removed from the case for reworking.

Systems 5 and 10 are the next least costly (the difference in rank between the two varies with the mileage from the packer). The farther from the packer, the larger the relative savings by shipping fewer pounds in the tray-ready system. The tray-ready system was just recently developed. It seems to have many advantages and its ranking is greatly affected by the beef-purchasing premium. The system costs of the tray-ready concept are certainly low enough that more retailers may adopt it. However, it has yet to pass the test of the marketplace over time. An important element in its acceptance is whether packers who adopt the system can maintain high standards of quality and sanitation.

In systems 1 and 2, meat is shipped direct from the packer to the retail store, rather than through a retail warehouse. Systems 2 and 3 are identical except that meat goes through a retail warehouse in system 3. The extra cost of system 2 (from packer directly to store) indicates that the use of a warehouse is less costly. A very small chain or a one-store firm (not simulated) might find direct-to-store transportation cheaper. But most small firms usually buy through a wholesaler to take advantage of size economies.

Table 5 provides a comparison of store sizes, mileage from the packer, and firm sizes. It shows that costs are lower for larger stores. The cost difference is greater between the small and medium stores than between the medium and large stores. The cost advantage of larger stores also varied by system with the frozen system's costs declining the most between small and large stores. The central cutting systems (systems 6 and 9) indicate the next greatest advantages of size. The systems involving direct delivery from packer to store (systems 1 and 2) were least affected by size increases.

Costs increased substantially as the mileage from the packer increased. The savings in transportation (due to shipping fewer pounds) by system is indicated by the difference in costs between 125 miles and 1,000 miles. The carcass systems cost about 4.5 cents per retail pound, the boxed beef about 4 cents, and the tray ready about 3.5 cents more at the greater distance.

The comparison of firm sizes did not show very large differences in costs. There was, however, a small decline in costs for most systems and situations. The system showing the most economies of scale was frozen meat (system 7). The centralized cutting systems (6 and 9) were the next in cost savings as the chain moved to more stores.

The cheapest cost combination on table 5 is for the largest chain with the largest stores located closest to the packer and using system 6, fresh cuts. The overall highest cost is for the smallest chain with the smallest stores located farthest from the packer and using system 1, primals delivered directly to the store.

The Base Run in Detail

Table 6 provides information about which costs are relevant for which system. It also allows a comparison of detailed cost items by system as well as purchases and sales.

Warehouse costs are highest for systems where more meat is centrally cut. The system involving frozen retail cuts also adds on freezing costs. Costs per retail pound are relatively low for systems that just warehouse the meat. Systems 1 and 2 do not use a warehouse at all.

Store costs tend to be the opposite of warehouse costs. In fact, adding the labor and the investment costs for the warehouse and the store is useful in determining if the warehouse can do things more efficiently. As the cutting moves away from the retail store, labor coverage becomes a problem. In other words, if many meatcutters are needed, one can serve customers, but if there are no meatcutters, most retailers will still feel the need to serve customers and will hire one.

Transportation costs reflect two things. First, packers charge extra to deliver meat directly to stores. Second, a reduction in poundage shipped from the packer as a result of cutting and trimming boxed beef and tray-ready beef lowers the cost.

Under merchandising costs, the purchasing premium will be discussed in detail later. Shrinkage has already been discussed. The cost of slow-moving cuts declines as the system allows the store more choice in purchasing the cuts desired by its customers. Note that the retail chain warehouse, even though it buys carcasses, can send individual stores noncarcass proportions as long as the stores have different needs.

Quality can be controlled better in a central warehouse than at 50, 80, or 100 retail stores. General administrative costs included are the same for all systems, but they do not include many other general costs that are also the same regardless of system. Examples of costs not included are those for checkout labor, trays and film, display cabinets, and other overhead costs such as beef's share of the cost of the store parking lot.

Sales for all the carcass proportion systems are the same because the beef sold is assumed to be the same regardless of system. All stores using carcass proportions must sell what they buy, even though, in some systems, an individual store does not have to sell in carcass proportion. The average sales price of a pound of beef is higher for systems 8 and 9 because stores using these systems sell in noncarcass proportion selling more thick cuts and fewer thin cuts. The tray-ready system, with noncarcass proportions, goes a step further; stores using this system are assumed to sell a higher proportion of boneless cuts. Fat and bone resale reflects both the amount of fat and bone purchased with the meat and the higher price the retailer can get for fat and bone if more volume is available at one location (the warehouse).

Purchase Premiums

The cost of meat purchases could have been handled several ways. The cost per pound of a carcass is logically different from the cost per pound of an equivalent amount of primals or tray-ready beef that has had fat and bone removed. The meat remaining weighs less and has a greater value per pound.

The extra cost involved in cutting, trimming, vacuum packing, and boxing the beef also increases the value per pound.

For this study, beef for all systems was initially priced the same. The mix of cuts in the noncarcass systems does result in a slightly higher base price per original carcass pound (see appendix, program area labeled "Purchase cost"). The increased value of the boxed product (for services performed) is then added in as a cost. Levels of the purchase premium used in the model were estimated to represent an average level. Costs, however, are not the full story. Returns differ by system also.

While table 5 compares costs only, an alternative method of comparing systems is indicated at the bottom of table 6.

Net beef sales represent the purchase cost subtracted from the value of the beef, fat, and bone sales. By subtracting the total of all costs considered by the model from net beef sales, a modified return to the retailer is obtained. Using this criterion rather than just the costs the tray-ready system (10) appears to be most profitable for the retailer in table 6. Systems 9, 6, and 7, then follow in order. The returns criterion seems more relevant than costs alone. It is revenue minus costs that counts toward profits, not just minimized costs.

Purchase premiums could also have been removed as a cost. To do that in table 6 the purchase premium is added to the bottom line of table 6 as follows:

System 1	$59.37 + 0 = 59.37	System 6	$67.83 + 0 = 67.83
System 2	$58.94 + 5.62 = 64.56	System 7	$67.46 + 0 = 67.46
System 3	$61.16 + 5.62 = 66.78	System 8	$66.93 + 5.62 = 72.55
System 4	$60.84 + 0 = 60.84	System 9	$68.93 + 5.62 = 74.55
System 5	$62.40 + 0 = 62.40	System 10	$72.03 + 16.87 = 88.90

These numbers represent the net sales minus costs, assuming no purchase premium. A comparison of two systems, say, system 1--direct delivery of carcass--with system 2--direct delivery of boxed beef, ($64.56 minus $59.37 equals $5.19) indicates that the retailer would make more money with the boxed beef system as long as the purchase premium for boxed beef is less than $5.19.

Other comparisons are shown in the tabulations on the following page.

Note that the last two numbers are negative; that means that instead of a purchase premium, the boxed beef would have to cost less than carcass beef for the retailer to obtain the same net returns. The purchase premiums for comparisons with system 10, tray-ready beef, are higher because there is more service involved than with regular boxed beef. To use these data, a firm would compare its current system with the system under consideration, and then compare the difference with the purchase premium to see if the change would be desirable.

Varying the Purchase Premium

The base model assumed a set purchase premium cost, even though the total of all costs considered is quite sensitive to the premium the retailer must pay for boxed beef or tray-ready beef. Table 7 traces the effects of different purchase premiums on different situations. While the base run purchase

To switch from this system:	To this system:	The retailer can pay a purchase premium up to:
6 - Warehouse cut retail cuts	8 - Noncarcass proportion boxed beef	$4.72
6 - Warehouse cut retail cuts	9 - Warehouse retail cut boxed beef	6.72
6 - Warehouse cut retail cuts	10 - Tray-ready beef	21.07
1 - Carcass direct to store	3 - Boxed beef through warehouse to store	7.41
4 - Carcass cut to primals in warehouse	3 - Boxed beef through warehouse to store	5.94
4 - Carcass cut to primals in warehouse	8 - Noncarcass proportion boxed beef	11.71
5 - Carcass cut to subprimals in warehouse	10 - Tray-ready beef	26.50
6 - Warehouse cut retail cuts	2 - Boxed beef direct to store	-3.27
6 - Warehouse cut retail cuts	3 - Boxed beef through warehouse to store	-1.05

premiums were selected to represent a fairly typical situation, an individual firm may face different purchase premium situations.

As discussed earlier, all systems use either carcasses or carcass equivalents. Salable beef (both thick cuts and thin) add to 393 pounds, from a 650-pound carcass, after trim, fat, and bone are included. The $19.50, $32.50, and $45.50 purchase premiums for boxed beef represent 650 pounds times 3, 5, and 7 cents. The $65.00, $97.50, and $130.00 purchase premiums for tray-ready beef represent 10, 15, and 20 cents per carcass pound. An individual firm can thus determine its purchase premium cost either on a per retail pound or per carcass equivalent basis and then compute its own costs for its purchase premium.

Note that in table 7, a 1-cent change in purchase premium (per pound of carcass equivalent) changes costs by 1.125 cents. This factor is the same for both boxed beef and tray-ready beef. To obtain the 1.125, examine the cost differences. For example, under system 2, subtract row 3 (33.17) from row 4 (35.42) and divide by the premium difference per pound (5-3=2), or use system 10 rows 1 and 2 (32.89 - 27.27) and divide by 5.

With the lowest tray-ready purchase premium, system 10 becomes the lowest cost system. It also becomes the highest cost system at the higher purchase premium option. This indicates the importance to the retailer of knowing the real cost of the meat and keeping the purchase price as low as possible. The lower boxed-beef purchase premium used in table 7 does not make boxed beef

Table 7--Effect of varying the purchase premium by beef-handling systems and chain store characteristics 1/

Chain description	Purchase premium: Boxed beef	Purchase premium: Tray-ready	Leaves packer as-- Carcass: Direct to retailer: System 1 3/	Primals: Direct to retailer: System 2 3/	Primals: To retail warehouse for further processing into-- Primals, system 3	Carcass: Primals, system 4	Carcass: Subprimals, system 5	Carcass: Fresh cuts, system 6	Carcass: Frozen cuts, system 7	Primals 2/: Primals, system 8 2/	Primals 2/: Fresh cuts, system 9 2/	Tray-ready 2/: Tray-ready, system 10 2/
	Dollars/carcass		Cents per retail pound									
80-outlet chain of medium size stores 600 miles from packer	19.50	65.00	35.33	33.17	30.95	34.39	33.07	27.86	28.23	30.08	28.69	27.27
	19.50	97.50	35.33	33.17	30.95	34.39	33.07	27.86	28.23	30.08	28.69	32.89
	19.50	130.00	35.33	33.17	30.95	34.39	33.07	27.86	28.23	30.08	28.69	38.51
	32.50	65.00	35.33	35.42	33.20	34.39	33.07	27.86	28.23	32.33	30.94	27.27
	32.50	97.50	35.33	35.42	33.20	34.39	33.07	27.86	28.23	32.33	30.94	32.89
	32.50	130.00	35.33	35.42	33.20	34.39	33.07	27.86	28.23	32.33	30.94	38.51
	45.50	65.00	35.33	37.67	35.45	34.39	33.07	27.86	28.23	34.58	33.19	27.27
	45.50	97.50	35.33	37.67	35.45	34.39	33.07	27.86	28.23	34.58	33.19	32.89
	45.50	130.00	35.33	37.67	35.45	34.39	33.07	27.86	28.23	34.58	33.19	38.51
80-outlet chain of medium-size stores:												
125 miles from packer--	19.50	65.00	33.41	31.45	29.24	32.46	31.15	25.94	26.31	28.33	26.93	25.76
	32.50	97.50	33.41	33.70	31.49	32.46	31.15	25.94	26.31	30.58	29.18	31.38
	45.50	130.00	33.41	35.95	33.74	32.46	31.15	25.94	26.31	32.83	31.43	37.00
1,000 miles from packer--	19.50	65.00	37.91	35.44	33.23	36.96	35.64	30.43	30.81	32.41	31.02	29.27
	32.50	97.50	37.91	37.69	35.48	36.96	35.64	30.43	30.81	34.66	33.27	34.89
	45.50	130.00	37.91	39.94	37.73	36.96	35.64	30.43	30.81	36.91	35.52	40.51
80-outlet chain, 600 miles from packer												
Small stores--	19.50	65.00	35.65	33.48	31.59	35.00	33.73	28.74	29.51	30.72	29.57	27.91
	32.50	97.50	35.65	35.73	33.84	35.00	33.73	28.74	29.51	32.97	31.82	33.53
	45.50	130.00	35.65	37.98	36.09	35.00	33.73	28.74	29.51	35.22	34.07	39.15
Large stores--	19.50	65.00	35.21	33.04	30.72	34.18	32.86	27.67	27.91	29.84	28.46	27.03
	32.50	97.50	35.21	35.29	32.97	34.18	32.86	27.67	27.91	32.09	30.71	32.65
	45.50	130.00	35.21	37.54	35.22	34.18	32.86	27.67	27.91	34.34	32.96	38.27
Chain with medium size stores 600 miles from packer, with:												
50 stores--	19.50	65.00	35.35	33.18	30.99	34.40	33.12	28.04	28.63	30.11	28.87	27.31
	32.50	97.50	35.35	35.43	33.24	34.40	33.12	28.04	28.63	32.36	31.12	32.93
	45.50	130.00	35.35	37.68	35.49	34.40	33.12	28.04	28.63	34.61	33.37	38.55
100 stores--	19.50	65.00	35.33	33.16	30.94	34.41	33.09	27.86	28.16	30.07	28.65	27.25
	32.50	97.50	35.33	35.41	33.19	34.41	33.09	27.86	28.16	32.32	30.90	32.87
	45.50	130.00	35.33	37.66	35.44	34.41	33.09	27.86	28.16	34.57	33.15	38.49

1/ Assumes stores sell 32 percent by volume of ground beef relative to all beef sold. Costs that do not vary by type of handling system are not included in most cases. 2/ Noncarcass proportions. 3/ Moves direct from packer to retail store.

cost less than central retail beef cutting, but it does get the costs considerably closer.

Varying the Percentage of Ground Beef Sold

The base run of the model reflects 32 percent of all beef sold as ground beef. In addition, the model was run to see the effects of 22-percent and 42-percent levels of ground beef (table 8). The carcass equivalents remain the same but the pounds of ground beef vary to obtain the various percentages. Since the cost and sales data are presented on a pounds-sold basis, the costs appear to change more than they really do.

While the ranking of systems does not change, the relative costs per system vary a little. Costs of the primal and tray-ready beef systems decline more than the costs of the carcass systems as the percentage of ground beef increases. Cost for fresh and frozen cuts prepared at the warehouse (systems 6 and 7) declined less than costs of all other systems.

Costs went down as a greater percentage of ground beef was sold, but the value of net beef sales dropped even faster. As a result, returns over costs per pound sold declined as the proportion of ground beef rose. If the increased number of pounds sold is included, however, total returns minus total costs increased as a greater percentage of ground beef was sold. This just says that net earnings (using only the costs considered in the model) increased with an increase in ground beef, but the returns per pound declined.

Adjusting the Return on Investment

Firms have a large amount of money tied up in buildings and equipment. Since this money could be invested elsewhere, firms expect it to yield a return. The base run used a desired return on investment (ROI) of 15 percent. Table 9 indicates the effects on costs per retail pound if the desired ROI is raised to 20 percent. Only the relevant costs (warehouse and store investment and total costs) are listed in table 9.

Costs increased when the ROI was increased from 15 to 20 percent, but not uniformly among systems. Costs for systems using more land and equipment increased more than for the other systems. Costs for a 50-store chain of large stores 1,000 miles from the packer increased less than those for a 100-store chain of small stores 600 miles from the packer.

Cattle and Product Price Changes

All previous tables have used the same set of cattle and product prices. These prices were raised in table 10 to examine the sensitivity of the model to price changes.

Only two cost items (shrinkage and slow-moving cuts) changed as a result of the increase. Total costs also changed as a result of those two changes. The sales and purchase costs changed because those were the changes considered in this run.

Costs went up by system in relation to the size of the original shrinkage and costs associated with slow-moving cuts. Since retail prices were arbitrarily raised more than wholesale prices, net beef sales increased with the new set of prices.

Table 8--Selected data indicating changes in results with different percentages of ground beef sold 1/

Ground beef percentage and item	Unit	Leaves packer as--									
		Carcass	Primals	Primals	Carcass	Carcass	Carcass	Carcass	Primals 2/	Primals 2/	Tray-ready 2/
		Direct to retailer		To retail warehouse for further processing into--							
		System 1 3/	System 2 3/	Primals, system 3	Primals, system 4	Subprimals, system 5	Fresh cuts, system 6	Frozen cuts, system 7	Primals, system 8 2/	Fresh cuts, system 9 2/	Tray-ready, system 10 2/
22-percent ground beef:											
Total carcass equivalents per store	No.	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Ground beef sold	Lb	249,400	249,400	249,400	249,400	249,400	249,400	249,400	249,400	249,400	249,400
Total beef sold	Lb	1,133,653	1,133,653	1,133,653	1,133,653	1,133,653	1,133,653	1,133,653	1,133,653	1,133,653	1,133,653
Total costs considered	¢/lb	40.63	40.60	38.20	39.52	38.01	32.33	32.32	37.26	35.64	37.61
Meat sales, avg. price	Do.	234.49	234.49	234.49	234.49	234.49	234.49	234.49	240.56	240.56	248.03
Fat and bone resale	Do.	.70	.31	.31	1.31	1.58	1.83	1.83	.44	1.14	0
Purchase cost	Do.	131.71	131.71	131.71	131.71	131.71	131.71	131.71	132.29	132.29	133.56
Net beef sales	Do.	103.48	103.09	103.09	104.09	104.36	104.61	104.61	108.71	109.41	114.47
32-percent ground beef:											
Total carcass equivalents per store	No.	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Ground beef sold	Lb	416,100	416,100	416,100	416,100	416,100	416,100	416,100	416,100	416,100	416,100
Total beef sold	Lb	1,300,366	1,300,366	1,300,366	1,300,366	1,300,366	1,300,366	1,300,366	1,300,367	1,300,367	1,300,366
Total costs considered	¢/lb	37.78	37.56	35.24	36.74	35.42	30.18	30.37	34.41	32.98	34.65
Meat sales, avg. price	Dol.	223.66	223.66	223.66	223.66	223.66	223.66	223.66	228.95	228.95	235.46
Fat and bone resale	Do.	.61	.27	.27	1.14	1.38	1.60	1.60	.38	.99	0
Purchase cost	Do.	129.57	129.57	129.57	129.57	129.57	129.57	129.57	130.07	130.07	130.54
Net beef sales	Do.	94.70	94.36	94.36	95.23	95.47	95.69	95.69	99.26	99.87	104.92
42-percent ground beef:											
Total carcass equivalents per store	No.	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Ground beef sold	Lb	640,300	640,300	640,300	640,300	640,300	640,300	640,300	640,300	640,300	640,300
Total beef sold	Lb	1,524,568	1,524,568	1,524,568	1,524,568	1,524,568	1,524,568	1,524,568	1,524,568	1,524,568	1,524,568
Total costs considered	¢/lb	34.92	34.53	32.27	33.96	32.84	28.05	28.43	31.57	30.34	31.69
Meat sales, avg. price	Do.	212.83	212.83	212.83	212.83	212.83	212.83	212.83	217.34	217.34	222.89
Fat and bone resale	Do.	.52	.23	.23	.97	1.18	1.36	1.36	.33	.85	0
Purchase cost	Do.	127.43	127.43	127.43	127.43	127.43	127.43	127.43	127.85	127.85	127.52
Net beef sales	Do.	85.92	85.63	85.63	86.37	86.58	86.76	86.76	89.81	90.34	95.37

1/ Data represent 100 large-store chain, 1,000 miles from packer; boxed-beef purchase premium of $32.50, and tray-ready purchase premium of $97.50.
2/ Noncarcass proportions. 3/ Moves direct from packer to retail store.

Table 9--Changes in results when the return on investment is adjusted from 15 to 20 percent 1/

Type of chain and return on investment	Leaves packer as-- Carcass	Primals	Primals	Carcass	Carcass	Carcass	Carcass	Primals 2/	Primals 2/	Tray-ready 2/
	Direct to retailer		To retail warehouse for further processing into--							
	System 1: 3/	System 2 3/	Primals, system 3	Primals, system 4	Subprimals, system 5	Fresh cuts, system 6	Frozen cuts, system 7	Primals, system 8 2/	Fresh cuts, system 9 2/	Tray-ready, system 10 2/
	Cents per retail pound									
100-outlet chain of stores 600 miles from packer:										
15 percent return on investment in--										
Warehouse	0	0	0.43	1.83	2.11	3.50	3.95	0.43	3.29	0.31
Store	2.69	2.42	2.42	2.42	2.15	.95	.95	2.42	.95	1.72
Total	35.64	35.72	33.81	34.95	33.69	28.44	29.07	32.94	31.52	33.50
20-percent return on investment in--										
Warehouse	0	0	.54	2.11	2.46	4.16	4.68	.54	3.89	.38
Store	3.08	2.77	2.77	2.77	2.49	1.19	1.19	2.77	1.19	2.00
Total	36.03	36.07	34.28	35.61	34.38	29.34	30.04	33.40	32.36	33.87
50-outlet chain of stores 1,000 miles from packer:										
15-percent return on investment in--										
Warehouse	0	0	.41	1.83	2.08	3.67	3.97	.41	3.47	.28
Store	2.34	2.07	2.07	2.07	1.80	.61	.61	2.07	.61	1.37
Total	37.79	37.58	35.27	36.75	35.43	30.36	30.74	34.45	33.20	34.68
20-percent return on investment in--										
Warehouse	0	0	.52	2.10	2.43	4.35	4.71	.52	4.09	.36
Store	2.65	2.35	2.35	2.35	2.06	.77	.77	2.35	.77	1.58
Total	38.10	37.85	35.65	37.30	36.03	31.21	31.64	34.83	33.99	34.97

1/ Ground beef percentage is 32 percent. The purchase premium for boxed beef is $32.50 per carcass equivalent and $97.50 for tray-ready.
2/ Noncarcass proportions. 3/ Moves direct from packer to retail store.

Table 10--Changes resulting from a change in cattle and product prices 1/

Item	Base or new prices	Leaves packer as-- Carcass	Primals	Primals	Carcass	Carcass	Carcass	Carcass	Primals 2/	Primals 2/	Tray-ready 2/
		Direct to retailer		To retail warehouse for further processing into--							
		System 1: 3/	System 2 3/	Primals, system 3	Primals, system 4	Subprimals, system 5	Fresh cuts, system 6	Frozen cuts, system 7	Primals, system 8 2/	Fresh cuts, system 9 2/	Tray-ready, system 10 2/
		Cents per retail pound									
Shrinkage	Base	1.83	1.33	1.33	3.29	3.29	2.80	0.87	1.33	2.30	1.34
Slow-moving cuts	Base	4.34	2.79	2.79	2.79	1.93	1.06	.19	1.93	1.06	1.06
Sales, beef	Base	223.66	223.66	223.66	223.66	223.66	223.66	223.66	228.95	228.95	235.46
Fat and bone resale	Base	.61	.27	.27	1.14	1.38	1.60	1.60	.38	.99	0
Purchase cost	Base	129.57	129.57	129.57	129.57	129.57	129.57	129.57	130.07	130.07	130.54
Net beef sales	Base	94.70	94.36	94.36	95.23	95.47	95.69	95.69	99.26	99.88	104.92
Total costs considered	Base	35.35	35.43	33.24	34.40	33.12	28.04	28.63	32.36	31.12	32.93
Shrinkage	New	1.99	1.44	1.44	3.57	3.57	3.04	.95	1.44	2.49	1.45
Slow-moving cuts	New	4.56	2.94	2.94	2.94	2.03	1.11	.20	2.03	1.11	1.11
Sales, beef	New	241.18	241.18	241.18	241.18	241.18	241.18	241.18	247.06	247.06	253.56
Fat and bone resale	New	.61	.27	.27	1.14	1.38	1.60	1.60	.38	.99	0
Purchase cost	New	142.30	142.30	142.30	142.30	142.30	142.30	142.30	142.84	142.84	141.67
Net beef sales	New	99.49	99.14	99.14	100.01	100.25	100.47	100.47	104.60	105.21	111.89
Total costs considered	New	35.73	35.69	33.50	34.83	33.49	28.34	28.73	32.58	31.36	33.10

1/ 50-outlet chain of medium stores of 600 miles from packer, 32 percent ground beef sales, 15 percent return on investment, $32.50 purchase premium for boxed beef, $97.50 purchase premium for tray-ready beef. Base and simulation run (new) prices used as follows:

	Base	New
Reg. average thick cuts retail price	$2.70/lb	$2.90/lb
Tray-ready average thick cuts retail price	2.80	3.00
Thin cuts average retail price	1.80	1.90
Ground beef retail price	1.50	1.65
Purchase price, cattle	1.00	1.10
Purchase price, trim	1.15	1.25
Purchase price, ground beef	1.10	1.15

Table 11--Changes resulting from changes in warehouse and retail store wage rates 1/

Items	Leaves packer as--									
	Carcass	Primals	Primals	Carcass	Carcass	Carcass	Carcass	Primals 2/	Primals 2/	Tray-ready 2/
	Direct to retailer		To retail warehouse for further processing into--							
	System 1: 3/	System 2 3/	Primals, system 3	Primals, system 4	Subprimals, system 5	Fresh cuts, system 6	Frozen cuts, system 7	Primals, system 8 2/	Fresh cuts, system 9 2/	Tray-ready, system 10 2/
	Cents per retail pound									
Base run prices: 4/										
Warehouse labor	0	0	0.32	1.85	3.56	8.68	8.68	0.32	7.50	0.27
Warehouse support	0	0	.15	1.53	1.33	1.35	4.16	.15	1.13	.12
Store labor	12.97	11.54	11.54	11.54	9.68	.64	.64	11.46	.64	2.15
Store support	4.36	4.12	4.12	4.12	3.80	2.20	2.23	4.11	2.20	3.70
Labor coverage	0	.21	.21	.21	.49	1.85	1.85	.23	1.85	1.62
Slow-moving cuts	4.34	2.79	2.79	2.79	1.93	1.06	.19	1.93	1.06	1.06
Total costs	37.91	37.69	35.48	36.96	35.64	30.43	30.81	34.66	33.27	34.89
Warehouse raised to store rates: 4/										
Warehouse labor	0	0	.40	2.27	4.37	10.65	10.65	.40	9.22	.33
Warehouse support	0	0	.15	1.55	1.35	1.41	4.22	.15	1.18	.12
Store labor	12.97	11.54	11.54	11.54	9.68	.64	.64	11.46	.64	2.15
Store support	4.36	4.12	4.12	4.12	3.80	2.20	2.23	4.11	2.20	3.70
Labor coverage	0	.21	.21	.21	.49	1.85	1.85	.23	1.85	1.62
Slow-moving cuts	4.34	2.79	2.79	2.79	1.93	1.06	.19	1.93	1.06	1.06
Total costs	37.91	37.69	35.56	37.40	36.48	32.47	32.84	34.74	35.03	34.96
Store lowered to warehouse rates: 4/										
Warehouse labor	0	0	.32	1.85	3.56	8.68	8.68	.32	7.50	.27
Warehouse support	0	0	.15	1.53	1.33	1.35	4.16	.15	1.13	.12
Store labor	10.70	9.53	9.53	9.53	8.01	.58	.58	9.46	.58	1.87
Store support	4.12	3.91	3.91	3.91	3.62	2.18	2.21	3.90	2.18	3.53
Labor coverage	0	.18	.18	.18	.40	1.52	1.52	.19	1.52	1.32
Slow-moving cuts	4.28	2.75	2.75	2.75	1.90	1.04	.19	1.90	1.04	1.04
Total costs	35.33	35.39	33.17	34.65	33.67	30.01	30.40	32.38	32.85	34.13
Warehouse rates higher than store rates: 4/										
Warehouse labor	0	0	.40	2.27	4.37	10.65	10.65	.40	9.22	.33
Warehouse support	0	0	.15	1.55	1.35	1.41	4.22	.15	1.18	.12
Store labor	10.70	9.53	9.53	9.53	8.01	.58	.58	9.46	.58	1.87
Store support	4.12	3.91	3.91	3.91	3.62	2.18	2.21	3.90	2.18	3.53
Labor coverage	0	.18	.18	.18	.40	1.52	1.52	.19	1.52	1.32
Slow-moving cuts	4.28	2.75	2.75	2.75	1.90	1.04	.19	1.90	1.04	1.04
Total costs	35.33	35.39	33.25	35.09	34.51	32.05	32.44	32.46	34.51	34.20

1/ Data represent 80-outlet chain of medium stores 1,000 miles from packer, boxed-beef purchase premium of $32.50 and a tray-ready purchase premium of $97.50. 2/ Noncarcass proportion. 3/ Moves direct from packer to retail store. 4/ The wage rates used for the four situations are as follows:

	Base	Warehouse raised	Store lowered	Warehouse higher than store
	Dollars per hour			
Warehouse labor:				
Receiving	9.10	11.40	9.10	11.40
Cutting	10.20	12.50	10.20	12.50
Tenderizing	10.20	12.50	10.20	12.50
Grinding	9.10	11.40	9.10	11.40
Subprimal wrapping	8.00	10.00	8.00	10.00
Retail wrapping	8.00	10.00	8.00	10.00
Move to storage	9.10	11.40	9.10	11.40
Selection	9.10	11.40	9.10	11.40
Maintenance	10.00	11.40	10.00	11.40
Sanitation	9.00	10.00	9.00	10.00
Store labor:				
Receiving	12.50	12.50	10.20	10.20
Cutting	12.50	12.50	10.20	10.20
Tenderizing	12.50	12.50	10.20	10.20
Grinding	12.50	12.50	10.20	10.20
Wrapping	10.00	10.00	9.10	9.10
Pricing	10.00	10.00	9.10	9.10
Display	10.00	10.00	9.10	9.10
Maintenance	11.40	11.40	10.00	10.00
Sanitation	10.00	10.00	9.00	9.00

Changing Warehouse and Store Wage Rates

The base run and all other runs reported so far used the same wage rates. A major assumption that retail store wage rates are higher than the wage rates at the warehouse was thus reflected in all the results. Table 11 indicates the results for the base run first. When warehouse prices were raised to the store level, the costs for systems 6, 7, and 9 rose by about 2 cents per retail pound. As a result, systems 8 and 10 became less costly than system 9. The systems where beef is cut at the warehouse became relatively more costly than before. The boxed and tray-ready systems seem more economical than before, although the central retail cutting systems 6, and 7, still show the lowest costs.

When store wage rates were reduced to the warehouse level (the third section of table 11), costs for all systems declined. The boxed-beef systems 3, 8, and 9 (but not 2) become less costly than all but systems 6 and 7 (central retail cut from carcass systems). Even with lowered wage rates in the store, the wrapping and pricing wages did not decline as much proportionally as others. Tray-ready beef compares more favorably when wrapping and pricing wages are lower, but stores may not be able to lower these wages as much when the meat staff is small.

In the last run reported in table 11, warehouse wage rates higher than store rates, the noncarcass proportion boxed beef (system 8) almost becomes less costly than the central cutting from carcass systems. Note, however, that this table compares only costs and when returns are included (see "Purchase Premiums" discussed earlier) the most favorable systems are quite different.

Table 11 emphasizes the importance of wage rates. Regardless of wage rate level, labor costs represent over half of all the costs considered for all systems except system 10, the tray-ready system. The boxed-beef systems use relatively less labor than when carcasses are purchased, but wage rates are still quite important. Costs considered dropped by more than 2 cents per retail pound for all systems (except for tray-ready) between the second and third runs reported in table 11.

IMPLICATIONS

The results of this study may not fully support the actual trend to boxed beef now in progress, but it does show the boxed-beef system in a much more favorable light than the 1977 study. The noncarcass proportion boxed-beef system (system 8) ranks fourth lowest in costs (in the base run), and is within 1 cent per pound of the central cut systems on a net sales minus costs considered basis. In addition, the three least costly systems apparently fail to give realistic costs to shelf life problems associated with central cutting and to the consumer aversion to purchasing frozen meat. Thus, boxed beef in noncarcass proportions may be the least costly system or more appropriately the most profitable. Tray-ready beef (system 10) and boxed beef centrally cut (system 9) were most desirable when considered on the basis of net sales minus costs. System 9 has the same apparent problems as the system in which beef is centrally cut from the carcass. The tray-ready system results are favorable, but may or may not be adopted by the industry.

Central processing has been tried, probably because it appears to be a low-cost system, but it has not had significant adoption apparently due mainly to shelf life problems. Both systems 6 and 9 are central cutting methods, one starts with a carcass and the other with boxed beef. System 7 incorporates central cutting, packaging, and freezing. An alternative system not examined was central cutting and freezing at the packing plant. Regardless, retailers have not yet found a way to persuade customers to buy frozen beef, although a limited amount is sold.

Tray-ready beef costs are fairly low and it ranked first on a returns minus cost basis. The concept of trimming and cutting meat and then vacuum packaging it as the subprimal seems good. Collective bargaining may deter its acceptance because it reduces the need for meatcutters in stores. Packers (as innovators) were able to get a little extra for boxed beef until competition drove the price down. This may be the case with tray-ready beef also, implying that this system may be more cost competitive in the future than the base run implies. The tray-ready system now provides more "net" returns than any other system if the purchase premium is less than $21.07. The future for tray-ready beef depends on retailer acceptance, on the presence of large beef packers in the business, and on many other factors.

This study indicates that small savings can be gained by bigger stores and more stores per chain. But the savings from bigger stores do not stem from direct delivery from the packer to the store. The results indicate rather strongly that chain warehouses (or in the case of independent grocery stores, use of wholesaler warehouses) reduce retail costs. Retail warehouse cutting seems to have lost its impetus and retailers are converting to boxed beef as their investments in warehouse cutting equipment depreciates and becomes inefficient.

Transition from one system to another is a slow process, and this transition seems to have gone a long way toward boxed beef. A move to any other system will not occur quickly. Since the analysis was based on new costs for all items, existing systems with sunken costs will usually continue operations. Only when it becomes time to remodel or replace do firms begin looking for a better system.

Labor implications were partially examined, as labor is a significant factor (over half of the costs considered) and is essentially what the systems are all about. The different systems shift labor (and investment) among packing plants, warehouses, and retail stores to obtain the most productive and least costly use of labor. The need to stock retail counters and to provide customer service means all stores require some meat department personnel, but job descriptions and wage levels might differ if less cutting is done at retail. Significant reductions in use of retail labor has occurred for other meats as well. If the system were changed to retail warehouse cutting, some meatcutter jobs lost from the store might shift to the warehouse. If the system were changed to one where the cutting was done at the packing plant, that would probably mean a shift to a different geographic area as well as a shift to lower wages (meatcutter wages are usually lower at the packing plant). Thus, a change in system by a chain may cause labor problems.

Moving meatcutting back to a warehouse or packing plant allows for the use of disassembly lines and specialization of tasks. This efficiency is partially lost because some people must remain at local stores to stock the meat case and to serve customers. A change to the tray-ready system leaves the packaging labor at the local store, but does eliminate most meatcutters.

Stocking and packaging wage rates are lower than meatcutter wage rates by as much as \$2-\$3 per hour.

Many factors, in addition to costs, determine the beef-handling system used by a retail chain. First, the current system being used has an edge because firms already have the investment and method of handling in place. To change, the firm must see a clear-cut advantage. The cost of the new system must be less than current variable costs. Managerial resources and experience with other systems may be important in choosing a beef-handling system. A store's reputation and the perceived wants of its consumers may also affect the choice of system, as can labor union strength, location of the chain, availability of supplies, and availability of meat from usual suppliers. The extent to which the firm feels it wants to or needs to merchandise in other than carcass proportions may be another factor.

Given consumer pressures for lower beef prices, the necessity for beef to remain competitive with pork and chicken, and the existing alternatives for handling meat, retailers will continue to examine alternatives and changes will evolve slowly over time. Other retailing considerations, such as general store format, pricing strategy, and customer service policies may also influence the selection of a meat-handling system.

Supply and demand considerations are also relevant if we assume that cost savings of alternative systems result in higher prices to the producer or lower prices to the consumer. The opposite would be that the retailer is able to retain the savings as a profit. Economic theory would suggest that competition among firms would result in at least most of the cost savings being passed on eventually. Innovators or first adapters can sometimes retain gains for awhile.

A 1-percent decline in the retail price would increase the amount of beef demanded by consumers by 0.725 percent. In other words, with the elasticity estimate obtained by Ball (1), a switch to a less costly retail beef-handling system (with the cost savings passed on in the form of lower retail prices), the quantity of beef demanded will increase. The difference between the highest and lowest cost system in table 6 is 7.56 cents, about a 3.4-percent price change. Applied to 18.5 billion pounds of beef consumed per year, that amounts to an initial saving to consumers of as much as \$1.4 billion. It would also increase the demand for beef by up to 2.456 percent or 456 million pounds. Such changes in the retail price and quantity demanded would in turn prompt changes at the farm level, which would then move through the system causing other changes. These wave effects would continue.

A cost reduction, if passed on, would probably in the end result in a small advantage to both consumers and producers. Thus, adoption of cost-saving systems would be a benefit overall. Complicating such an analysis, however, is the effect on the labor force and the economy if the adopted system includes the substitution of capital or technology for labor.

A 1-percent decline in the price of beef, according to Ball's analysis, would also lower the quantity of pork demanded by 0.18 percent and of chicken by 0.163 percent. This reflects the substitution consumers would make in purchases of other products in order to purchase the cheaper beef. This would spur other adjustments such as price and production changes for pork and poultry.

While the effects of a cost reduction are difficult to trace, the overall presumption is that whenever costs can be reduced, the final overall effect to society as a whole is positive. In the short run, however, a firm that can reduce costs may obtain a temporary competitive advantage in returns.

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APPENDIX

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C**** BEEF DISTRIBUTION SYSTEMS COST MODEL
C         BY LAWRENCE A. DUEWER (ADAPTED FROM WORK OF CRAWFORD/DUEWER)
C        AND BASED ON CASE AND CO. MEAT MODELS
C     SENSITIVITY AND SIMULATION CONTROL SECTION
C       SYSTEM(1)=CARCASS DIRECT TO STORE
C       SYSTEM(2)=PRIMALS DIRECT TO STORE
C       SYSTEM(3)=PRIMALS THRU WAREHOUSE TO STORES
C       SYSTEM(4)=CARCASS TO WAREHOUSE,PRIMAL TO STORE
C       SYSTEM(5)=CARCASS TO WAREHOUSE,SUBPRIMALS TO STORE
C       SYSTEM(6)=CARCASS TO WAREHOUSE,FRESH RETAIL CUTS TO STORES
C       SYSTEM(7)=CARCASS TO WAREHOUSE,FROZEN RETAIL CUTS TO STORES
C       SYSTEM(8)=PRIMALS THRU WAREHOUSE TO STORE, NON-CARCASS PROPORTIONS
C       SYSTEM(9)=PRIMALS TO WRHS,FRESH TO STORE,NON-CARC.PROP.
C       SYSTEM(10)=TRAYRDY TO WRHS,TRAYRDY TO STORE,NON-CARC.PROP.
C      SUBSCRIPTS
C       I= FUNCTION OR EQUATION
C       J= SYSTEM (SEE ABOVE)
C       K= NO. OF STORES PER CHAIN      1= 50. 2=80, 3=100
C       L= SIZE OF STORE   1,=SMALL(PRESENT AVERAGE) 2= 2X AVERAGE 3=4X
C       M= ROI LEVELS   1=10,2=15,3=20
C       N= DISTANCE ONE WAY BETWEEN STORE & PACKER 1= 125, 2= 600,3=1000
C       O= INPUT PRICE LEVELS (3)
C     HOUSEKEEPING SECTION
      INTEGER O
      DIMENSION F(150,10,3,3,3), C(150,10,3,3,3),P(5,125)
     1,AMORT(20),STORES(3),ROI(3), MILES(3),PRICE(3),CLAB(4),
     1ANAME(150,10),NO(150),IYR(150),X(10)
      DATA AMORT/20*0./,ROI/.10,.15,.20/,STORES/50.,80.,100./
     1,P/625*0./,CLAB/'SMAL',' AVG',' LGE','XLGE'/,
     2PRICE/'1975','1982','1984'/,
     1F,C/40500*0.,40500*0./,ANAME/1500*0./,IYR,NO/150*0,150*0/
      AVMILE=30.
      HISANI = 0.
      MILES(1)=125
      MILES(2)=600
      MILES(3)=1000
C     UPPER AND LOWER LIMITS OF SYSTEMS
      READ(5,500)IKL,IKU,ILL,ILU,IML,IMU,INL,INU,INNL,INNU
  500 FORMAT(10I2)
      DO 22 II=1,125
      READ(5,2,END=22) (ANAME(II,J),J=1,9),NO(II),(P(I,II),I=1,5),
     1IYR(II)
    2 FORMAT(8A4,A3,I3,5F8.2,I2)
   22 CONTINUE
      DO 1000 L=ILL,ILU
      DO 1000 N=INL,INU
C***  ASSUMPTIONS AND INITIAL ASSIGNMENTS SECTION
C     MERCHANDISE MIX OF MEAT  F1 THRU F6
      DO 3 J=1,10
      DO 3 K=1,3
      M=2
      O=3
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C     THICK MEAT F1
      F(1,J,K,M,O)=342.
      F(1,8,K,M,O)=376.
      F(1,9,K,M,O)=376.
      F(1,10,K,M,O)=376.
      F(2,J,K,M,O)=51.
C     THIN MEAT PER SYSTEM  F2
C     PURCHASE OF TRIM AND THIN MEAT TO EQUAL CARCASS YIELDS
      TRIMP=87.
      THINP=51.
      F(2,2,K,M,O)= 0.+THINP
      F(2,3,K,M,O)= 0.+THINP
      F(2,8,K,M,O)=17.
      F(2,9,K,M,O)=17.
      F(2,10,K,M,O)=17.
C     TRIM MEAT YIELD PER CARCASS  F3
      F(3,J,K,M,O)=99.
      F(3,2,K,M,O)=12.+TRIMP
      F(3,3,K,M,O)=12.+TRIMP
      F(3,8,K,M,O)=93.
      F(3,9,K,M,O)=93.
      F(3,10,K,M,O)=0.
C     GROUND BEEF PERCENTAGE  F4
      F(4,J,K,M,O)= .32
C     FAT YIELD F5
      F(5,J,K,M,O)=54.
      F(5,2,K,M,O)=22.
      F(5,3,K,M,O)=22.
      F(5,8,K,M,O)=33.
      F(5,9,K,M,O)=33.
      F(5,10,K,M,O)=0.
C     CUT LOSSES     F6
      F(6,J,K,M,O)= 8.
C     APAK IS THE DISCONTINUOUS WRAPPING OF RETAIL CUTS & PRICING IF=1.
      APAK=0.
C     APAK= 0 MEANS AUTOMATIC WRAPPING AND PRICING AFTER CUTTING
C***  QUANTITY AND MIX CONTROL MODEL - PURCHASE PER STORE PER WEEK
C     NO. OF CATTLE OR CATTLEPAKS PURCHASED  F7
      F(7,J,K,M,O)=30./4.* L
C     ADDITIONAL TRIM PURCHASED TO MAKE GROUND BEEF  F8
      ADDED= F(3,J,K,M,O)+F(1,J,K,M,O)+F(2,J,K,M,O)
      F(8,J,K,M,O)=((1.-F(3,J,K,M,O)/ADDED) /(1.-F(4,J,K,M,O
     1)))*ADDED-ADDED
C     POUNDS OF STEAKS AND ROASTS F9
      F(9,J,K,M,O)=(F(1,J,K,M,O)+F(2,J,K,M,O))*F(7,J,K,M,O
     1)
C     PACKAGES OF STEAKS AND ROASTS-F10
      F(10,J,K,M,O)=F(9,J,K,M,O)/2.5
C     POUNDS OF GROUND BEEF-F11
      F(11,J,K,M,O)=(F(8,J,K,M,O)+F(3,J,K,M,O))*F(7,J,K,M,O)
C     GROUND BEEF PACKAGES-F12
      F(12,J,K,M,O)=F(11,J,K,M,O)/2.5
C     TOTAL RETAIL POUNDS PER CHAIN-F13
      F(13,J,K,M,O)=(F(9,J,K,M,O)+ F(11,J,K,M,O))*STORES(K)
C     NUMBER OF FRONT QUARTER PURCHASED-F14,MO. REAR QUARTERS-F15
      F(14,J,K,M,O)=F(7,J,K,M,O)*2.*STORES(K)
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      F(15,J,K,M,O)=F(14,J,K,M,O)
      IF(J-8)3000,3000,3001
 3001 IF(J-9)3000,3002,3004
 3000 F(14,8,K,M,O)=F(14,8,K,M,O)*1.17
      F(15,8,K,M,O)=F(15,8,K,M,O)*.83
 3002 F(14,9,K,M,O)=F(14,9,K,M,O)*1.17
      F(15,9,K,M,O)=F(15,9,K,M,O)*.83
 3004 F(14,10,K,M,O)=F(14,10,K,M,O)*1.17
      F(15,10,K,M,O)=F(15,10,K,M,O)*.83
C     TOTAL QUARTERS PURCHASED-F16
      F(16,J,K,M,O)=(F(14,J,K,M,O)+F(15,J,K,M,O))
    3 CONTINUE
C     DO LOOP FOR PLANT  J=3,10
C *** PLANT LABOR MODEL -LABOR STANDARDS ARE IN MANHOURS
C *   RECEIVING AT PLANT -F17
      DO 6 J=3,10
      DO 6 K=1,3
      M=2
      O=3
      IF(F(16,J,K,M,O).LE.5000.) F(17,J,K,M,O)=F(16,J,K,M,O)
     1*.0094
      IF(F(16,J,K,M,O).GT.5000.) F(17,J,K,M,O)=F(16,J,K,M,O)
     1*.0146
      F(17,3,K,M,O)=.00009*F(13,3,K,M,O)
      F(17,8,K,M,O)=.00009*F(13,8,K,M,O)
      F(17,9,K,M,O)=.00009*F(13,9,K,M,O)
      F(17,10,K,M,O)=.00007*F(13,10,K,M,O)
C     CUTTING  F18
      F(18,3,K,M,O)=0.
      F(18,4,K,M,O)=.157*F(14,4,K,M,O)+.165*F(15,4,K,M,O)
      F(18,5,K,M,O)=.328*F(14,5,K,M,O)+.390*F(15,5,K,M,O)
      F(18,7,K,M,O)=1.03*F(14,7,K,M,O)+1.02*F(15,7,K,M,O)
      F(18,9,K,M,O)=.873*F(14,9,K,M,O)+.855*F(15,9,K,M,O)
      F(18,6,K,M,O)=1.03*F(14,6,K,M,O)+1.02*F(15,6,K,M,O)
      F(18,8,K,M,O)=0.
      F(18,10,K,M,O)=0.
C     TENDERIZING=F19
      F(19,6,K,M,O)=.02* F(14,6,K,M,O)+.14*F(15,6,K,M,O)
      F(19,7,K,M,O)=.02*F(14,7,K,M,O)+.14*F(15,7,K,M,O)
      F(19,9,K,M,O)=.02*F(14,9,K,M,O)+.14*F(15,9,K,M,O)
      F(19,8,K,M,O)=0.
      F(19,10,K,M,O)=0.
C     GRINDING  F20
      IF (F(13,6,K,M,O ).GT.380000.) F(20,6,K,M,O)=.0002*F(13,6
     1,K,M,O)
      IF (F(13,7,K,M,O).GT.380000.) F(20,7,K,M,O)=.0002*F(13,7,K
     1,M,O)
      IF (F(13,9,K,M,O).GT.380000.) F(20,9,K,M,O)=.0002*F(13,9,K
     1,M,O)
      IF(F(13,6,K,M,O).GE.170000.AND.F(13,6,K,M,O).LT.380000)
     1F(20,6,K,M,O)=.0004*F(13,6,K,M,O)
      IF(F(13,7,K,M,O).GE.170000.AND.F(13,7,K,M,O).LT.380000)
     1F(20,7,K,M,O)=.0004*F(13,7,K,M,O)
      IF(F(13,9,K,M,O).GE.170000.AND.F(13,9,K,M,O).LT.380000)
     1F(20,9,K,M,O)=.0004*F(13,9,K,M,O)
      IF (F(13,6,K,M,O).LT.170000) F(20,6,K,M,O)=.0006*F(13,6,K,
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     1M,O)
      IF (F(13,7,K,M,O).LT.170000) F(20,7,K,M,O)=.0006*F(13,7,K,
     1M,O)
      IF (F(13,9,K,M,O).LT.170000) F(20,9,K,M,O)=.0006*F(13,9,K,
     1M,O)
      F(20,8,K,M,O)=0.
      F(20,10,K,M,O)=0.
C     PRIMAL/SUB PRIMAL WRAPPINGS- F21
      F(21,4,K,M,O)=.043*F(14,4,K,M,O)+.059*F(15,4,K,M,O)
      F(21,5,K,M,O)=.053*F(14,5,K,M,O)+.138*F(15,5,K,M,O)
      F(21,8,K,M,O)=0.
      F(21,9,K,M,O)=0.
      F(21,10,K,M,O)=0.
C     RETAIL WRAPPING AND PRICING-F22
      F(22,6,K,M,O)=(.00099+.00230*APAK)*F(13,6,K,M,O)/2.5
      F(22,7,K,M,O)=(.00099+.00230*APAK)*F(13,7,K,M,O)/2.5
      F(22,9,K,M,O)=(.00099+.00230*APAK)*F(13,9,K,M,O)/2.5
      F(22,8,K,M,O)=0.
      F(22,10,K,M,O)=0.
C     MOVE TO STORAGE -F23
      F(23,4,K,M,O)=.014*F(16,4,K,M,O)
      F(23,5,K,M,O)=.014*F(16,5,K,M,O)
      F(23,6,K,M,O)=.018*F(16,6,K,M,O)+.0001*F(12,6,K,M,O)
      F(23,7,K,M,O)=.018*F(16,7,K,M,O)+.0001*F(12,7,K,M,O)
      F(23,9,K,M,O)=.018*F(16,9,K,M,O)+.0001*F(12,9,K,M,O)
      F(23,8,K,M,O)=0.
      F(23,10,K,M,O)=0.
C     SELECTION -F123
      F(123,J,K,M,O)=.023*F(16,J,K,M,O)+.0002*F(11,J,K,M,O)*
     1STORES(K)
      F(123,3,K,M,O)=.028*F(16,3,K,M,O)+.0002*F(11,3,K,M,O)*
     1STORES(K)
      F(123,8,K,M,O)=.028*F(16,8,K,M,O)+.0002*F(11,8,K,M,O)*
     1STORES(K)
C**** PLANT INVESTMENT MODEL
C     BUILDING SHELL SQUARE FEET -F24
      F(24,J,K,M,O)=.0068*F(13,J,K,M,O)
      F(24,3,K,M,O)=.0049*F(13,3,K,M,O)
      F(24,8,K,M,O)=.0049*F(13,8,K,M,O)
      F(24,10,K,M,O)=.0040*F(13,10,K,M,O)
C     WEIGH SCALES (MECHANICAL)  F25
      F(25,J,K,M,O)=2.
C     TRANSPORTERS AND ACCESSORIES-F26
      F(26,J,K,M,O)=2.
      IF(F(13,8,K,M,O).LT.625000.) F(26,8,K,M,O)=1.
      IF(F(13,3,K,M,O).LT.625000.) F(26,3,K,M,O)=1.
      IF(F(13,10,K,M,O).LT.625000.) F(26,3,K,M,O)=1.
C     CARCASS HOLDING COOLER SQUARE FEET F27
      F(27,J,K,M,O)=2.3*F(16,J,K,M,O)
      F(27,3,K,M,O)=0.
      F(27,8,K,M,O)=0.
      F(27,9,K,M,O)=0.
      F(27,10,K,M,O)=0.
C     RAIL FOR CARCASS HOLDING COOLER IN FEET F28
      F(28,J,K,M,O)=.86*F(16,J,K,M,O)
      F(28,3,K,M,O)=0.
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      F(28,8,K,M,O)=0.
      F(28,9,K,M,O)=0.
      F(28,10,K,M,O)=0.
C     PROCESSING AREA - BUILDING SHELL (SQUARE FEET) F29
      F(29,J,K,M,O)=3.60*(F(18,J,K,M,O)+F(19,J,K,M,O)+
     1F(20,J,K,M,O)+F(22,J,K,M,O)+F(21,J,K,M,O))
      F(29,3,K,M,O)=0.
      F(29,8,K,M,O)=0.
      F(29,10,K,M,O)=0.
C     CUTTING LINE CONVEYOR(1)FEET F30
      F(30,J,K,M,O)=.083*F(18,J,K,M,O)
      F(30,3,K,M,O)=0.
      F(30,8,K,M,O)=0.
      F(30,10,K,M,O)=0.
C     CUTTING TABLES F31
      F(31,J,K,M,O)=.028*F(18,J,K,M,O)
      F(31,3,K,M,O)=0.
      F(31,8,K,M,O)=0.
      F(31,10,K,M,O)=0.
C     CARCASS BREAKING SAWS F32
      F(32,J,K,M,O)=2.
      IF(F(16,J,K,M,O).LT.4762) F(32,J,K,M,O)=1.
      F(32,3,K,M,O)=0.
      F(32,9,K,M,O)=0.
      F(32,8,K,M,O)=0.
      F(32,10,K,M,O)=0.
C     PRIMAL BREAKING SAWS F33
      F(33,5,K,M,O)=2.
      IF(F(16,5,K,M,O).LT.1515) F(33,5,K,M,O)=1.
      F(33,6,K,M,O)=2.
      F(33,7,K,M,O)=2.
      IF(F(16,7,K,M,O).LT.435) F(33,7,K,M,O)=1.
      IF(F(16,6,K,M,O).LT.435) F(33,6,K,M,O)=1.
C     GRINDING EQUIPMENT F34
      F(34,6,K,M,O)=AINT(1+.095*F(11,6,K,M,O))
      F(34,7,K,M,O)=AINT(1+.095*F(11,7,K,M,O))
      F(34,9,K,M,O)=AINT(1+.095*F(11,9,K,M,O))
C     STEAK TENDERIZERS F35
      F(35,6,K,M,O)=AINT(1 +.0042*F(16,6,K,M,O))
      F(35,7,K,M,O)=AINT(1+.0042*F(16,7,K,M,O))
      F(35,9,K,M,O)=AINT(1+.0042*F(16,9,K,M,O))
C     PRICING EQUIPMENT F36
      F(36,6,K,M,O)=AINT(1+.000011*F(12,6,K,M,O)*STORES(K))
      F(36,7,K,M,O)=AINT(1+.000011*F(12,7,K,M,O)*STORES(K))
      F(36,9,K,M,O)=AINT(1+.000011*F(12,9,K,M,O)*STORES(K))
      IF(F(12,6,K,M,O)*STORES(K) .LE.40000) F(52,6,K,M,O)=1.
      IF(F(12,7,K,M,O)*STORES(K) .LE.40000) F(52,7,K,M,O)=1.
      IF(F(12,9,K,M,O)*STORES(K) .LE.40000) F(52,9,K,M,O)=1.
      IF(F(12,6,K,M,O)*STORES(K) .GT.40000) F(52,6,K,M,O)=2.
      IF(F(12,7,K,M,O)*STORES(K) .GT.40000) F(52,7,K,M,O)=2.
      IF(F(12,9,K,M,O)*STORES(K) .GT.40000) F(52,9,K,M,O)=2.
C     FREEZING TUNNEL AND CONVEYOR F37
      IF(F(13,7,K,M,O).GT.1333) F(37,7,K,M,O)=20.
C     VACUUM WRAPPING LINES F38
      F(38,4,K,M,O)=2.
      F(38,5,K,M,O)=2.
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      IF (F(15,4,K,M,O).LT.1538) F(38,4,K,M,O)=1.
      IF(F(15,5,K,M,O).LT.434) F(38,5,K,M,O)=1.
C     PLATFORM SCALES F39
      F(39,J,K,M,O)=2.
      F(39,3,K,M,O)=0.
      F(39,8,K,M,O)=0.
      F(39,10,K,M,O)=0.
C     EQUIPMENT WIRING F40
      F(40,J,K,M,O)=33.*(F(18,J,K,M,O)+F(19,J,K,M,O)+
     1F(20,J,K,M,O)+F(21,J,K,M,O)+F(22,J,K,M,O))
      F(40,3,K,M,O)=0.
      F(40,8,K,M,O)=0.
      F(40,10,K,M,O)=0.
C     MISCELLANEOUS F41
      F(41,J,K,M,O)=15.*(F(18,J,K,M,O)+F(19,J,K,M,O)+
     1F(20,J,K,M,O)+F(21,J,K,M,O)+F(22,J,K,M,O))
      F(41,3,K,M,O)=0.
      F(41,8,K,M,O)=0.
      F(41,10,K,M,O)=0.
C     BUILDING SHELL SQUARE FEET F42 SELECTION AREA
      F(42,4,K,M,O)=.0088*F(13,4,K,M,O)
      F(42,5,K,M,O)=.0088*F(13,5,K,M,O)
      F(42,6,K,M,O)=.0139*F(13,6,K,M,O)
      F(42,7,K,M,O)=.0139*F(13,7,K,M,O)
      F(42,9,K,M,O)=.0139*F(13,9,K,M,O)
      F(42,3,K,M,O)=.0153*F(13,3,K,M,O)
      F(42,8,K,M,O)=.0153*F(13,8,K,M,O)
      F(42,10,K,M,O)=.0112*F(13,10,K,M,O)
C     RACK SLOTS F43
      F(43,3,K,M,O)=.0015*F(13,3,K,M,O)
      F(43,8,K,M,O)=.0015*F(13,8,K,M,O)
      F(43,10,K,M,O)=.0015*F(13,10,K,M,O)
C     CARTS FOR TOTE BOXES F44
      F(44,4,K,M,O)=.0021*F(13,4,K,M,O)
      F(44,5,K,M,O)=.0021*F(13,5,K,M,O)
      F(44,6,K,M,O)=.0027*F(13,6,K,M,O)
      F(44,7,K,M,O)=.0027*F(13,7,K,M,O)
      F(44,9,K,M,O)=.0027*F(13,9,K,M,O)
      F(44,3,K,M,O)=0.
      F(44,8,K,M,O)=0.
      F(44,10,K,M,O)=0.
C     TOTE BOXES F45
      F(45,4,K,M,O)=.034*F(13,4,K,M,O)
      F(45,5,K,M,O)=.034*F(13,5,K,M,O)
      F(45,6,K,M,O)=.043*F(13,6,K,M,O)
      F(45,7,K,M,O)=.043*F(13,7,K,M,O)
      F(45,9,K,M,O)=.043*F(13,9,K,M,O)
      F(45,3,K,M,O)=0.
      F(45,8,K,M,O)=0.
      F(45,10,K,M,O)=0.
C     FORK LIFTS AND ACCESSORIES F46
      F(46,3,K,M,O)=2.
      F(46,8,K,M,O)=2.
      F(46,10,K,M,O)=2.
      IF(F(13,3,K,M,O).LT.222222) F(46,3,K,M,O)=1.
      IF(F(13,8,K,M,O).LT.222222) F(46,8,K,M,O)=1.
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      IF(F(13,10,K,M,O).LT.222222) F(46,10,K,M,O)=1.
C     PALLETS F47
      F(47,3,K,M,O)=.0015*F(13,3,K,M,O)
      F(47,8,K,M,O)=.0015*F(13,8,K,M,O)
      F(47,10,K,M,O)=.0015*F(13,10,K,M,O)
C     BUILDING SHELL F48
      F(48,3,K,M,O)=.0047*F(13,3,K,M,O)
      F(48,4,K,M,O)=.0096*F(13,4,K,M,O)
      F(48,5,K,M,O)=.0111*F(13,5,K,M,O)
      F(48,6,K,M,O)=.0183*F(13,6,K,M,O)
      F(48,7,K,M,O)=.0183*F(13,7,K,M,O)
      F(48,9,K,M,O)=.0183*F(13,9,K,M,O)
      F(48,8,K,M,O)=.0047*F(13,8,K,M,O)
      F(48,10,K,M,O)=.0047*F(13,10,K,M,O)
C     HARDWARE AND SYSTEMS F49
      F(49,J,K,M,O)=1.
      F(49,3,K,M,O)=0.
      F(49,8,K,M,O)=0.
      F(49,10,K,M,O)=0.
C     MISCELLANEOUS F50
C *** PLANT TO STORE TRANSPORT MODEL
C      UNLOADING TIME  F103
C      UNLOAD PACKER TO STORE
      F(103,1,K,M,O)=.18*F(7,1,K,M,O)*STORES(K)
      F(103,2,K,M,O)=.18*F(7,2,K,M,O)*STORES(K)
      F(103,3,K,M,O)=.64*STORES(K)+.000024*F(13,3,K,M,O)
      F(103,8,K,M,O)=.64*STORES(K)+.000024*F(13,8,K,M,O)
      F(103,10,K,M,O)=.64*STORES(K)+.000024*F(13,10,K,M,O)
      F(103,4,K,M,O)=.64*STORES(K)+.000024*F(13,4,K,M,O)
      F(103,5,K,M,O)=.64*STORES(K)+.000024*F(13,5,K,M,O)
      F(103,6,K,M,O)=.80*STORES(K)+.000031*F(13,6,K,M,O)
      F(103,7,K,M,O)=.80*STORES(K)+.000031*F(13,7,K,M,O)
      F(103,9,K,M,O)=.80*STORES(K)+.000031*F(13,9,K,M,O)
C     MILEAGE FOR 20-FOOT TRUCK F104
      AX=0.
      IF(J.EQ.6) AX=1.
      IF(J.EQ.7) AX=1.
      IF(J.EQ.9) AX=1.
      F(104,J,K,M,O)=(.00021+.00006*AX)*F(13,J,K,M,O)*AVMILE+16.
     1*STORES(K)
C     MILEAGE FOR 40-FOOT TRUCK F105
      F(105,J,K,M,O)=(.0001+.00003*AX)*F(13,J,K,M,O)*AVMILE+16.*
     1STORES(K)
    6 CONTINUE
      DO 33 J=1,10
      DO 33 K=1,3
      M=2
      O=3
C*** * STORE LABOR MODEL
C     RECEIVING AT STORE PER QUARTER & PER LB. F70
      F(70,J,K,M,O)=.000024*F(13,J,K,M,O)
      F(70,1,K,M,O)=.014*F(16,1,K,M,O)+.000021*F(8,1,K,M,O)*STORES(K)
      F(70,6,K,M,O)=.000031*F(13,6,K,M,O)
      F(70,7,K,M,O)=.000031*F(13,7,K,M,O)
      F(70,9,K,M,O)=.000031*F(13,9,K,M,O)
C     CUTTING TO RETAIL CUTS F71
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      F(71,J,K,M,O)=1.01*F(14,J,K,M,O)+.99*F(15,J,K,M,O)
      F(71,1,K,M,O)=1.16*F(14,1,K,M,O)+1.15*F(15,1,K,M,O)
      F(71,5,K,M,O)=.82*F(14,5,K,M,O)+.75*F(15,5,K,M,O)
      F(71,10,K,M,O)=.20*F(14,10,K,M,O)+.20*F(15,10,K,M,O)
      F(71,6,K,M,O)=0.
      F(71,7,K,M,O)=0.
      F(71,9,K,M,O)=0.
      F(71,10,K,M,O)=0.
C     STEAK TENDERIZING F72
      F(72,J,K,M,O)=.02*F(14,J,K,M,O)+.15*F(15,J,K,M,O)
      F(72,6,K,M,O)=0.
      F(72,7,K,M,O)=0.
      F(72,9,K,M,O)=0.
      F(72,10,K,M,O)=0.
C     GRINDING F73
      F(73,J,K,M,O)=.0023*F(11,J,K,M,O)*STORES(K)
      F(73,6,K,M,O)=0.
      F(73,7,K,M,O)=0.
      F(73,9,K,M,O)=0.
C     WRAPPING FULLY AUTOMATIC F74
      IF(F(13,J,K,M,O)-2200.)922,921,921
  921 F(74,J,K,M,O)=.0015*F(13,J,K,M,O)/2.5
      F(74,6,K,M,O)=0.
      F(74,7,K,M,O)=0.
      F(74,9,K,M,O)=0.
      F(75,J,K,M,O)=0.
      F(76,J,K,M,O)=0.
      GO TO 923
  922 F(74,J,K,M,O)=.0032*F(13,J,K,M,O)/2.5
C     WRAPPING SEMI-AUTOMATIC F75
      F(74,6,K,M,O)=0.
      F(74,7,K,M,O)=0.
      F(74,9,K,M,O)=0.
      F(75,J,K,M,O)=.0015*F(13,J,K,M,O)/2.5
C     PRICING PER PACKAGE F76
      F(76,J,K,M,O)=F(75,J,K,M,O)
  923 CONTINUE
      F(76,6,K,M,O)=0.
      F(76,7,K,M,O)=0.
      F(76,9,K,M,O)=0.
C     DISPLAYING PACKAGES F77
      F(77,J,K,M,O)=.0015*F(13,J,K,M,O)/2.5
C*****  STORE INVESTMENT MODEL
C     RECEIVING SCALE F78
      F(78,J,K,M,O)=1.
C     RECEIVING RAIL IN FEET F79
      F(79,1,K,M,O)=30.
C     RECEIVING PALLET JACK F80
      F(80,J,K,M,O)=1.
C     COOLER BUILDING SHELL IN SQUARE FEET F81
      F(81,J,K,M,O)=.028*F(13,J,K,M,O)
      F(81,1,K,M,O)=.031*F(13,1,K,M,O)
      F(81,6,K,M,O)=.029*F(13,6,K,M,O)
      F(81,7,K,M,O)=.029*F(13,7,K,M,O)
      F(81,9,K,M,O)=.029*F(13,9,K,M,O)
      F(81,10,K,M,O)=.023*F(13,10,K,M,O)
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C     COOLER RAIL IN FEET F82
      F(82,1,K,M,O)=1.25*F(16,1,K,M,O)
C     CUTTING ROOM BUILDING SHELL IN SQUARE FEET F83
      F(83,J,K,M,O)=3.5*F(71,J,K,M,O)
      F(83,6,K,M,O)=3.5*F(71,6,K,M,O)
      F(83,7,K,M,O)=3.5*F(71,7,K,M,O)
      F(83,9,K,M,O)=3.5*F(71,9,K,M,O)
      F(83,10,K,M,O)=1.8*F(16,10,K,M,O)
C     SLICER F84
      F(84,J,K,M,O)=1.
C     TENDERIZER F85
      F(85,J,K,M,O)=1.
      F(85,6,K,M,O)=0.
      F(85,7,K,M,O)=0.
      F(85,9,K,M,O)=0.
      F(85,10,K,M,O)=0.
C     SAW F86
      F(86,J,K,M,O)=2.
      F(86,6,K,M,O)=1.
      F(86,7,K,M,O)=1.
      F(86,9,K,M,O)=1.
      F(86,10,K,M,O)=1.
C     GRINDER F87
      F(87,J,K,M,O)=1.
C     TABLE F88
      F(88,J,K,M,O)=.019*F(71,J,K,M,O)
C     PLATTERS F89
      F(89,J,K,M,O)=.013*F(13,J,K,M,O)
      F(89,6,K,M,O)=0.
      F(89,7,K,M,O)=0.
      F(89,9,K,M,O)=0.
C     PLATTER CARTS F90
      F(90,J,K,M,O)=.0022*F(13,J,K,M,O)
      F(90,6,K,M,O)=0.
      F(90,7,K,M,O)=0.
      F(90,9,K,M,O)=0.
C     KNIVES F91 SEE C56
C     WRAPPING AREA BUILDING SHELL IN SQUARE FEET F92
      F(92,J,K,M,O)=100.
      F(92,6,K,M,O)=35.
      F(92,7,K,M,O)=35.
      F(92,9,K,M,O)=35.
C     WRAPPING EQUIPMENT MANUAL F93
      F(93,J,K,M,O)=1.
C     WRAPPING EQUIPMENT AUTOMATIC F94
      IF((F(13,J,K,M,O)/2.5).GT.2200)  F(94,J,K,M,O)=1.
      F(94,6,K,M,O)=0.
      F(94,7,K,M,O)=0.
      F(94,9,K,M,O)=0.
C     PRICING EQUIPMENT  NEW F95   USED F96
      IF(J.LE.5) F(95,J,K,M,O)=1.
      F(96,6,K,M,O)=1.
      F(96,7,K,M,O)=1.
      F(96,9,K,M,O)=1.
      F(95,8,K,M,O)=1.
      F(95,10,K,M,O)=1.
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C     DISPLAY BUILDING SHELL FLOOR AREA  F97
      F(97,J,K,M,O)=85.*STORES(K)
      IF((F(13,J,K,M,O)/STORES(K)).LT.4722) F(97,J,K,M,O)=.018*F
     1(13,J,K,M,O)
C     DISPLAY CABINET LINEAR FEET  F98
      F(98,J,K,M,O)=12.*STORES(K)
      IF(F(13,J,K,M,O)/STORES(K) .LT.4800) F(98,J,K,M,O)=.0025
     1 *F(13,J,K,M,O)
C**** STORE SUPPORT MODEL
C     MAINTENANCE LABOR F99
      F(99,J,K,M,O)=.042*(F(71,J,K,M,O)+F(72,J,K,M,O)+F(73,J
     1,K,M,O)+F(74,J,K,M,O)+F(75,J,K,M,O)+F(77,J,K,M,O))
      F(99,10,K,M,O)=F(99,8,K,M,O)*.8
C     SANITATION LABOR  F100
      F(100,J,K,M,O)=.17*(F(71,J,K,M,O)+F(72,J,K,M,O)+F(73,J
     1,K,M,O)+F(74,J,K,M,O)+F(75,J,K,M,O)+F(77,J,K,M,O))
      F(100,10,K,M,O)=F(100,8,K,M,O)*.8
C     POWER FOR DISPLAY CABINET IN KWH F101
      F(101,J,K,M,O)=.120*F(98,J,K,M,O)
      F(101,7,K,M,O)=.176*F(98,7,K,M,O)
C     OTHER POWER IN KWH F102
      C(90,3,K,M,O)=.098*F(13,3,K,M,O)
      C(90,4,K,M,O)=.20*F(13,4,K,M,O)
      C(90,5,K,M,O)=.23*F(13,5,K,M,O)
      C(90,6,K,M,O)=.38*F(13,6,K,M,O)
      C(90,7,K,M,O)=.38*F(13,7,K,M,O)
      C(90,9,K,M,O)=.38*F(13,9,K,M,O)
      C(90,8,K,M,O)=.098*F(13,8,K,M,O)
      C(90,10,K,M,O)=.098*F(13,10,K,M,O)
      F(102,J,K,M,O)=.073 *(F(81,J,K,M,O)+F(83,J,K,M,O))
   33 CONTINUE
C**** MERCHANDISING MODEL  *****
C  *  PRIMAL PRODUCT MIX DISADVANTAGE OR EACH SYSTEM OVER BOXED PRIMALS
C     PULLED BACK AND RETRIMMED
      DO 4 K=1,3
      DO 44 J=1,10
      M=2
      O=3
      C(106,1,K,M,O)=(P(O,1)*.10)*.05+(P(O,104)+.0054*P(O,82))*.05
      C(106,2,K,M,O)=(P(O,1)*.10)*.03+(P(O,104)+.0054*P(O,82))*.03
      C(106,3,K,M,O)=(P(O,1)*.10)*.03+(P(O,104)+.0054*P(O,82))*.03
      C(106,4,K,M,O)=(P(O,1)*.10)*.03+(P(O,104)+.0054*P(O,82))*.03
      C(106,5,K,M,O)=(P(O,1)*.10)*.02+(P(O,104)+.0054*P(O,82))*.02
      C(106,6,K,M,O)=(P(O,1)*.10)*.01+(P(O,104)+.0054*P(O,82))*.01
      C(106,9,K,M,O)=(P(O,1)*.10)*.01+(P(O,104)+.0054*P(O,82))*.01
      C(106,10,K,M,O)=(P(O,1)*.10)*.01+(P(O,104)+.0054*P(O,82))*.01
      C(106,7,K,M,O)=0.
      C(106,8,K,M,O)=(P(O,1)*.10)*.02+(P(O,104)+.0054*P(O,82))*.02
C     PULLED BACK AND CONVERTED TO GROUND F107
      C(107,1,K,M,O)=(P(O,1)-P(O,2))*.025+(P(O,104)+.0054*P(O,82))
     1*.025
      C(107,2,K,M,O)=(P(O,1)-P(O,2))*.015+(P(O,104)+.0054*P(O,82))
     1*.015
      C(107,3,K,M,O)=(P(O,1)-P(O,2))*.015+(P(O,104)+.0054*P(O,82))
     1*.015
      C(107,4,K,M,O)=(P(O,1)-P(O,2))*.015+(P(O,104)+.0054*P(O,82))
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     1*.015
      C(107,5,K,M,O)=(P(0,1)-P(0,2))*.010+(P(0,104)+.0054*P(0,82))
     1*.010
      C(107,6,K,M,O)=(P(0,1)-P(0,2))*.005+(P(0,104)+.0054*P(0,82))
     1*.005
      C(107,9,K,M,O)=(P(0,1)-P(0,2))*.005+(P(0,104)+.0054*P(0,82))
     1*.005
      C(107,10,K,M,O)=(P(0,1)-P(0,2))*.005+(P(0,104)+.0054*P(0,82))
     1*.005
      C(107,7,K,M,O)=0.
      C(107,8,K,M,O)=(P(0,1)-P(0,2))*.01+(P(0,104)+.0054*P(0,82))
     1*.01
C     PULLED BACK AND SCRAPPED F108
      C(108,J,K,M,O)=P(0,1)*.005+.005*P(0,82)*.005
      C(108,2,K,M,O)=P(0,1)*.004+.005*P(0,82)*.004
      C(108,3,K,M,O)=P(0,1)*.004+.005*P(0,82)*.004
      C(108,4,K,M,O)=P(0,1)*.004+.005*P(0,82)*.004
      C(108,5,K,M,O)=P(0,1)*.003+.005*P(0,82)*.003
      C(108,6,K,M,O)=P(0,1)*.002+.005*P(0,82)*.002
      C(108,7,K,M,O)=P(0,1)*.001+.005*P(0,82)*.001
      C(108,8,K,M,O)=P(0,1)*.003+.005*P(0,82)*.003
      C(108,9,K,M,O)=P(0,1)*.002+.005*P(0,82)*.002
      C(108,10,K,M,O)=P(0,1)*.002+.005*P(0,82)*.002
      XNAKED=.0042
      XPVACM=.0035
C     COST PER POUND SUMMATION FOR PRIMAL MIX DISADVANTAGE F109
      C(109,J,K,M,O)=(C(107,J,K,M,O)+C(106,J,K,M,O)+C(108,
     1J,K,M,O))*(F(9,J,K,M,O)*STORES(K))
C  *  THIN MEAT DISADVANTAGE F110
      C(110,1,K,M,O)=F(2,1,K,M,O)*F(7,1,K,M,O)*STORES(K)*.5
     1*(P(0,4)-P(0,3))
      C(110,4,K,M,O)=F(2,4,K,M,O)*F(7,4,K,M,O)*STORES(K)*.25
     1*(P(0,4)-P(0,3))
      C(110,5,K,M,O)=F(2,5,K,M,O)*F(7,5,K,M,O)*STORES(K)*.25
     1*(P(0,4)-P(0,3))
      C(110,6,K,M,O)=F(2,6,K,M,O)*F(7,6,K,M,O)*STORES(K)*.25
     1*(P(0,4)-P(0,3))
      C(110,7,K,M,O)=F(2,7,K,M,O)*F(7,7,K,M,O)*STORES(K)*.25
     1*(P(0,4)-P(0,3))
      C(110,2,K,M,O)=0.
      C(110,3,K,M,O)=0.
      C(110,8,K,M,O)=0.
      C(110,9,K,M,O)=0.
      C(110,10,K,M,O)=0.
C     PRODUCT PURCHASE PREMIUM WITH BOXED BEEF F111
      C(111,2,K,M,O)=STORES(K)*F(7,2,K,M,O)*P(0,103)
      C(111,3,K,M,O)=STORES(K)*F(7,3,K,M,O)*P(0,103)
      C(111,8,K,M,O)=STORES(K)*F(7,8,K,M,O)*P(0,103)
      C(111,9,K,M,O)=STORES(K)*F(7,9,K,M,O)*P(0,103)
      C(111,10,K,M,O)=STORES(K)*F(7,10,K,M,O)*P(0,122)
C  *  PRODUCT SHRINK C111   NOTE:SHRINK FOR 2&3 UPPED BY USDA TO .4 FROM
C     .2 EST. BY CASE DUE CONTRARY REPORTS FROM OTHER CONSULTANTS
      C(114,1,K,M,O)=((((F(1,1,K,M,O)+F(2,1,K,M,O)+F(3,1,K,M,O))*P(0,3))
     1+(F(8,1,K,M,O)*P(0,4)))*F(7,1,K,M,O)*XNAKED*2.*STORES(K))+(((F(9,1
     2,K,M,O)*P(0,1))+(F(11,1,K,M,O)*P(0,2)))*XNAKED*1.*STORES(K))
      C(114,2,K,M,O)=((((F(1,2,K,M,O)+F(2,2,K,M,O)+F(3,2,K,M,O))*P(0,3))
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     1+(F(8,2,K,M,O)*P(O,4)))*F(7,2,K,M,O)*XPVACM*1.*STORES(K))+(((F(9,2
     2,K,M,O)*P(O,1))+(F(11,2,K,M,O)*P(O,2)))*XNAKED*1.*STORES(K))
      C(114,3,K,M,O)=((((F(1,3,K,M,O)+F(2,3,K,M,O)+F(3,3,K,M,O))*P(O,3))
     1+(F(8,3,K,M,O)*P(O,4)))*F(7,3,K,M,O)*XPVACM*1.*STORES(K))+(((F(9,3
     2,K,M,O)*P(O,1))+(F(11,3,K,M,O)*P(O,2)))*XNAKED*1.*STORES(K))
      C(114,4,K,M,O)=((((F(1,4,K,M,O)+F(2,4,K,M,O)+F(3,4,K,M,O))*P(O,3))
     1+(F(8,4,K,M,O)*P(O,4)))*F(7,4,K,M,O)*XNAKED*2.*STORES(K))+(((F(9,4
     2,K,M,O)*P(O,1))+(F(11,4,K,M,O)*P(O,2)))*XNAKED*2.5*STORES(K))
      C(114,5,K,M,O)=((((F(1,5,K,M,O)+F(2,5,K,M,O)+F(3,5,K,M,O))*P(O,3))
     1+(F(8,5,K,M,O)*P(O,4)))*F(7,5,K,M,O)*XNAKED*2.*STORES(K))+(((F(9,5
     2,K,M,O)*P(O,1))+(F(11,5,K,M,O)*P(O,2)))*XNAKED*2.5*STORES(K))
      C(114,6,K,M,O)=((((F(1,6,K,M,O)+F(2,6,K,M,O)+F(3,6,K,M,O))*P(O,3))
     1+(F(8,6,K,M,O)*P(O,4)))*F(7,6,K,M,O)*XNAKED*2.*STORES(K))+(((F(9,6
     2,K,M,O)*P(O,1))+(F(11,6,K,M,O)*P(O,2)))*XNAKED*2.*STORES(K))
      C(114,7,K,M,O)=((((F(1,7,K,M,O)+F(2,7,K,M,O)+F(3,7,K,M,O))*P(O,3))
     1+(F(8,7,K,M,O)*P(O,4)))*F(7,7,K,M,O)*XNAKED*2.*STORES(K))+(((F(9,7
     2,K,M,O)*P(O,1))+(F(11,7,K,M,O)*P(O,2)))*XNAKED*.01*STORES(K))
      C(114,8,K,M,O)=((((F(1,8,K,M,O)+F(2,8,K,M,O)+F(3,8,K,M,O))*P(O,3))
     1+(F(8,8,K,M,O)*P(O,4)))*F(7,8,K,M,O)*XPVACM*1.*STORES(K))+(((F(9,8
     2,K,M,O)*P(O,1))+(F(11,8,K,M,O)*P(O,2)))*XNAKED*1.*STORES(K))
      C(114,10,K,M,O)=((((F(1,10,K,M,O)+F(2,10,K,M,O)+F(3,10,K,M,O))*P(O
     1,3))+(F(
     18,10,K,M,O)*P(O,4)))*F(7,10,K,M,O)*XPVACM*1.*STORES(K))+(((F(9,10,
     2K,M,O)*P(O,1))+(F(11,10,K,M,O)*P(O,2)))*XNAKED*1.*STORES(K))
      C(114,9,K,M,O)=((((F(1,9,K,M,O)+F(2,9,K,M,O)+F(3,9,K,M,O))*P(O,3))
     1+(F(8,9,K,M,O)*P(O,4)))*F(7,9,K,M,O)*XPVACM*1.*STORES(K))+(((F(9,9
     2,K,M,O)*P(O,1))+(F(11,9,K,M,O)*P(O,2)))*XNAKED*2.*STORES(K))
C     FAT AND BONE RESALE   F112 BONE YIELD
      F(112,J,K,M,O)=96.
      F(112,2,K,M,O)=45.
      F(112,3,K,M,O)=45.
      F(112,8,K,M,O)=61.
      F(112,9,K,M,O)=61.
      F(112,10,K,M,O)=0.0
      C(112,J,K,M,O)=(F(112,J,K,M,O)*P(O,117)+F(5,J,K,M,O)*
     1P(O,115))*STORES(K)*F(7,J,K,M,O)
      C(112,2,K,M,O)=(F(112,2,K,M,O)*P(O,116)+F(5,2,K,M,O)*
     1P(O,114))*STORES(K)*F(7,2,K,M,O)
      C(112,3,K,M,O)=(F(112,3,K,M,O)*P(O,116)+F(5,3,K,M,O)*
     1P(O,114))*STORES(K)*F(7,3,K,M,O)
      C(112,8,K,M,O)=(F(112,8,K,M,O)*P(O,116)+F(5,8,K,M,O)*
     1P(O,114))*STORES(K)*F(7,8,K,M,O)
      C(112,1,K,M,O)=(F(112,1,K,M,O)*P(O,116)+F(5,1,K,M,O)*
     1P(O,114))*STORES(K)*F(7,1,K,M,O)
      C(112,4,K,M,O)=((41.*P(O,117)+55.*P(O,116))+(32.*P(O,
     1115)+22.*P(O,114)))*STORES(K)*F(7,4,K,M,O)
      C(112,5,K,M,O)=((F(112,5,K,M,O)*P(O,117))
     1+(36.*P(O,115)+18.*P(O,114)))*STORES(K)*F(7,5,K,M,O)
   44 CONTINUE
      DO 444 J=3,10
C**** PLANT LABOR MODEL - COSTS
C     RECEIVING C17
      C(17,J,K,M,O)=F(17,J,K,M,O)*P(O,5)
C     CUTTING C18
      C(18,J,K,M,O)=F(18,J,K,M,O)*P(O,6)
C     TENDERIZING C19
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      C(19,J,K,M,O)=F(19,J,K,M,O)*P(O,7)
C     GRINDING C20
      C(20,J,K,M,O)=F(20,J,K,M,O)*P(O,8)
C     PRIMAL/SUB PRIMAL WRAPPING C21
      C(21,J,K,M,O)=F(21,J,K,M,O)*P(O,6)
C     RETAIL WRAPPING AND PRICING C22
      C(22,J,K,M,O)=F(22,J,K,M,O)*P(O,10)
C     MOVE TO STORAGE C23
      C(23,J,K,M,O)=F(23,J,K,M,O)*P(O,11)
C     SELECTION C24
      C(123,J,K,M,O)=F(123,J,K,M,O)*P(O,12)
C     POUNDS OF STEAKS AND ROASTS C9
      C(9,J,K,M,O)=F(9,J,K,M,O)*P(O,1)
C     GROUND C11
      C(11,J,K,M,O)=F(11,J,K,M,O)*P(O,2)
C     CATTLE C7
      C(7,J,K,M,O)=F(7,J,K,M,O)*P(O,3)
C     TRIM C8
      C(8,J,K,M,O)=F(8,J,K,M,O)*P(O,4)
C**** PLANT INVESTMENT
      DO 51 LLL=1,20
C     AMORT IS AMORTIZATION FACTOR
      AMORT(LLL)=(ROI(M)*(1.+ROI(M))**LLL)/(((1.+ROI(M))**LLL)-1.)
   51 CONTINUE
C     BUILDING SHELL C24
      C(24,J,K,M,O)=(F(24,J,K,M,O)*P(O,13)*(1.-HISANI)+
     1F(24,J,K,M,O)*P(O,14)*HISANI)*AMORT(20)
C     WEIGH SCALES  C25
      C(25,J,K,M,O)=F(25,J,K,M,O)*P(O,15)*AMORT(10)
C     PALLET TRANSPORTERS C26
      C(26,J,K,M,O)=F(26,J,K,M,O)*P(O,16)*AMORT(10)
C     MISCELLANEOUS C27
      C(27,J,K,M,O)=F(13,J,K,M,O)*P(O,17)*AMORT(10)
C     CARCASS HOLDING COOLER - BUILDING SHELL C28
      C(28,J,K,M,O)=F(29,J,K,M,O)*P(O,18)*AMORT(20)
C     CARCASS HOLDING COOLER - RAIL C29
      C(29,J,K,M,O)=F(28,J,K,M,O)*P(O,19)*AMORT(20)
C     PROCESSING AREA - BUILDING SHELL C30
      C(30,J,K,M,O)=(F(29,J,K,M,O)*P(O,20)*(1.-HISANI)+F(29,J,K,
     1M,O)*P(O,21)*HISANI)*AMORT(20)
C     CUTTING LINE CONVEYOR C31
      C(31,J,K,M,O)=F(30,J,K,M,O)*P(O,22)*AMORT(20)
C     CUTTING TABLES C32
      C(32,J,K,M,O)=F(31,J,K,M,O)*P(O,23)*AMORT(10)
C     CARCASS BREAKING SAWS C33
      C(33,J,K,M,O)=F(32,J,K,M,O)*P(O,24)*AMORT(5)
C     PRIMAL BREAKING SAWS C34
      C(34,J,K,M,O)=F(33,J,K,M,O)*P(O,25)*AMORT(5)
C     GRINDING EQUIPMENT C35
      C(35,J,K,M,O)=F(34,J,K,M,O)*P(O,26)*AMORT(8)
C     STEAK TENDERIZERS C36
      C(36,J,K,M,O)=F(35,J,K,M,O)*P(O,27)*AMORT(4)
C     PRICING EQUIPMENT C37
      C(37,J,K,M,O)=F(36,J,K,M,O)*P(O,28)*AMORT(8)
C     OTHER C38
      C(38,J,K,M,O)=F(37,J,K,M,O)*P(O,29)*AMORT(8)
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C     FREEZING TUNNEL AND CONVEYOR C39
      C(39,J,K,M,O)=F(37,J,K,M,O)*P(0,30)*AMORT(10)
C     VACUUM WRAPPING C40
      C(40,J,K,M,O)=F(38,J,K,M,O)*P(0,31)*AMORT(8)
C     PLATFORM SCALES C41
      C(41,J,K,M,O)=F(39,J,K,M,O)*P(0,32)*AMORT(20)
C     EQUIPMENT INSTALLATION C42
      C(42,J,K,M,O)=F(40,J,K,M,O)*P(0,33)*AMORT(15)
C     MISCELLANEOUS C43
      C(43,J,K,M,O)=F(41,J,K,M,O)*P(0,34)*AMORT(10)
C     BUILDING SHELL HI/AVERAGE C44
      C(44,J,K,M,O)=(F(42,J,K,M,O)*P(0,35)*(1.-HISANI)+
     1F(42,J,K,M,O)*P(0,36)*HISANI)*AMORT(20)
C     RACK SLOTS C45
      C(45,J,K,M,O)=F(43,J,K,M,O)*P(0,37)*AMORT(20)
C     CARTS FOR TOTE BOXES C46
      C(46,J,K,M,O)=F(44,J,K,M,O)*P(0,38)*AMORT(4)
C     TOTE BOXES C47
      C(47,J,K,M,O)=F(45,J,K,M,O)*P(0,39)*AMORT(3)
C     FORK LIFTS C48
      C(48,J,K,M,O)=F(46,J,K,M,O)*P(0,40)*AMORT(8)
C     PALLETS C49
      C(49,J,K,M,O)=F(47,J,K,M,O)*P(0,41)*AMORT(2)
C     BUILDING SHELL C142
      C(142,4,K,M,O)=F(48,4,K,M,O)*P(0,44)*AMORT(20)
      C(142,5,K,M,O)=F(48,5,K,M,O)*P(0,45)*AMORT(20)
      C(142,6,K,M,O)=F(48,6,K,M,O)*P(0,46)*AMORT(20)
      C(142,7,K,M,O)=F(48,7,K,M,O)*P(0,46)*AMORT(20)
      C(142,9,K,M,O)=F(48,9,K,M,O)*P(0,46)*AMORT(20)
      C(115,J,K,M,O)=F(49,J,K,M,O)*P(0,42)*AMORT(20)
      C(142,3,K,M,O)=F(48,3,K,M,O)*P(0,47)*AMORT(20)
      C(115,3,K,M,O)=0.
      C(115,8,K,M,O)=0.
      C(115,10,K,M,O)=0.
      C(142,8,K,M,O)=F(48,8,K,M,O)*P(0,47)*AMORT(20)
      C(116,3,K,M,O)=.098*F(13,3,K,M,O)
      C(116,4,K,M,O)=.020*F(13,4,K,M,O)
      C(116,5,K,M,O)=.023*F(13,5,K,M,O)
      C(116,6,K,M,O)=.038*F(13,6,K,M,O)
      C(116,7,K,M,O)=.038*F(13,7,K,M,O)
      C(116,9,K,M,O)=.038*F(13,9,K,M,O)
      C(116,8,K,M,O)=.098*F(13,8,K,M,O)
  444 CONTINUE
      DO 4 J=1,10
C**** STORE INVESTMENT  COSTS
C     RECEIVING SCALE C(150)
      C(150,J,K,M,O)=F(78,J,K,M,O)*P(0,105)*AMORT(20)
C     RECEIVING RAIL C142
      C(143,J,K,M,O)=F(79,J,K,M,O)*P(0,59)*AMORT(20)
C     RECEIVING PALLET JACK C144
      C(144,J,K,M,O)=F(80,J,K,M,O)*P(0,60)*AMORT(10)
C     COOLER BUILDING SHELL C145
      C(145,J,K,M,O)=F(81,J,K,M,O)*P(0,61)*AMORT(20)
C     COOLER RAIL C146
      C(146,J,K,M,O)=F(82,J,K,M,O)*P(0,62)*AMORT(20)
C     CUTTING RM BLDG SHELL C147
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      C(147,J,K,M,O)=F(83,J,K,M,O)*P(O,63)*AMORT(2)
C     SLICER C148
      C(148,J,K,M,O)=F(84,J,K,M,O)*P(O,64)*AMORT(10)
C     TENDERIZERS C149
      C(149,J,K,M,O)=F(85,J,K,M,O)*P(O,65)*AMORT(10)
C     SAW C50
      C(50,J,K,M,O)=F(86,J,K,M,O)*P(O,66)*AMORT(10)
C     GRINDER BOXES RECEIVED C51
      C(51,1,K,M,O)=F(87,1,K,M,O)*P(O,67)*AMORT(10)
      C(51,2,K,M,O)=F(87,2,K,M,O)*P(O,67)*AMORT(10)
      C(51,3,K,M,O)=F(87,3,K,M,O)*P(O,67)*AMORT(10)
      C(51,8,K,M,O)=F(87,8,K,M,O)*P(O,67)*AMORT(10)
      C(51,4,K,M,O)=F(87,4,K,M,O)*P(O,67)*AMORT(10)
      C(51,5,K,M,O)=F(87,5,K,M,O)*P(O,67)*AMORT(10)
C     GRINDER C52
      C(52,6,K,M,O)=F(87,6,K,M,O)*P(O,68)*AMORT(10)
      C(52,7,K,M,O)=F(87,7,K,M,O)*P(O,68)*AMORT(10)
      C(52,9,K,M,O)=F(87,9,K,M,O)*P(O,68)*AMORT(10)
      C(52,10,K,M,O)=F(87,10,K,M,O)*P(O,68)*AMORT(10)
C     TABLES C53
      C(53,J,K,M,O)=F(88,J,K,M,O)*P(O,69)*AMORT(20)
C     PLATTERS C54
      C(54,J,K,M,O)=F(89,J,K,M,O)*P(O,70)*AMORT(7)
C     PLATTER CARTS C55
      C(55,J,K,M,O)=F(90,J,K,M,O)*P(O,71)*AMORT(7)
C     KNIVES C56
      C(56,J,K,M,O)=F(71,J,K,M,O)*P(O,72)*AMORT(1)
      C(57,6,K,M,O)=P(O,73)*AMORT(10)
      C(57,7,K,M,O)=P(O,73)*AMORT(10)
      C(57,9,K,M,O)=P(O,73)*AMORT(10)
      C(57,9,K,M,O)=.5*P(O,73)*AMORT(10)
C     WRAPPING AREA BLDG SHELL C58
      C(58,J,K,M,O)=P(O,74)*F(92,J,K,M,O)*AMORT(20)
      C(58,6,K,M,O)=P(O,74)*F(92,6,K,M,O)*AMORT(20)
      C(58,7,K,M,O)=P(O,74)*F(92,7,K,M,O)*AMORT(20)
      C(58,9,K,M,O)=P(O,74)*F(92,9,K,M,O)*AMORT(20)
      C(58,10,K,M,O)=P(O,74)*F(92,10,K,M,O)*AMORT(20)
C     WRAPPING EQUIPMENT - MANUAL C59
      C(59,J,K,M,O)=F(93,J,K,M,O)*P(O,75)*AMORT(7)
C     WRAPPING EQUIPMENT - AUTOMATIC C60
      C(60,J,K,M,O)=F(94,J,K,M,O)*P(O,76)*AMORT(7)
C     PRICING EQUIPMENT NEW C61
      C(61,J,K,M,O)=F(95,J,K,M,O)*P(O,77)*AMORT(7)
C     PRICING EQUIPMENT USED C62
      C(62,6,K,M,O)=F(96,6,K,M,O)*P(O,78)*AMORT(7)
      C(62,7,K,M,O)=F(96,7,K,M,O)*P(O,78)*AMORT(7)
      C(62,9,K,M,O)=F(96,9,K,M,O)*P(O,78)*AMORT(7)
C     DISPLAY AREA BLDG SHELL C63
      C(63,J,K,M,O)=F(97,J,K,M,O)*P(O,79)*AMORT(20)
C     DISPLAY CABINET C64
      C(64,J,K,M,O)=F(98,J,K,M,O)*P(O,80)*AMORT(10)
C**** STORE LABOR MODEL
C     RECEIVING C65
      C(65,J,K,M,O)=F(70,J,K,M,O)*P(O,81)
C     CUTTING C66
      C(66,J,K,M,O)=F(71,J,K,M,O)*P(O,82)
```

```
C     STEAK TENDERIZING C67
      C(67,J,K,M,O)=F(72,J,K,M,O)*P(0,83)
C     GRINDING C68
      C(68,J,K,M,O)=F(73,J,K,M,O)*P(0,84)
C     WRAPPING C69
      C(69,J,K,M,O)=F(74,J,K,M,O)*P(0,85)
C     PRICING C70
      C(70,J,K,M,O)=F(76,J,K,M,O)*P(0,86)
C     DISPLAY C71
      C(71,J,K,M,O)=F(77,J,K,M,O)*P(0,87)
C**** PLANT TO STORE TRANSPORTATION
C     20-FOOT MILEAGE C72
      C(72,J,K,M,O)=F(104,J,K,M,O)*P(0,92)
      C(72,7,K,M,O)=F(104,7,K,M,O)*P(0,93)
C     UNLOAD COST C73
      C(73,J,K,M,O)=F(103,J,K,M,O)*P(0,94)
C     40-FOOT MILEAGE C74
      C(74,J,K,M,O)=F(105,J,K,M,O)*P(0,95)
      C(74,7,K,M,O)=F(105,7,K,M,O )*P(0,96)
      IF(C(72,J,K,M,O)-C(74,J,K,M,O))267,268,268
  267 C(74,J,K,M,O)=0.
      GO TO 269
  268 C(72,J,K,M,O)=0.
  269 C(72,1,K,M,O)=0.0
      C(72,2,K,M,O)=0.0
      C(74,1,K,M,O)=0.0
      C(74,2,K,M,O)=0.0
      C(73,1,K,M,O)=0.0
      C(73,2,K,M,O)=0.0
C**** STORE SUPPORT MODEL
C     MAINTENANCE LABOR C75
      C(75,J,K,M,O)=F(99,J,K,M,O)*P(0,88)
C     SANITATION LABOR C75
      C(76,J,K,M,O)=F(100,J,K,M,O)*P(0,89)
C     POWER C77
      C(77,J,K,M,O)=F(101,J,K,M,O)*P(0,90)
C     PACKAGING C78
      C(78,J,K,M,O)=F(13,J,K,M,O)*P(0,91)
C**** PLANT SUPPORT MODEL
      IF(J-10)927,930,927
  927 IF(J-8)928,930,928
  928 IF(J-3)929,930,931
C     MAINTENANCE C79
  931 C(79,J,K,M,O)= (F(17,J,K,M,O)+F(18,J,K,M,O)+F(19,J,K
     1,M,O)+F(20,J,K,M,O)+F(21,J,K,M,O)+F(22,J,K,M,O)+
     2F(23,J,K,M,O)+F(123,J,K,M,O))*P(0,48)*P(0,99)
C     MAINTENANCE MATERIALS C80
      C(80,J,K,M,O)=(F(17,J,K,M,O)+F(18,J,K,M,O)
     1+F(19,J,K,M,O)+F(20,J,K,M,O)+F(21,J,K,M,O)+
     2F(22,J,K,M,O)+F(23,J,K,M,O)+F(123,J,K,M,O))*P(0,49)
C     SANITATION LABOR C81
      C(81,J,K,M,O)=(F(17,J,K,M,O)+F(18,J,K,M,O)+
     1F(19,J,K,M,O)+F(20,J,K,M,O)+F(21,J,K,M,O)+
     2F(22,J,K,M,O)+F(23,J,K,M,O)+F(123,J,K,M,O))*P(0,50)*P(0,100)
      GO TO 932
  929 C(79,J,K,M,O)=0.
```

```
      C(80,J,K,M,O)=0.
      C(81,J,K,M,O)=0.
      GO TO 932
  930 C(80,J,K,M,O)=(F(17,J,K,M,O)+F(18,J,K,M,O)
     1+F(19,J,K,M,O)+F(20,J,K,M,O)+F(21,J,K,M,O)+
     2F(22,J,K,M,O)+F(23,J,K,M,O)+F(123,J,K,M,O))*P(0,110)
      C(81,J,K,M,O)=(F(17,J,K,M,O)+F(18,J,K,M,O)+
     1F(19,J,K,M,O)+F(20,J,K,M,O)+F(21,J,K,M,O)+
     2F(22,J,K,M,O)+F(23,J,K,M,O)+F(123,J,K,M,O))*P(0,111)*P(0,100)
  932 CONTINUE
C     CARBON DIOXIDE FREEZING C82
      C(82,7,K,M,O)=F(13,J,K,M,O)*P(0,51)*P(0,52)
C     POWER COST C83
      C(83,J,K,M,O)=(F(24,J,K,M,O)+F(27,J,K,M,O)+F(29,J,K,M,O)+
     1F(42,J,K,M,O)+F(48,J,K,M,O))*P(0,112)*P(0,90)
      C(83,7,K,M,O)=C(83,7,K,M,O)+(F(42,7,K,M,O)*P(0,113)*P(0,90))
C     CARBON DIOXIDE TANK STORAGE C84
      C(84,7,K,M,O)=P(0,53)
C     PRIMALS/SUBPRIMAL-NONVACUUM C85
      C(85,4,K,M,O)=P(0,54)*F(16,4,K,M,O)
C     PRIMAL-VACUUM-FRONT C86
      C(86,5,K,M,O)=P(0,55)*F(14,5,K,M,O)
C     PRIMAL-VACUUM-REAR C87
      C(87,4,K,M,O)=P(0,56)*F(15,4,K,M,O)
      C(87,5,K,M,O)=P(0,56)*F(15,5,K,M,O)
C     LABOR/PLANT SUPERVISOR C88
      C(88,J,K,M,O)=P(0,57)*(F(17,J,K,M,O)+F(18,J,K,M,O)+F(1
     19,J,K,M,O)+F(20,J,K,M,O)+F(21,J,K,M,O)+F(22,J,K,M,O)
     1+F(23,J,K,M,O)+F(123,J,K,M,O))
C     PLANT INVESTMENT MODEL
      C(129,J,K,M,O)=0.
      DO 9 I=24,49
      C(129,J,K,M,O)=C(129,J,K,M,O)+C(I,J,K,M,O)
    9 CONTINUE
      C(129,J,K,M,O)=(C(129,J,K,M,O)+C(142,J,K,M,O))/52.
      C(129,1,K,M,O)=0.
      C(129,2,K,M,O)=0.
C     INSURANCE TAX C89
      C(89,J,K,M,O)=P(0,58)*C(129,J,K,M,O)
C     SUM=STORE LABOR F70-F76
      IF(F(70,J,K,M,O)+F(71,J,K,M,O)+F(72,J,K,M,O)+
     1F(73,J,K,M,O)+F(74,J,K,M,O)+F(75,J,K,M,O)+F(77,J,K,
     1M,O).LT.40*STORES(K)) C(133,J,K,M,O)=P(0,82)*40.*STORES(K)-
     2C(130,J,K,M,O)
C     TRANSPORTATION RATE PACKER TO PLANT
      IF(N-2)940,941,942
  940 C(13,J,K,M,O)=P(0,106)
      C(13,2,K,M,O)=P(0,109)
      C(13,3,K,M,O)=P(0,109)
      C(13,8,K,M,O)=P(0,109)
      C(13,9,K,M,O)=P(0,109)
      C(13,10,K,M,O)=P(0,109)
      GO TO 943
  941 C(13,J,K,M,O)=P(0,118)
      C(13,2,K,M,O)=P(0,119)
      C(13,3,K,M,O)=P(0,119)
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      C(13,8,K,M,O)=P(0,119)
      C(13,9,K,M,O)=P(0,119)
      C(13,10,K,M,O)=P(0,119)
      GO TO 943
  942 C(13,J,K,M,O)=P(0,120)
      C(13,2,K,M,O)=P(0,121)
      C(13,3,K,M,O)=P(0,121)
      C(13,8,K,M,O)=P(0,121)
      C(13,9,K,M,O)=P(0,121)
      C(13,10,K,M,O)=P(0,121)
C     PLANT TO WAREHOUSE TRANSPORTATION COST
  943 C(12,J,K,M,O)=((F(7,J,K,M,O)*650.*C(13,J,K,M,O))+(F(7,J,K,M,O)
     1*F(8,J,K,M,O)*C(13,J,K,M,O)))*STORES(K)
      C(12,1,K,M,O)=((F(7,1,K,M,O)*650.*C(13,1,K,M,O))+(F(7,1,K,M,O)
     1*F(8,1,K,M,O)*C(13,1,K,M,O)))*STORES(K)
      C(12,2,K,M,O)=((F(7,2,K,M,O)*(F(1,2,K,M,O)+F(2,2,K,M,O)+12.+
     1F(3,2,K,M,O)+
     1F(112,2,K,M,O)+F(6,2,K,M,O)+F(5,2,K,M,O))*C(13,2,K,M,O))+(F
     2(7,2,K,M,O)*F(8,2,K,M,O)*C(13,2,K,M,O)))*STORES(K)
      C(12,3,K,M,O)=((F(7,3,K,M,O)*(F(1,3,K,M,O)+F(2,3,K,M,O)+12.+
     1F(3,3,K,M,O)+
     1F(112,3,K,M,O)+F(6,3,K,M,O)+F(5,3,K,M,O))*C(13,3,K,M,O))+(F(7,3,K
     2,M,O)*F(8,3,K,M,O)*C(13,3,K,M,O)))*STORES(K)
      C(12,8,K,M,O)=((F(7,8,K,M,O)*(F(1,8,K,M,O)+F(2,8,K,M,O)+
     1F(3,8,K,M,O)+
     1F(112,8,K,M,O)+F(6,8,K,M,O)+F(5,8,K,M,O))*C(13,8,K,M,O))+(F(7,8,K
     2,M,O)*F(8,8,K,M,O)*C(13,8,K,M,O)))*STORES(K)
      C(12,10,K,M,O)=((F(7,10,K,M,O)*(F(1,10,K,M,O)+F(2,10,K,M,O)+
     1F(3,10,K,M,O)+F(112
     1,10,K,M,O)+F(6,10,K,M,O)+F(5,10,K,M,O))*C(13,10,K,M,O))+(F(7,10,K
     2,M,O)*F(8,10,K,M,O)*C(13,10,K,M,O)))*STORES(K)
      C(12,9,K,M,O)=((F(7,9,K,M,O)*(F(1,9,K,M,O)+F(2,9,K,M,O)+
     1F(3,9,K,M,O)+
     1F(112,9,K,M,O)+F(6,9,K,M,O)+F(5,9,K,M,O))*C(13,9,K,M,O))+(F(7,9,K
     2,M,O)*F(8,9,K,M,O)*C(13,9,K,M,O)))*STORES(K)
C     PACKER DIRCT TO STORE FOR CARCASS BEEF
      C(14,1,K,M,O)=(P(0,107)*((650.*F(7,1,K,M,O))+(F(7,1,K,M,O)*
     1F(8,1,K,M,O))))*STORES(K)
      C(14,2,K,M,O)=((P(0,108)* F(7,2,K,M,O))*(F(1,2,K,M,O)+F(2,2,K,M,O
     1)    +F(112,2,K,M,O)+F(6,2,K,M,O)+F(5,2,K,M,O)+F(3,2,K,M,O)+
     2 F(8,2,K,M,O)))*STORES(K)
C                                                 UNLOAD COST
      C(15,1,K,M,O)=C(14,1,K,M,O)+C(12,1,K,M,O)+(F(103,1,K,M,O)*P(0,94))
      C(15,2,K,M,O)=C(14,2,K,M,O)+C(12,2,K,M,O)+(F(103,2,K,M,O)*P(0,94))
C     ADMINSTRATIVE EXPENSES - HDQTRS(INCLUDE MEAT DIRECTOR,BUYERS,
C     FIELD SPECIALISTS, ADP, ACCOUNTING, CLERK, SECRETARIES, OFFICE EXP
      C(124,J,K,M,O)=P(0,101)*F(13,J,K,M,O)
C     ACCTG CONTROL
      C(141,1,K,M,O)=0.0031*F(13,1,K,M,O)
      C(141,2,K,M,O)=0.0012*F(13,2,K,M,O)
      C(141,3,K,M,O)=0.0012*F(13,3,K,M,O)
      C(141,4,K,M,O)=0.0012*F(13,4,K,M,O)
      C(141,5,K,M,O)=0.0009*F(13,5,K,M,O)
      C(141,6,K,M,O)=0.00*F(13,6,K,M,O)
      C(141,7,K,M,O)=0.00*F(13,7,K,M,O)
      C(141,8,K,M,O)=0.0012*F(13,8,K,M,O)
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      C(141,9,K,M,O)=0.00*F(13,9,K,M,O)
      C(141,10,K,M,O)=0.00*F(13,10,K,M,O)
C     MERCHANDISING MODEL
      C(125,J,K,M,O)=0.
      DO 5 I=106,111
      C(125,J,K,M,O)=C(125,J,K,M,O)+C(I,J,K,M,O)
    5 CONTINUE
      C(125,J,K,M,O)=C(125,J,K,M,O)+C(114,J,K,M,O)
C     ADMINISTRATIVE EXPENSES
      C(126,J,K,M,O)=0.
      C(126,J,K,M,O)=C(126,J,K,M,O)+C(124,J,K,M,O)
C     PLANT LABOR MODEL
      C(127,J,K,M,O)=0.
      DO 7 I=17,23
      C(127,J,K,M,O)=C(127,J,K,M,O)+C(I,J,K,M,O)
    7 CONTINUE
      C(127,J,K,M,O)=C(127,J,K,M,O)+C(123,J,K,M,O)
C     PLANT SUPPORT MODEL
      C(128,J,K,M,O)=0.
      DO 8 I=79,89
      C(128,J,K,M,O)=C(128,J,K,M,O)+C(I,J,K,M,O)
    8 CONTINUE
      C(128,1,K,M,O)=0.
      C(128,2,K,M,O)=0.
C     STORE LABOR MODEL
      C(130,J,K,M,O)=0.
      DO 10 I=65,71
      C(130,J,K,M,O)=C(130,J,K,M,O)+C(I,J,K,M,O)
   10 CONTINUE
C     STORE SUPPORT MODEL
      C(131,J,K,M,O)=0.
      DO 11 I=75,78
      C(131,J,K,M,O)=C(131,J,K,M,O)+C(I,J,K,M,O)
   11 CONTINUE
C     STORE INVESTMENT MODEL
      C(132,J,K,M,O)=0.
      DO 17 I=143,150
      C(132,J,K,M,O)=C(132,J,K,M,O)+ C(I,J,K,M,O)
   17 CONTINUE
C     STORE INVESTMENT MODEL
      DO 13 I=50,64
      C(132,J,K,M,O)=C(132,J,K,M,O)+C(I,J,K,M,O)
   13 CONTINUE
      C(132,J,K,M,O)=C(132,J,K,M,O)/52.
C     STORE COVERAGE MODEL
      C(133,J,K,M,O)=(C(130,1,K,M,O)-C(130,J,K,M,O))*.15
C     PLANT TO STORE TRANSPORTATION
      C(134,J,K,M,O)=0.
      DO 14 I=72,74
      C(134,J,K,M,O)=C(134,J,K,M,O)+C(I,J,K,M,O)
   14 CONTINUE
      C(12,1,K,M,O)=0.
      C(12,2,K,M,O)=0.
C     TOTAL
      C(139,J,K,M,O)=0.
      DO 15 I=127, 134
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      C(139,J,K,M,O)=C(139,J,K,M,O)+C(I,J,K,M,O)
      C(140,J,K,M,O)=0.
   15 CONTINUE
      C(140,J,K,M,O)=                   C(12,J,K,M,O)+
     1C(109,J,K,M,O)                   +C(15,J,K,M,O)
     3+C(124,J,K,M,O) + C(139,J,K,M,O)
     4+C(111,J,K,M,O)+C(114,J,K,M,O)+C(141,J,K,M,O)
C
C******SALES
C
      C(136,J,K,M,O)=((F(1,J,K,M,O)*P(O,1)+F(2,J,K,M,O)*P(O,125
     1)+((F(3,J,K,M,O)+F(8,J,K,M,O))*P(O,2)))*(STORES(K)*(30./4.*L)))
      C(136,10,K,M,O)=((F(1,10,K,M,O)*P(O,123)+F(2,10,K,M,O)*P(O,125)
     1+((F(3,10,K,M,O)+F(8,10,K,M,O))*P(O,2)))*(STORES(K)*(30./4.*L)))
C
C ****   PURCHASE COST
C
C
      C(137,J,K,M,O)=(((F(7,J,K,M,O)*650.*P(O,3))+(F(8,J,K,M,O)*
     1F(7,J,K,M,O)*P(O,4)))*STORES(K))
      C(137,2,K,M,O)=(((F(7,2,K,M,O)*650.*P(O,3))+(F(8,2,K,M,O)*
     1F(7,2,K,M,O)*P(O,4)))*STORES(K))
      C(137,3,K,M,O)=(((F(7,3,K,M,O)*650.*P(O,3))+(F(8,3,K,M,O)*
     1F(7,3,K,M,O)*P(O,4)))*STORES(K))
      C(137,8,K,M,O)=(((F(7,8,K,M,O)*646.*P(O,3))+(F(8,8,K,M,O)*
     1F(7,8,K,M,O)*P(O,4)))*STORES(K))
      C(137,9,K,M,O)=(((F(7,9,K,M,O)*646.*P(O,3))+(F(8,9,K,M,O)*
     1F(7,9,K,M,O)*P(O,4)))*STORES(K))
      C(137,10,K,M,O)=(((F(7,10,K,M,O)*551.*P(O,3))+(F(8,10,K,M,O)*
     1F(7,10,K,M,O)*P(O,124)))*STORES(K))
C ****   NET
C
      C(138,J,K,M,O)=(C(136,J,K,M,O)+C(112,J,K,M,O))-C(137,J,K,M,O)
    4 CONTINUE
  100 WRITE(6,101)STORES(K),     CLAB(L),ROI(M), MILES(N),PRICE(O)
  101 FORMAT(1H1,10X,'TABLE A.--COST FOR ALTERNATIVE BEEF DISTRIBUTION W
     1ITH',F5.0,2X,A4,2X,'STORES PER CHAIN, AT A RETURN ON'//25X,'INVEST
     1MENT' ,F3.2,2X,'PERCENT',I5,2X,'MILES FROM THE PACKING PLANT FOR P
     2RICE LEVEL',2X,A4///1X,131('-')/)
      WRITE(6,102)
  102 FORMAT(30X,'D E L I V E R Y        A N D       H A N D L I N G
     1     SYSTEMS'////
     131X,'CARCASS',3X,'PACKER',1X,'CUT',1X,'PRIMALS',6X,'CHAIN',2X,
     2'CARCASSES',2X,'CUT',2X,'AT',2X,'WAREHOUSES'/
     331X,'SHIPPED',53X,'RETAIL   CUTS'/2X,'COST CONSIDERED',16X,'FROM',
     36X,'DIRECT',4X,'DELIVERED',18X,'SUB'/
     331X,'PACKER',4X,'DELIVERED',3X,'VIA CHAIN',5X,'PRIMALS',18X,'FRESH
     3',6X,'FROZEN'/
     430X,'DIRECT',10X,'TO',6X,'WAREHOUSE',20X,'PRIMALS'/31X,'TO  STORE'
     5,4X,'STORE'//28X,'(1)', 8X,'(2)', 8X,'(3)', 8X,'(4)', 8X,'(5)'
     6,8X,'(6)', 8X,'(7)', 8X,'(8)',8X,'(9)',8X,'(10)'//58X,'D O L
     5L.A.R.S'///)
      DO 555 K=IKL,IKU
      M=2
      O=3
      WRITE(6,152)
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 152 FORMAT(1X,'WAREHOUSE OR PLANT'/5X,'INVESTMENT',5X)
     DO 1001 J=1,10
     X(J)=0.
     X(J)=C(129,J,K,M,O)/F(13,J,K,M,O)
1001 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
 103 FORMAT( '+',21X,10(F11.4)/)
     WRITE(6,104)
 104 FORMAT(4X,'LABOR',11X)
     DO 1002 J=1,10
     X(J)=0.
     X(J)=C(127,J,K,M,O)/F(13,J,K,M,O)
1002 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
     WRITE(6,105)
 105 FORMAT(4X,'SUPPORT',9X)
     DO 1003 J=1,10
     X(J)=0.
     X(J)=C(128,J,K,M,O)/F(13,J,K,M,O)
1003 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
     WRITE(6,106)
 106 FORMAT('0','STORE'/5X,'INVESTMENT',5X)
     DO 1004 J=1,10
     X(J)=0.
     X(J)=C(132,J,K,M,O)/F(13,J,K,M,O)
1004 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
     WRITE(6,104)
     DO 1005 J=1,10
     X(J)=0.
     X(J)=C(130,J,K,M,O)/F(13,J,K,M,O)
1005 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
     WRITE(6,105)
     DO 1006 J=1,10
     X(J)=0.
     X(J)=C(131,J,K,M,O)/F(13,J,K,M,O)
1006 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
     WRITE(6,107)
 107 FORMAT(4X,'LABOR COVERAGE  ')
     DO 1007 J=1,10
     X(J)=0.
     X(J)=C(133,J,K,M,O)/F(13,J,K,M,O)
1007 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
     WRITE(6,108)
 108 FORMAT( '0','TRANSPORTATION'/)
     WRITE(6,109)
 109 FORMAT(4X,'PACKER TO STORE  ')
     DO 1008 J=1,10
     X(J)=0.
     X(J)=C(15,J,K,M,O)/F(13,J,K,M,O)
1008 CONTINUE
     WRITE(6,103) (X(J),J=1,10)
```

```
      WRITE(6,110)
  110 FORMAT(4X,'PACKER TO WHSE  ')
      DO 1009 J=1,10
      X(J)=0.
      X(J)=C(12,J,K,M,O)/F(13,J,K,M,O)
 1009 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,111)
  111 FORMAT(4X,'WHSE  TO STORE  ')
      DO 1010 J=1,10
      X(J)=0.
      X(J)=C(134,J,K,M,O)/F(13,J,K,M,O)
 1010 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,112)
  112 FORMAT( '0','MERCHANDISING COST' /4X,'PURCHASING PREM. ')
      DO 1011 J=1,10
      X(J)=0.
      X(J)=C(111,J,K,M,O)/F(13,J,K,M,O)
 1011 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,113)
  113 FORMAT(4X,'SHRINKAGE',7X)
      DO 1012 J=1,10
      X(J)=0.
      X(J)=C(114,J,K,M,O)/F(13,J,K,M,O)
 1012 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,115)
  115 FORMAT(4X,'MDSE SLOW CUTS  ')
      DO 1013 J=1,10
      X(J)=0.
      X(J)=C(109,J,K,M,O)/F(13,J,K,M,O)
 1013 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,116)
  116 FORMAT(1X,'ADMINISTRATIVE COST'/4X,'CONTROL OF PRODUCT')
      DO 1014 J=1,10
      X(J)=0.
      X(J)=C(141,J,K,M,O)/F(13,J,K,M,O)
 1014 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,177)
  177 FORMAT(4X,'GENERAL ADMIN   ')
      DO 1015 J=1,10
      X(J)=0.
      X(J)=C(124,J,K,M,O)/F(13,J,K,M,O)
 1015 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,178)
  178 FORMAT(//'0','TOTAL COST',8X)
      DO 1016 J=1,10
      X(J)=0.
      X(J)=C(140,J,K,M,O)/F(13,J,K,M,O)
 1016 CONTINUE
      WRITE(6,103)  (X(J),J=1,10)
```

```
      WRITE(6,179)
  179 FORMAT(//'0','MARGIN ANALYSIS'/4X,'SALES',10X)
      DO 1017 J=1,10
      X(J)=0.
      X(J)=C(136,J,K,M,O)/F(13,J,K,M,O)
 1017 CONTINUE
      WRITE(6,103)(X(J),J=1,10)
      WRITE(6,114)
  114 FORMAT(4X,'FAT & BONE RESAL')
      DO 1018 J=1,10
      X(J)=0.
      X(J)=C(112,J,K,M,O)/F(13,J,K,M,O)
 1018 CONTINUE
      WRITE(6,103) (X(J),J=1,10)
      WRITE(6,180)
  180 FORMAT(4X,'PURCHASE  COST  ')
      DO 1019 J=1,10
      X(J)=0.
      X(J)=C(137,J,K,M,O)/F(13,J,K,M,O)
 1019 CONTINUE
      WRITE(6,103)(X(J),J=1,10)
      WRITE(6,121)
  121 FORMAT(4X,'NET BEEF SALES  ')
      DO 1020 J=1,10
      X(J)=0.
      X(J)=C(138,J,K,M,O)/F(13,J,K,M,O)
 1020 CONTINUE
      WRITE(6,103)(X(J),J=1,10)
 1021 FORMAT( '+',21X,10(F11.0)/)
      WRITE(6,1022)
 1022 FORMAT(4X,'CATTLEPAKS PURCH')
      WRITE(6,1021)(F(7,J,K,M,O),J=1,10)
      WRITE(6,1023)
 1023 FORMAT(4X,'ADDIT TRIM PURCH')
      WRITE(6,1021)(F(8,J,K,M,O),J=1,10)
      WRITE(6,1024)
 1024 FORMAT(4X,'LBS STK & RST   ')
      WRITE(6,1021)(F(9,J,K,M,O),J=1,10)
      WRITE(6,1025)
 1025 FORMAT(4X,'PKG STK & RST   ')
      WRITE(6,1021)(F(10,J,K,M,O),J=1,10)
      WRITE(6,1026)
 1026 FORMAT(4X,'LBS GR BEEF     ')
      WRITE(6,1021)(F(11,J,K,M,O),J=1,10)
      WRITE(6,1027)
 1027 FORMAT(4X,'PKG GR BEEF     ')
      WRITE(6,1021)(F(12,J,K,M,O),J=1,10)
      WRITE(6,1028)
 1028 FORMAT(4X,'TOTAL LBS CHN   ')
      WRITE(6,1021)(F(13,J,K,M,O),J=1,10)
      WRITE(6,1029)
 1029 FORMAT(4X,'NO. FRNT QTRS   ')
      WRITE(6,1021)(F(14,J,K,M,O),J=1,10)
      WRITE(6,1030)
 1030 FORMAT(4X,'NO. HIND QTRS   ')
      WRITE(6,1021)(F(15,J,K,M,O),J=1,10)
```

```
      WRITE(6,1031)
 1031 FORMAT(4X,'TOTAL NO. QTRS  ')
      WRITE(6,1021)(F(16,J,K,M,0),J=1,10)
  555 CONTINUE
 1000 CONTINUE
   99 STOP
      END
//GO.SYSIN      DD    *                                   DATA
01030103020201030202                                      USED
AVERAGE COMPOSITE BEEF PRICE RETAIL001          240      270              84
HAMBURGER PRICE RETAIL             002          150      150              84
PURCHASE PRICE CATTLE              003          100      100              84
PURCHASE PRICE TRIM                004          115      115              84
PLANT RECEIVING LABOR RATE         005         1000      910              84
PLANT CUTTING LABOR RATE           006         1120     1020              84
PLANT TENDERIZING LABOR RATE       007         1120     1020              84
PLANT GRINDING LABOR RATE          008         1000      910              84
PLANT PRIMAL SUB WRAPNG LABOR RATE 009          880      800              84
PLANT RETAIL WRAPNG PRCG LABOR RATE010          880      800              84
PLANT MOVE TO STOTAGE LABOR RATE   011         1000      910              84
PLANT SELECTION LABOR RATE         012         1000      910              84
PLNT CST SQ FT AVG SAN BLDG SHELL  013         4000     4200              84
PLNT CST SQ FT HIGH SAN BLDG SHELL 014         5200     4800              84
PLANT COST PER WEIGH SCALES        015       400000   420000              84
PLANT COST PER PALLET TRANSPORTER  016       550000   550000              84
PLANT COST MISC FACTOR             017         .027     .027              84
PLNT CST SQ FT CRCS HLDG CULR BDSHL018         4500     4500              84
PLNT RAIL CST PER FT CRCS HLDG CULR019         1800     1800              84
PLNT PRCSSNG AREA AVG SAN BLDG SHEL020         4000     4200              84
PLNT PRCSSNG AREA HI SAN BLDG SHELL021         5200     4800              84
PLNT PRCSNG AREA CST FT CTG LN CNVY022       100000   100000              84
PLNT PRCSNG AREA CST PER CTG TABLE 023        45000    45000              84
PLNT PRCSNG AREA CST CRC BRKG SAWS 024       500000   500000              84
PLNT PRCSG AREA CST PRIM BRKG SAWS 025       113500   120000              84
PLNT PRCSG AREA CST GRNDNG EQUIP NO026       125000   150000              84
PLNT PRCSG AREA CST STK TNDERIZERS 026        50000    90000              84
PLNT PRCSG AREA CST PRCNG EQUIP    028      4000000  4000000              84
PLNT PRCSG AREA CST OTHER EQUIP    029      2100000  2100000              84
PLNT PRCSG AREA CST FRZNG TNL CNVYR030       200000   200000              84
PLNT PRCSG AREA CST PER VACUM WRPLN031      3000000  3000000              84
PLNT PRCSG AREA CST PLTFRM SCALES  032       800000   600000              84
PLNT PRCSG AREA CST EQUIP INSTALLTN033          100      100              84
PLNT PRCSG AREA CST MISCELLANEOUS  034          100      100              84
PLNT SLCTN AREA CST AV S N BLDG SHL035         4000     4200              84
PLNT SLCTN AREA CST HI SAN BLDG SHL036         5000     4800              84
PLNT SLCTN AREA CST PER RACK SLOT  037         3500     3500              84
PLNT SLCTN AREA CST PER CART TOT BX038        14000    14000              84
PLNT SLCTN AREA CST PER TOTE BOX   039         3500     3500              84
PLNT SLCTN AREA CST PER FORK LIFT  040      2500000  2500000              84
PLNT SLCTN AREA CST PER PALLET     041         1000     1000              84
PLNT BLDG GEN CSTS COMPTR HRDWRE   042     2000000020000000              84
                                   043           00       00              84
PLNT BLDG GEN CSTS FT BLDG SHL 4   044         4000     4200              84
PLNT BLDG GEN CSTS FT BLDG SHL 5   045         4000     4200              84
PLNT BLDG GEN CSTS FT BLDG SHL 6,7 046         4000     4200              84
PLNT BLDG GEN CSTS FT BLDG SHL 3   047         4000     4200              84
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PLNT SUPPORT MNTNCE LABOR COEF	048	.036	.036	84
PLNT SUPPORT MNTNCE MATERIALS COEF	049	38	38	84
PLNT SUPPORT SANITATION LABOR COEF	050	.019	.019	84
CARBON DIOXIDE FREEZING COST COEF	051	.012	.012	84
CARBON DIOXIDE COST PER LB	052	.0250	225	84
CARBON DIOXIDE STORAGE TANK COST WK	053	50000	50000	84
PRIMALS/SUBPRIMALS-NONVACUUM WRAP	054	107	107	84
PRIMALS/SUBPRIMALS-VACUUM WRP FRONT	055	94	94	84
PRIMALS/SUBPRIMALS-VACUUM WRP REAR	056	96	96	84
LABOR/PLANT SUPERVISOR	057	05	05	84
PLANT INSURANCE TAX	058	.0133	.0133	84
STORE RECVG COSTS PER FT RAIL	059	3500	3500	84
STORE RECVG COSTS PER PALLET JACK	060	60000	60000	84
STORE COOLER BLDG SHEE COST PER FT	061	4000	4500	84
STORE COOLER RAIL COST PER FT	062	1200	1200	84
STORE CUTTING RM BLDG SHELL PER FT	063	3800	4200	84
STORE CUTTING AREA COST PER SLICER	064	120000	120000	84
STORE CUTTING AREA CST PER TNDRIZER	065	50000	90000	84
STORE CUTTING AREA COST PER SAW	066	120000	120000	84
STORE CUTTING AREA COST GRNDER BOX	067	300000	300000	84
STORE CUTTING AREA COST GRINDER	068	150000	150000	84
STORE CUTTING AREA COST PER TABLE	069	45000	45000	84
STORE CUTTING AREA COST PER PLATTER	070	600	1000	84
STORE CUTTING AREA COST PLTER CARTS	071	10000	15000	84
STORE CUTTING AREA COST KNIFE 1-5	072	200	200	84
STORE CUTTING AREA COST KNIFE 6,7	073	5000	5000	84
STORE WRPNG AREA BLDG SHL CST PERFT	074	4000	4200	84
STORE WRAPPING AREA MAN WRPNG EQUIP	075	45000	45000	84
STORE WRAPNG AREA AUTOM WRPNG EQUIP	076	1700000	1700000	84
STORE WRAPPING AREA NEW WRPNG EQUIP	077	600000	600000	84
STORE WRAPPNG AREA USED WRPNG EQUIP	078	100000	1000000	84
STORE DISPLAY AREA PER FT BLDG SHEL	079	2200	2700	84
STORE DISPLAY AREA PER FT DSPLY CAB	080	35000	40000	84
STORE RECEIVING LABOR RATE	081	1100	1250	84
STORE CUTTING LABOR RATE - PULLBACK	082	1100	1250	84
STORE STEAK TNDRZNG LABOR RATE	083	1100	1250	84
STORE GRINDING LABOR RATE	084	1100	1250	84
STORE WRAPPING LABOR RATE	085	870	1000	84
STORE PRICING LABOR RATE	086	870	1000	84
STORE DISPLAY LABOR RATE	087	870	1000	84
STORE SUPPORT MNTNANCE LABOR RATE	088	1000	1140	84
STORE SUPPORT SANITATN LABOR RATE	089	870	1000	84
STORE SUPPORT POWER PER KWH	090	03	400	84
STORE SUPPORT RETAIL PACKAGING	091	01	02	84
PLT TO STORE TRNSPRT PER MI 20 FRES	092	100	100	84
PLT TO STORE TRNSPRT PER MI 20 FROZ	093	110	110	84
PLT TO STORE TRNSPRT UNLOAD LABR RT	094	1100	1100	84
PLT TO STORE TRNSPRT PER MI 40 FRES	095	110	110	84
PLT TO STORE TRNSPRT PER MI 40 FROZ	096	120	120	84
	097	00	00	84
SUPERVISOR WAGE PER HOUR	098	2000	2000	84
MAINTENANCE LABOR COST PER HOUR	099	1000	1000	84
SANITATION LABOR COST PER HOUR	100	900	900	84
MERCHANDISING AND ADMIN. FACTOR	101	.0039	.0039	84
	102	00	00	84
PRODUCT PURCHASE PREMIUM	103	3484	3250	84

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COST PER LB FOR PACKAGING	104	01	02	84
STORE RCVG COSTS SCALE	105	200000	200000	84
TRANS CARC1000 RATE PACKER TO PLANT	106	.0369	.0155	84
PACKER DIRECT TO STORE FOR CARC 1	107	.035	.035	84
PACKER DIRECT TO STORE FOR BOXED 2	108	.030	.030	84
TRANS RATE PACKER TO PLANT 2,3	109	.0387	.0145	84
PLNT SUPT J3 MNTNCE	110	.112	.112	84
PLNT SUPT J3 SANITN	111	01	01	84
PLANT SUPPRT POWR CST COEFF	112	.014	.014	84
PLANT SUPPRT POWR CST COEFF FRZR	113	.0053	.0053	84
PRICE FAT SOLD FROM STORE	114	03	03	84
PRICE FAT SOLD FROM WAREHOUSE	115	10	10	84
PRICE BNE SOLD FROM STORE	116	02	02	84
PRICE BNE SOLD FROM WAREHOUSE	117	04	04	84
TRANS RATE PCKER TO PLNT CARC 600	118	.0349	.0306	84
TRANS RATE PCKER TO PLNT BOXD 600	119	.0367	.0294	84
TRANS RATE PCKER TO PLNT CARC 125	120	.0309	.0508	84
TRANS RATE PCKER TO PLNT BOXD 125	121	.0327	.0492	84
PURCHASE PREMIUM FOR TRAYREADY	122	8684	9750	84
RETAIL PRICE FOR TRAYREADY	123	250	280	84
GROUND BEEF PRICE FOR TRAYREADY	124	100	110	84
THIN CUTS PRICE	125	180	180	84

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