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PORT FEEDING SYSTEM
FOR AIRBORNE PERSONNEL
VOLUME 2
A COST BENEFIT ANALYSIS
OF THE USE OF CONVENIENCE
FOODS IN A MILITARY
CONSERVATION OPERATION

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A cost/benefit analysis was conducted to investigate the existing conventional in-port foodservice operations for the Landing Ship Dock USS Alamo (LSD-33) and Aircraft Carrier USS Kitty Hawk (CV-63) and one that incorporates a large percentage of convenience foods. This was undertaken to determine to what extent the use of convenience foods would have on reducing shipboard foodservice labor requirements while in-port. A 21-day A-ration menu cycle was designed for optimum use of convenience foods. The menu was used to compare		

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20. Abstract (cont'd)

Direct food and labor costs for the convenience food system versus the current conventional system. Daily foods costs for the convenience food systems averaged \$3.14 versus \$3.03 for the conventional system. Direct labor costs analysis based on monthly computation showed a labor cost reduction with the use of convenience food of 33.6 percent and 56.5 percent for the USS Alamo and USS Kitty Hawk, respectively. This Report is volume 2 of a four-volume series. The other titles are volume 1, An In-Port Feeding System for Shipboard Personnel; volume 3, A Personnel, Equipment and Facility Evaluation of the Enlisted Dining Facilities at NAS North Island and NAVSTA San Diego; and volume 4, Recommended Quality Control Requirements for a Central Military Food Service System. /

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PREFACE

During FY80 to FY82 the Operations Research and Systems Analysis Office at the US Army Natick Research and Development Laboratories (NLABS) conducted an investigation of the Navy in-port feeding system under Task AA, Project 1L162724AH99A, Analysis and Design of Military Feeding Systems, of the DoD Food Research Development Testing and Engineering Program. The military service requirement identification was USN 9-2 In-Port Feeding Systems for Shipboard Personnel. The purpose of this project was to develop and evaluate analytically alternative foodservice system concepts for providing meals to surface ship crew members during extended in-port periods. In particular, a system was desired to reduce onboard foodservice personnel labor requirements to provide the cooks time for leave, liberty, and training comparable with that enjoyed by other members of the crew, and, secondly, to reduce the loss of ships' force overhaul productivity resulting from messing delays. In addition, the proposed system was to provide highly acceptable and nutritious meals at a quality level that was equal to or better than that presently being served to shipboard personnel while in port.

As a means of reducing shipboard foodservice labor requirements during extended in-port periods, the use of convenience foods was proposed (see volume 1 in this series, NATICK/TR-83/035). Therefore, in support of this project, an Intergovernmental Personnel Act was awarded to Dr. Mary Q. Hawkins, College of Family Studies, San Diego State University, San Diego, CA to design a 21-day A-ration menu incorporating a maximum of commercially prepared convenience foods and subsequently determine their impact on both food and labor costs when compared to a conventional A-ration menu.

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A COST/BENEFIT ANALYSIS OF THE USE OF CONVENIENCE FOODS IN A MILITARY FOODSERVICE OPERATION

I. INTRODUCTION

The US Army Natick Research and Development Laboratories' (NLABS) investigation of alternative methods of feeding shipboard personnel during extended in-port periods has the objectives of both improving the quality of the foodservice offered as well as reducing foodservice labor requirements. Trends in commercial and institutional foodservice operations have shown an increasing use of prepared, convenience-type foods. This increase has been attributed to two factors: (1) the quality of prepared foods has increased significantly in recent years to where it is often very comparable to items prepared from scratch; and (2) convenience foods are more economical, when both food and labor preparation costs are considered. Therefore, as part of this project, an evaluation is performed of a foodservice system that includes many commercially available convenience foods. The cost/benefit analysis between the existing conventional foodservice operation and one that incorporates a large percentage of convenience foods was conducted at San Diego State University.

II. OBJECTIVES

The objectives of this study were to (1) design a high preference, 21-day, A-ration menu that permits maximum flexibility in substituting commercially available convenience foods for prepared from recipes that are in the Armed Forces Recipe Service; (2) analyze and compare food costs when a maximum of prepared convenience foods are introduced into the menu versus having all the items prepared from scratch, as is done in the conventional military foodservice system; (3) analyze and compare labor costs when a maximum of convenience foods are substituted into the menu in lieu of recipes made from scratch.

III. SUMMARY OF RESULTS AND CONCLUSIONS

A 21-day, A-ration menu cycle was designed for optimum use of convenience food production for Navy in-port feeding. The menu was used to compare direct food and labor costs for the projected convenience system and those of the current conventional system.

Food costs for the conventional system were determined by costing actual Navy standardized recipes and for the convenience system by computing per serving costs from vendor price lists where appropriate. A weighted average was used to project a meal daily food cost per customer for both systems. A most expensive choice food cost was computed for the convenience food system.

The conventional system direct labor cost was determined from actual number of positions available, pay rate codes, and hours worked. The convenience system direct labor cost was developed from a projected labor schedule utilizing the current "5 and 2" scheduling system.

The projected convenience food system resulted in an average daily cost of \$3.14 as compared to \$3.03 food cost for the conventional system over the 21-day menu cycle.

Convenience menu choice based on the most expensive items averaged \$3.79 per day for the 21-day cycle.

Direct labor cost analyses on a monthly basis showed a labor cost reduction with the use of convenience food of 33.6 percent (\$13,476.24) for the USS Alamo and 56.5 percent (\$29,282.06) for the USS Kitty Hawk.

IV. EXISTING SYSTEM

A. Introduction

When Naval ships are undergoing maintenance and/or renovations requiring extended in-port periods, it is necessary to provide meals for personnel stationed onboard. For major ship overhauls of one year or more in port, the messing and berthing functions are usually transferred to either an adjacent barge or ashore facilities.

However, for shorter duration in-port periods of two to four months, such as SRAs or PRAVs, no formal alternative methods of feeding the crew exist; the decision, instead, is left up to the ship's Captain and depends on the availability of local support services. These options often include: (1) continued feeding onboard the ship (even when maintenance and/or renovations are being done in the galley and messdecks); (2) feeding at the ashore dining facility, which is often quite a distance away, thereby requiring shuttle bus service and the subsequent loss of manhours on the job; (3) placing the crew on commuted rations (i.e., giving them a monetary allowance in lieu of meals); and (4) any combination of these three.

When a ship is deployed, the constraints placed upon its foodservice operation in terms of availability and location of storage areas, time between replenishment, product shelf life, etc., often result in inefficiency. There is no need, however, for a ship that is in port to provide meals in the same inefficient manner that is necessary when it is underway.

Data to define the present system were collected onboard two ships, the USS Alamo to represent small ships and the USS Kitty Hawk to represent the larger carriers.

B. Menus

Both ships used menus that were based primarily on the Armed Forces Recipe Service (i.e., all items were prepared from scratch). The Alamo usually offered only one choice of entree at the noon and evening meals due to space and equipment limitations, while a choice of two entrees was the norm onboard the Kitty Hawk. In addition, the Kitty Hawk operated a fast-food line at noon. Both ships operated on a five-week menu cycle.

C. Staffing

Foodservice staffing levels for the two ships are presented in Table 1 and are based on two watches (one on, one off) working a "5 and 2" schedule (each watch works an entire 14-hour day when on duty but only 7 days in a two-week period).

Table 1

Staffing levels for USS Kitty Hawk and USS Alamo

Rank	Pay rate	USS Kitty Hawk (CV-63)		USS Alamo (LSD-33)	
		Authorized	Actual	Authorized	Actual
ENS	O-1	0	0	1	1
CWO2	W-2	1	1	0	0
MSCM	E-9	1	1	0	0
MSCS	E-8	0	0	1	0
MSC	E-7	3	2	0	1
MS1	E-6	8	7	4	4
MS2	E-5	9	9	4	3
MS3	E-4	14	15	5	3
MSSN	E-3	11	15	5	8
MSSA	E-2	16	8	0	0
MSSR	E-1	7	12	0	0
		70	70	20	20

D. Serving Hours

Serving hours onboard each ship during the in-port period were as follows:

	USS Kitty Hawk	USS Alamo
Breakfast	0600-0730	0600-0745
Dinner	1100-1300	1100-1230
Supper	1630-1800	1630-1800

MIDRATS (midnight meals for on-duty watches) usually consisted of box lunches prepared at the ashore dining facility.

V. SYSTEM ANALYSIS

A. Methodology

A 21-day cycle high preference, A-ration menu was designed with the objective of maximum flexibility in interchanging commercially available convenience foods with existing recipes in the Armed Forces Recipe Service. As most of the convenience foods available today are applicable primarily to lunch and dinner meals, breakfasts remained prepared in the conventional method in both alternatives.

As shown in Table 2, each noon and evening meal permitted the customer a choice of two entrees, one starch, two vegetables, three salads, and two desserts. In designing the menu, consideration was given to the basic menu planning principles of color, shape, flavor, acceptability, variety, and nutritional value. Portion sizes for the convenience items were consistent with their conventionally prepared counterparts listed in the Armed Forces Recipe Service. It is important to emphasize, however, that the exact formulations of the convenience foods were not known and therefore could be one source of variation in comparing costs.

Two menus were analyzed from both food cost and labor cost viewpoints. The first menu was based entirely on the conventional method of food preparation listed in the Armed Forces Recipe Service, with food costs derived from 1981 computer recipe cost files provided by NLABS. The second menu substituted as many convenience foods as possible, with the cost of these items based on vendor price lists from the fall to 1980.

Two feeding levels, 500 and 1,000 men per day, were used to represent the different sizes of the ships.

1. **Food Costs.** Standard portion sizes, in accordance with the Armed Forces Recipe Service (Table 2), were established for each menu item and served as the basis for costing both the prepared from scratch and convenience foods. The conventional method and

Table 2

Twenty-one day menu cycle and direct weighted food costs for two production systems

Day 1								
Meal	Menu item	Weighted average	Conventional		Convenience		Most expensive choice	
			Cost/portion	Weighted cost	Cost/portion	Weighted cost		
Breakfast				.70		.70	.70	
Lunch	Chicken Noodle Soup 8 oz.	1.0	.036	.036	.095	.095	.095	
	Grilled Reuben Sandwich	.5	.342	.171	.318	.159		
	Baked Lasagna 8 oz.	.5	.920	.46	.800	.40	.80	
	French Fried Potatoes 3 oz.	.5	.069	.035	.069*	.035	.069	
	Broccoli 1/2 c.	.25	.105	.026	.105*	.026	.105	
	Whole Kernel Corn 1/2 c.	.25	.069	.017	.069*	.017		
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237	
	Cottage Cheese w/Peach #12+1	.5	.146	.073	.146*	.073		
	Cherry Pie 1/9	.5	.227	.114	.187	.094	.187	
	Tapioca Pudding #12 scoop	.5	.054	.027	.101	.05		
	Beverage	1.0	.10	.10	.10*	.10	.10	
		Meal Total			1.179		1.169	1.393
Dinner	Cream of Tomato Soup 8 oz.	1.0	.034	.034	.149	.149	.149	
	Sliced Roast Beef 3 oz.	.5	.933	.467	.600	.30		
	Fried Chicken 1/4	.5	.570	.285	.870	.435	.87	
	Mashed Potatoes 1/2 c.	.5	.033	.017	.035	.018	.035	
	Green Peas 1/2 c.	.25	.068	.017	.068*	.017	.068	
	Stewed Tomatoes 1/2 c.	.25	.067	.017	.067*	.017		
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237	
	Mixed Fruit Gelatin 2"x3"	.5	.075	.037	.075*	.037		
	Angel Food Cake 1/12	.5	.065	.033	.167	.29	.167	
	Chocolate Pudding 1/2 c.	.5	.071	.03	.104	.052		
	Beverage	1.0	.10	.10	.10*	.10	.10	
		Meal Total			1.157		1.292	1.625
Day 1 Totals				3.04		3.16	3.92	

*Items remain the same as in conventional system.

Day 2

Meal	Menu item	Conventional		Convenience		Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost
Breakfast				.70		.70
Lunch	Split Pea Soup 8 oz.	1.0	.075	.075	.162	.162
	BBQ Ham Steak 3-1/4 oz.	.5	.485	.242	.388	.388
	Pizza 4 oz. (sausage)	.5	.135	.068	.32 ea.	.16
	Sweet Potatoes 4 oz.	.5	.086	.048	.086*	.086
	Buttered Spinach 1/2 c.	.25	.076	.019	.076*	.076
	Carrots 1/2 c. (canned)	.25	.068	.015	.068*	.015
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.119
	Bing Cherry Gelatin 2"x3"	.5	.025	.01	.025*	.01
	Chocolate Chip Cookies	.5	.095	.048	.106	.063
	Butterscotch Pudding 1/2 c.	.5	.068	.029	.092	.046
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.774		.931
Dinner	Chicken w/Rice Soup 8 oz.	1.0	.068	.068	.103	.103
	Salisbury Steak w/Gravy 5 oz.	.5	.534	.267	.452	.452
	Polish Sausage Sandwich 3 oz.	.5	.347	.179	.374	.187
	German Potato Salad 4 oz.	.5	.081	.041	.081*	.04
	Brussels Sprouts 1/2 c.	.25	.114	.029	.114*	.029
	Succotash 1/2 c.	.25	.076	.02	.076*	.02
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.119
	Three Bean Salad 1/2 c.	.25	.086	.021	.066	.028
	Blackberry Pie 1/8	.5	.210	.105	.210	.105
	Spice Cake w/Butter Cream Frosting	.5	.070	.035	.178	.089
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.975		1.018
	Day 2 Totals			2.45		2.65
						1.207
						2.98

*Items remain the same as in conventional system.

Day 3

Meal	Menu item	Conventional		Convenience		Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost
Breakfast				.70		.70
Lunch	French Onion Soup 8 oz.	1.0	.038	.038	.108	.108
	Swiss Steak 5 oz.	.5	1.098	.549	.528	.264
	Pork Chop Suey 6 oz.	.5	.43	.215	.93	.465
	Steamed Rice 2/3 c.	1.0	.030	.030	.030*	.030
	Beets 1/2 c.	.5	.064	.032	.064*	.032
	Green Beans 1/2 c.	.5	.060	.030	.060*	.030
	Tossed Salad 3/4 c.	.5	.239	.120	.237	.120
	Orange Gelatin 2"x3"	.5	.028	.014	.028*	.014
	Lemon Meringue Pie 1/8	.5	.118	.059	.187	.094
	Brownies, Chocolate 2"x3"	.5	.102	.051	.198	.099
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.238		1.356
Dinner	Beef Vegetable Soup 8 oz.	1.0	.084	.084	.107	.107
	Veal Parmesan 6 oz.	.5	.829	.415	.544	.272
	Chicken A La King 6 oz.	.5	.59	.295	.465	.233
	Mashed Potatoes 4 oz.	.5	.068	.034	.035	.018
	Broccoli 1/2 c.	.25	.105	.026	.105*	.026
	Wax Beans 1/2 c.	.25	.069	.017	.069*	.017
	Tossed Salad 3/4 c.	.5	.239	.120	.237	.119
	Cole Slaw 1/2 c.	.5	.065	.033	.063	.027
	Yellow Cake w/Frosting 1/12	.5	.066	.033	.083	.042
	Blueberry Crisp 2"x3"	.5	.136	.068	.136	.068
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.225		1.029
	Day 3 Totals			3.16		3.09
						1.264
						3.63

* Items remain the same as in conventional system.

Day 4

Meal	Menu item	Weighted averages		Conventional		Convenience		Most expensive choices
		Cost/portion	Weighted cost	Cost/portion	Weighted cost	Cost/portion	Weighted cost	
Breakfast			.70		.70			
Lunch								
	Creem of Mushroom Soup 8 oz.	.125	.125	.131	.131	.131	.131	.131
	Macaroni Beef w/Tomato 8 oz.	.46	.23	.338	.169	.338	.169	.382
	Hot Roast Beef Sandwich 2 oz.2/2 sli.	.722	.361	.382	.191	.382	.191	.06
	French Fried Potatoes 3 oz.	.089	.035	.080	.03	.080	.03	.06
	Buttered Lima Beans 1/2 c.	.048	.012	.048*	.012	.048*	.012	.06
	Glazed Carrots 1/2 c.	.067	.017	.060	.015	.060	.015	.237
	Tossed Salad 3/4 c.	.239	.12	.237	.12	.237	.12	.189
	Cottage Cheese w/Peach #12+1	.146	.073	.146*	.073	.146*	.073	.10
	Apple Pie 1/9	.162	.078	.189	.085	.189	.085	.10
	Fruit Bar 2"x3"	.064	.027	.054*	.027	.054*	.027	.10
	Beverage	.10	.10	.10*	.10	.10*	.10	.10
	Meal Total		1.176		.96		1.089	
Dinner								
	Chicken Noodle Soup 8 oz.	.097	.097	.097*	.097	.097*	.097	.097
	Grilled Steak 4 oz.	2.05	1.025	2.05*	1.025	2.05*	1.025	2.05
	BBQ Chicken w/BBQ Sauce 10 oz.	.301	.15	.301*	.15	.301*	.15	.10
	Baked Potato 4 oz.	.02	.01	.02*	.01	.02*	.01	.10
	Cauliflower 1/2 c.	.10	.025	.10*	.025	.10*	.025	.237
	Peas 1/2 c.	.088	.017	.088*	.017	.088*	.017	.178
	Tossed Salad 3/4 c.	.239	.12	.237	.12	.237	.12	.10
	Potato Salad 1/2 c.	.077	.039	.086	.033	.086	.033	.10
	Pumpkin Pie 1/9	.086	.043	.178	.089	.178	.089	.10
	Chocolate Cake w/Frosting 2"x3"	.100	.05	.160	.08	.160	.08	.10
	Beverage	.10	.10	.10*	.10	.10*	.10	.10
	Meal Total		1.676		1.746		2.782	
Day 4 Totals			3.55		3.41		4.55	

*Items remain the same as in conventional system.

Day 5

Meal	Menu item	Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost	Most expensive choices
Breakfast				.70		.70	.70
	Lunch						
	Manhattan Clam Chowder 8 oz.	1.0	.348	.348	.169	.169	.169
	Fried Fish Portion 4 oz.	.5	.390	.195	.390*	.195	
	Sloppy Joe on Bun 2 oz./1	.5	.68	.34	.420	.21	.42
	French Fried Potatoes 3 oz.	.5	.68	.34	.080	.03	.06
	Spinach 1/2 c.	.25	.13	.033	.13*	.033	.13
	Squash 1/2 c.	.25	.051	.013	.051*	.013	
	Tossed Salad 3/4 c.	.5	.239	.24	.237	.12	.237
	Cottage Cheese w/Pineapple #12+1	.5	.133	.067	.133*	.067	
Dinner	Butterscotch Brownies	.5	.255	.128	.111	.056	
	Cherry Pie 1/12	.5	.282	.131	.188	.094	.188
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.63		1.09	1.304
	Navy Bean Soup 8 oz.	1.0	.045	.045	.082	.082	.082
	Baked Ham, canned 4 oz.	.5	.36	.175	.36*	.175	
	Spaghetti w/Meat Sauce 1 c./6 oz	.5	.653	.327	.471	.236	.471
	Escalloped Potatoes 4 oz.	.5	.089	.035	.089*	.035	.089
	Green Beans 1/2 c.	.25	.080	.015	.080*	.015	
	Harvard Beets 1/2 c.	.25	.084	.021	.084*	.021	.084
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237
	Mixed Fruit Gelatin 2"x3"	.5	.084	.042	.084*	.042	
	Carrot Cake w/Frosting 2"x3"	.5	.23	.12	.261	.131	.261
	Vanilla Pudding 1/2 c.	.5	.061	.031	.096	.048	
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.03		1.005	1.03
	Day 5 Totals			3.36		2.80	3.03

*Items remain the same as in conventional system.

Day 6

Meal	Menu Item	Conventional		Convenience		Most expensive choices
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost
Breakfast				.70		.70
Lunch	Chicken Vegetable Soup 8 oz.	1.0	.090	.090	.090*	.090
	Baked Meat Loaf 5 oz.	.5	.442	.221	.59	.59
	Knockwurst 4 oz.	.5	.40	.20	.40*	.20
	Baked Beans 1/2 c.	.5	.08	.04	.111	.111
	Sauerkraut 1/2 c.	.25	.055	.014	.055*	.014
	Green Beans 1/2 c.	.25	.060	.015	.060*	.015
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Macaroni Salad # scoop	.5	.100	.05	.065	.038
	Hermits 2	.5	.055	.055	.055*	.028
	Boston Cream Pie 1/9	.5	.11	.055	.158	.158
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.933		1.034
Dinner	Corn Chowder 8 oz.	1.0	.105	.105	.108	.108
	Corned Beef 3 oz.	.5	.447	.224	.62	.62
	Baked Chicken & Noodles 6 oz.	.5	.526	.263	.60	.30
	Boiled Potatoes 4 oz.	.5	.018	.009	.092	.046
	Carrots 1/2 c.	.25	.068	.015	.058	.015
	Broccoli 1/2 c.	.25	.118	.059	.118*	.059
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Three Bean Salad 1/2 c.	.5	.062	.031	.091	.046
	Peach Pie 1/9	.5	.181	.091	.189	.095
	Chocolate Pudding 1/2 c.	.5	.083	.047	.109	.055
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.084		1.254
	Day 6 Totals			2.70		2.99
						3.52

* Items remain the same as in conventional system.

Day 7

Meal	Menu item	Conventional		Convenience		Most expensive choices
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost
Breakfast				.70		.70
Lunch	Minestrone Soup 8 oz.	1.0	.100	.100	.103	.103
	Hot Turkey Sandwich 3 oz.	.5	.296	.148	.302	.151
	Tuna & Noodle Casserole 6 oz.	.5	.445	.223	.64	.32
	Mashed Potatoes 4 oz.	.5	.033	.016	.036	.018
	Zucchini 1/2 c.	.25	.083	.023	.083*	.023
	Beets 1/2 c.	.25	.084	.016	.084*	.016
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Cottage Cheese w/Peach #12+1	.5	.146	.073	.147*	.073
	Strawberry Rhubarb Pie 1/8	.5	.166	.078	.189	.095
	Apple Crisp 1/2 c.	.5	.109	.055	.153	.077
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.952		1.086
Dinner	Beef and Noodle Soup 8 oz.	1.0	.016	.016	.113	.113
	Grilled Ham Steaks 4 oz.	.5	.49	.245	.49*	.245
	BBQ Beef Slices 3 oz.	.5	.659	.33	.612	.306
	O'Brien Potatoes 3 oz.	.5	.080	.04	.24	.12
	Green Beans 1/2 c.	.25	.084	.016	.084*	.016
	Corn 1/2 c.	.25	.083	.016	.083*	.016
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Fruit Gelatin 2"x3"	.5	.061	.032	.061*	.032
	Banana Cake w/Frosting	.5	.062	.026	.178	.089
	Coconut Cream Pie 1/9	.5	.099	.06	.236	.118
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.991		1.275
	Day 7 Totals			2.64		3.07
						3.61

*Items remain the same in conventional system.

Day 8

Meal	Menu item	Weighted average	Conventional		Convenience		Most expensive choices
			Cost/portion	Weighted cost	Cost/portion	Weighted cost	
Breakfast				.70		.70	.70
Lunch	Cream of Tomato Soup 8 oz.	1.0	.149	.149	.149*	.149	.149
	Baked Chicken w/Cream of Mushroom Soup 8 oz.	.5	.320	.16	.80	.40	.96
	Pepper Steak 4 oz.	.5	1.185	.593	.96	.48	.018
	Buttered Noodles 1/2 c.	.5	.018	.009	.018*	.009	.082
	Green Beans 1/2 c.	.25	.080	.015	.080*	.015	.237
	Stewed Tomatoes 1/2 c.	.25	.082	.023	.082*	.023	.178
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.10
	Fruit Cocktail Gelatin 2"x3"	.5	.033	.017	.033*	.017	
	Devil's Food Cake w/Frosting 2"x3"	.5	.18	.086	.178	.089	
	Vanilla Cream Pudding 1/2 c.	.5	.081	.031	.086	.048	
	Beverage	1.0	.10	.10	.10*	.10	
	Meal Total			1.312		1.45	1.734
Dinner	Navy Bean Soup 8 oz.	1.0	.045	.045	.082	.082	.082
	Veal Outlet 4 oz.	.5	.460	.276	.450*	.275	.45
	Baked Fish 4 oz.	.5	.386	.183	.386*	.183	.043
	Baked Potato 4 oz.	.5	.043	.027	.043*	.027	.088
	Broccoli 1/2 c.	.25	.088	.022	.088*	.022	.237
	Beets 1/2 c.	.25	.084	.016	.084*	.016	.282
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.10
	Three Bean Salad 1/2 c.	.5	.086	.043	.086	.028	
	Chesecake 1/8	.5	.22	.11	.282	.15	
	Dutch Apple Pie 1/9	.5	.34	.17	.30	.15	
	Beverage	1.0	.10	.10	.10*	.10	
	Meal Total			1.111		1.153	1.282
	Day 8 Totals			3.12		3.30	3.73

*Items remain the same as in conventional system.

Day 9

Meal	Menu item	Conventional		Convenience		Most expensive choices
		Weighted average	Cost/portion	Weighted cost	Cost/portion	
Breakfast				.70		.70
Lunch	Beef Vegetable Soup 8 oz.	1.0	.096	.096	.103	.103
	Newport Fried Chicken 10 oz.	.5	.57	.285	.87	.87
	Braised Beef Tips w/Gravy 6 oz.	.5	.681	.341	.683	.342
	French Fried Potatoes 3 oz.	.5	.089	.035	.080	.06
	Pears 1/2 c.	.25	.088	.017	.088*	.068
	Carrots 1/2 c.	.25	.058	.015	.058*	.029
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Cottage Cheese w/Peach #12+1	.5	.146	.073	.146*	.073
	Cherry Pie 1/8	.5	.282	.141	.189	.095
	Sugar Cookies 2 (mix)	.5	.055	.014	.062	.031
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.237		1.392
						1.727
Dinner	Cream of Chicken Soup 8 oz.	1.0	.115	.115	.115*	.115
	Stuffed Cheese Shells 10 oz.	.5	.72	.36	1.06	1.06
	Roast Pork Loin 4 oz.	.5	.740	.37	.398	.199
	Mashed Potatoes 4 oz.	.5	.033	.017	.036	.018
	Spinach 1/2 c. (frozen)	.25	.11	.028	.11*	.028
	Squash 1/2 c.	.25	.073	.018	.073*	.018
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Bing Cherries 1/2 c.	.5	.122	.061	.122*	.061
	Pecan Pie 1/8	.5	.166	.083	.225	.113
	Tapioca Pudding 1/2 c.	.5	.064	.027	.101	.051
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.299		1.348
						1.872
Day 9 Totals				3.24	3.44	4.30

*Items remain the same as in conventional system.

Day 10

Meal	Menu item	Conventional			Convenience			Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost	Weighted cost	
Breakfast				.70		.70	.70	
Lunch	Split Pea Soup 8 oz.	1.0	.075	.075	.162	.162	.162	.162
	Hot Roast Pork Sandwich 4 oz.	.5	.398	.199	.398*	.199	.199	
	Stuffed Cabbage 8 oz.	.5	.516	.258	1.54	.77	.77	1.54
	Escalop Potatoes 4 oz.	.5	.15	.075	.15*	.075	.075	.15
	Whole Kernel Corn 1/2 c.	.25	.069	.017	.069*	.017	.017	.069
	Beets 1/2 c.	.25	.084	.116	.084*	.016	.016	
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.12	.237
	Three Bean Salad 1/2 c.	.5	.086	.043	.056	.028	.028	
	Yellow Cake w/Orange Frosting 2"x3"	.5	.073	.037	.178	.089	.089	.178
	Chocolate Chip Cookies 2, 2"	.5	.084	.047	.100	.05	.05	
	Beverage	1.0	.10	.10	.10*	.10	.10	.10
	Meal Total			.987		1.626	1.626	2.436
Dinner	Beef & Noodle Soup 8 oz.	1.0	.016	.016	.113	.113	.113	.113
	Roast Turkey 2 oz.	.5	.581	.296	.311	.155	.155	
	Swedish Meatballs 6 oz.	.5	.527	.269	.527*	.26	.26	.527
	Buttered Noodles 1/2 c.	.5	.018	.009	.018*	.009	.009	.018
	Succotash 1/2 c.	.25	.076	.038	.076*	.038	.038	
	Fried Cauliflower 1/2 c.	.25	.118	.03	.118*	.03	.03	.118
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.12	.237
	Lime Gelatin 2"x3"	.5	.028	.014	.028*	.014	.014	
	German Chocolate Cake 1/12	.5	.110	.055	.406	.203	.203	.406
	Blueberry Pie 1/9	.5	.247	.124	.189	.095	.095	
	Beverage	1.0	.10	.10	.10*	.10	.10	.10
	Meal Total			1.071		1.146	1.146	1.519
	Day 10 Totals			2.76		3.47	3.47	4.66

*Items remain the same as in conventional system.

Day 11

Meal	Menu item	Weighted average		Conventional		Convenience		Most expensive choice
		Cost/portion	Weighted cost	Cost/portion	Weighted cost	Cost/portion	Weighted cost	
Breakfast			.70		.70		.70	.70
Lunch								
	Cream of Mushroom Soup 8 oz.	.179	.179	.131	.131	.131	.131	.131
	Hot BBQ Beef Sandwich 3 oz./2 sl.	.592	.296	.402	.201	.402	.201	.428
	Pork Chow Mein 6 oz.	.44	.22	.429	.214	.429	.214	.428
	Steamed Rice 1/2 c.	.030	.015	.030*	.015	.030*	.015	.03
	Carrots 1/2 c.	.068	.016	.068*	.016	.068*	.016	.06
	Green Beans 1/2 c.	.060	.015	.060*	.015	.060*	.015	.06
	Tossed Salad 3/4 c.	.239	.12	.237	.12	.237	.12	.237
	Cottage Cheese w/Pineapple #12+1	.133	.067	.133*	.067	.133*	.067	.178
	Marble Cake w/Frosting 1/12	.082	.041	.178	.089	.178	.089	.178
	Butterscotch Pudding 1/2 c.	.061	.031	.096	.048	.096	.048	.10
	Beverage	.10	.10	.10*	.10	.10*	.10	.10
	Meal Total		1.10		1.016		1.016	1.164
Dinner								
	Tomato Rice Soup 8 oz.	.084	.084	.071	.071	.071	.071	.071
	Fried Fish Filet 4 oz.	.353	.177	.353*	.177	.353*	.177	.77
	Stuffed Pepper 4 oz.	.584	.292	.770	.385	.770	.385	.77
	French Fried Potatoes 3 oz.	.089	.035	.090	.035	.090	.035	.06
	Lima Beans 1/2 c.	.085	.016	.085*	.016	.085*	.016	.068
	Stewed Tomatoes 1/2 c.	.067	.017	.067*	.017	.067*	.017	.237
	Tossed Salad 3/4 c.	.239	.12	.237	.12	.237	.12	.237
	Gelatin Salad 2"x3"	.04	.02	.04*	.02	.04*	.02	.30
	Lemon Meringue Pie 1/8	.129	.065	.300	.15	.300	.15	.30
	Banana Cake w/Frosting 2"x3"	.18	.09	.178	.089	.178	.089	.10
	Beverage	.10	.10	.10*	.10	.10*	.10	.10
	Meal Total		1.016		1.18		1.18	1.805
Day 11 Totals			2.82		2.90		2.90	3.47

* Items remain the same as in conventional system.

Day 12

Meal	Menu item	Weighted average	Conventional		Convenience		Most expensive choice
			Cost/portion	Weighted cost	Cost/portion	Weighted cost	
Breakfast				.70		.70	.70
Lunch	French Onion Soup 8 oz.	1.0	.306	.306	.112	.112	.112
	Hot Roast Beef Sandwich 3 oz./2 sli.	.5	.727	.364	.622	.311	.622
	Chicken Fried Beef Patties 3 oz.	.5	.679	.34	.130	.065	.065
	Oven Browned Potatoes 4 oz.	.5	.018	.009	.082	.046	.082
	Mixed Greens 1/2 c.	.25	.076	.019	.076*	.019	.076
	Whole Kernel Corn 1/2 c.	.25	.089	.017	.089*	.017	.089*
	Tossed Salad 3/4 c.	.5	.239	.24	.237	.12	.237
	Macaroni Salad 1/2 c.	.5	.10	.06	.065	.033	.065
	Peach Pie 1/9	.5	.176	.088	.189	.095	.189
	Strawberry Shortcake 2 oz.	.5	.204	.102	.303	.152	.303
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.636		1.07	1.542
Dinner	Corn Chowder 8 oz.	1.0	.105	.105	.156	.156	.156
	Beef Stew 8 oz.	.5	.704	.352	1.36	.68	1.36
	Baked Lasagna 3"x4"	.5	.46	.23	.80	.40	.80
	Mashed Potatoes 1/2 c.	.5	.033	.017	.035	.018	.035
	Peas 1/2 c.	.25	.088	.017	.088*	.017	.088
	Beets 1/2 c.	.25	.084	.016	.084*	.016	.084*
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237
	Cottage Cheese #12 scoop	.5	.086	.043	.086*	.043	.086*
	Yellow Cake w/Frosting 1/12	.5	.102	.051	.198	.099	.198
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.084		1.738	2.154
	Day 12 Totals			3.42		3.51	4.40

*Items remain the same as in conventional system.

Day 13

Meal	Menu Item	Conventional			Convenience			Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost	Weighted cost	
Breakfast				.70		.70		.70
Lunch								
	Cream of Potato Soup 8 oz.	1.0	.073	.073	.168	.168	.168	.168
	Grilled Liver w/Onions 4 oz	.5	.326	.163	.326	.163	.326	.326
	Pizza, Pepperoni 4 oz.	.5	.133	.067	.293	.147		
	Au Gratin Potatoes 4 oz.	.5	.176	.088	.176*	.088		.176
	Buttered Cauliflower 1/2 c.	.25	.118	.03	.118*	.03		.118
	Green Beans 1/2 c.	.25	.060	.015	.060*	.015		
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12		.237
	Cottage Cheese w/Peach #12+1	.5	.146	.073	.146*	.073		
	Apple Crisp 2"x3"	.5	.102	.051	.102*	.051		
	Chocolate Pudding 1/2 c.	.5	.061	.031	.104	.052		.104
	Beverage	1.0	.10	.10	.10*	.10		.10
	Meal Total			.811		1.007		1.229
Dinner								
	Chicken Rice Soup, canned 8 oz.	1.0	.126	.126	.126*	.126		.126
	Chicken Pot Pie 6 oz.	.5	.404	.202	.600	.30		
	BBQ Spare Ribs 10 oz.	.5	.829	.415	.829*	.415		.829
	French Fried Potatoes 3 oz.	.5	.069	.035	.060	.03		.06
	Brussels Sprouts 1/2 c.	.25	.084	.021	.084*	.021		.084
	Peas 1/2 c. (frozen)	.25	.068	.017	.068*	.017		
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12		.237
	Potato Salad 1/2 c.	.5	.094	.047	.065	.033		
	Carrot Cake, round 1/16	.5	.23	.115	.261	.131		.261
	Fruit Bars 2"x2"	.5	.054	.027	.054*	.027		
	Beverage	1.0	.10	.10	.10*	.10		.10
	Meal Total			1.225		1.32		1.697
Day 13 Totals				2.73		3.30		3.63

*Items remain the same as in conventional system.

Day 14

Meal	Menu Item	Conventional			Convenience			Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost	Weighted cost	
Breakfast				.70		.70	.70	
Lunch	Clam Chowder 8 oz.	1.0	.323	.323	.135	.135	.135	.135
	Grilled Steak 6 oz.	.5	2.06	1.025	2.06*	1.025	2.06	2.06
	Fried Chicken 10 oz.	.5	.570	.285	.87	.435	.435	.435
	Mashed Potatoes 4 oz.	.5	.033	.017	.035	.018	.018	.035
	Zucchini 4 oz.	.25	.033	.008	.035	.009	.009	.009
	Beets 1/2 c.	.25	.064	.016	.064*	.016	.016	.064
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.12	.237
	Gelatin w/Peach 2"x3"	.5	.061	.031	.061*	.031	.031	.031
	Banana Cream Pie 1/9	.5	.084	.047	.187	.094	.094	.187
	Oatmeal Cookies, 2, 3"	.5	.068	.034	.084	.042	.042	.084
	Beverage	1.0	.10	.10	.10*	.10	.10	.10
	Meal Total			2.006		2.025	2.808	
Dinner	Beef w/Barley Soup 8 oz.	1.0	.021	.021	.10	.10	.10	.10
	Grilled Pork Steaks 5 oz.	.5	.748	.374	.748*	.374	.374	.374
	Cheese Ravioli 6 oz.	.5	.497	.249	.497*	.249	.249	.249
	Escallop Potatoes 4 oz.	.5	.150	.075	.150*	.075	.075	.075
	Green Beans 1/2 c.	.25	.060	.015	.060*	.015	.015	.015
	Corn 1/2 c.	.25	.069	.017	.069*	.017	.017	.069
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.12	.237
	Cole Slaw 1/2 c.	.5	.046	.023	.053	.027	.027	.027
	Cherry Pie 1/8	.5	.278	.139	.189	.095	.095	.189
	Coconut Cake w/Frosting 2"x3"	.5	.063	.031	.178	.089	.089	.178
	Beverage	1.0	.10	.10	.10*	.10	.10	.10
	Meal Total			1.164		1.261	1.219	
	Day 14 Totals			3.87		3.99	4.73	

* Items remain the same as in conventional system.

Day 15

Meal	Menu item	Conventional		Convenience		Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost
Breakfast				.70		.70
Lunch						
	Cream of Chicken Soup 8 oz.	1.0	.115	.115	.049	.049
	Grilled Ham & Cheese Sandwich 2 oz./2 sli.	.5	.275	.138	.275*	.138
	Salisbury Steak 5 oz.	.5	.508	.254	.78	.39
	Oven Brown Potato 4 oz.	.5	.018	.009	.018*	.009
	Whole Kernel Corn 1/2 c.	.25	.063	.016	.063*	.016
	Green Bean 1/2 c.	.25	.064	.016	.064*	.016
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Red Gelatin w/Banana 2"x3"	.5	.043	.022	.043*	.022
	Apple Crisp 1/2 c.	.5	.109	.055	.153	.077
	Pumpkin Pie 1/9	.5	.088	.043	.25	.125
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.938		1.112
Dinner						
	Cream of Potato Soup 8 oz.	1.0	.073	.073	.168	.168
	Swiss Steak 5 oz.	.5	1.08	.545	.380	.19
	Chicken Cacciatore 6 oz.	.5	.59	.295	.831	.416
	Mashed Potatoes 1/2 c.	.5	.033	.017	.035	.018
	Peas 1/2 c.	.25	.068	.017	.068*	.017
	Carrots, canned 1/2 c.	.25	.068	.015	.068*	.015
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Three Bean Salad	.5	.088	.043	.066	.028
	Cheesecake 1/8	.5	.22	.11	.292	.146
	Brownies, Chocolate 2"x3"	.5	.102	.051	.198	.099
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.386		1.317
Day 15 Totals				3.02		3.13
						1.731
						3.93

*Items remain the same as in conventional system.

Day 16

Meal	Menu item	Conventional		Convenience		Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost
Breakfast				.70		.70
Lunch	Split Pea Soup 8 oz.	1.0	.075	.075	.162	.162
	Franks w/Cheese & Bacon 3 oz./1 sli/1 sli	.5	.374	.187	.374*	.187
	Sloppy Joes on Bun 4 oz./1	.5	.68	.34	.45	.225
	French Fried Potatoes 3 oz.	.5	.069	.035	.060	.03
	Broccoli 1/2 c.	.25	.105	.026	.105*	.026
	Beets 1/2 c.	.25	.064	.016	.064*	.016
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Potato Salad 1/2 c.	.5	.077	.037	.066	.033
	Boston Cream Pie 1/9	.5	.122	.061	.250	.126
	Chocolate Chip Cookies 2, 2"	.5	.094	.047	.100	.05
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.046		1.074
Dinner	Beef Vegetable Soup 8 oz.	1.0	.084	.084	.107	.107
	Chicken Chow Mein 6 oz.	.5	.41	.205	.420	.21
	Breaded Pork Chops 5 oz.	.5	.230	.115	.230*	.115
	Steamed Rice 1/2 c.	.5	.030	.015	.030*	.015
	Green Beans 1/2 c.	.25	.060	.015	.060*	.015
	Succotash 1/2 c.	.25	.076	.019	.076*	.019
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Apple Sauce 1/2 c.	.5	.036	.018	.083*	.018
	Chocolate Cake w/Frosting 1/16	.5	.071	.036	.178	.089
	Blueberry Pie 1/9	.5	.210	.105	.210	.105
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.832		.913
	Day 16 Totals			2.58		2.69
						1.18
						3.24

* Items remain the same as in conventional system.

Day 17

Meal	Menu item	Conventional		Convenience		Most expensive choice
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost
Breakfast				.70		.70
Lunch	French Onion Soup 8 oz.	1.0	.036	.036	.081	.081
	Breaded Chipper Perch 4 oz.	.5	.621	.311	.621*	.621
	Turkey Pot Pie 1/6 oz.	.5	.546	.273	.570	.285
	Mashed Potatoes 4 oz.	.5	.033	.017	.035	.018
	Whole Kernel Corn 1/2 c.	.25	.063	.016	.063*	.016
	Spinach 1/2 c.	.25	.130	.033	.130*	.033
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Cottage Cheese 2/Peach #12+1	.5	.146	.073	.146*	.073
	Angel Food Cake 1/12	.5	.065	.033	.167	.089
	Butterscotch Pudding 1/2 c.	.5	.058	.029	.092	.046
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			1.005		1.172
						1.371
Dinner	Chicken Noodle Soup 8 oz.	1.0	.036	.036	.095	.095
	Baked Ham 4 oz.	.5	.350	.175	.358	.175
	Meat Loaf 5 oz.	.5	.442	.221	.590	.245
	Candied Sweet Potatoes 4 oz.	.5	.142	.071	.142*	.071
	Cauliflower w/Cheese Sauce 1/2 c.	.25	.130	.033	.132	.066
	Stewed Tomatoes 1/2 c.	.25	.067	.017	.067*	.017
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12
	Cole Slaw 1/2 c.	.5	.046	.023	.053	.027
	Yellow Cake w/Orange Frosting 1/16	.5	.066	.033	.083	.041
	Dutch Apple Pie 1/9	.5	.141	.071	.260	.13
	Beverage	1.0	.10	.10	.10*	.10
	Meal Total			.90		1.087
						1.556
	Day 17 Totals			2.61		2.96
						3.63

* Items remain the same as in conventional system.

Day 18

Meal	Menu item	Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost	Most expensive choice
Breakfast						.70	.70
	Lunch						
	Manhattan Clam Chowder 8 oz.	1.0	.348	.348	.124	.124	.124
	Hot Roast Turkey Sandwich 3 oz./1 sli.	.5	.286	.143	.321	.161	
	Veal Cutlet 4 oz.	.5	.460	.225	.388	.194	.388
	Mashed Potatoes 1/2 c.	.5	.033	.017	.036	.018	.036
	Green Peas 1/2 c.	.25	.068	.017	.088*	.017	
	Cabbage 1/2 c. (frozen)	.25	.076	.019	.076*	.019	.076
	Tossed Salad 3/4.	.5	.239	.12	.237	.12	.237
	Cottage Cheese w/Pineapple # 2"	.5	.068	.034	.084	.042	
Beverage	1.0	.10	.01	.10*	.10	.10	
	Meal Total			1.149		.955	1.147
Dinner							
	Navy Bean Soup 8 oz.	1.0	.045	.045	.082	.082	.082
	Beef Tips w/Gravy 6 oz.	.5	.681	.341	1.18	.59	.59
	Baked Chicken & Noodles 6 oz.	.5	.513	.257	.60	.30	
	Steamed Rice 1/2 c.	.5	.030	.015	.030*	.015	.03
	Zucchini 1/2 c.	.25	.083	.023	.083*	.023	
	Broccoli 1/2 c.	.25	.106	.026	.106*	.026	.105
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237
	Cottage Cheese #12 scoop	.5	.086	.048	.086*	.048	
	Chocolate Pudding 1/2 c.	.5	.083	.047	.109	.055	
	Butterscotch Brownies 2"x3"	.5	.266	.128	.111	.056	.111
	Beverage	1.0	.10	.10	.10*	.18	.10
		Meal Total			1.15	1.415	1.255
Day 18 Totals				3.00	3.07	3.10	

* Items remain the same as in conventional system.

Day 19

Meal	Menu item	Weighted average	Conventional		Convenience		Most expensive choice
			Cost/portion	Weighted cost	Cost/portion	Weighted cost	
Breakfast				.70		.70	.70
Lunch	Chicken Vegetable Soup 8 oz.	1.0	.054	.054	.058	.058	.058
	Macaroni & Beef w/Tomato 8 oz.	.5	.46	.23	.338	.169	
	Grilled Ham Steaks 4 oz.	.5	.49	.245	.49*	.245	.49
	French Fried Potatoes 3 oz.	.5	.089	.035	.080	.03	.060
	Glazed Carrots 1/2 c.	.25	.080	.015	.080*	.015	.060
	Green Beans 1/2 c.	.25	.080	.015	.080*	.015	
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237
	Three Bean Salad 1/2 c.	.5	.082	.031	.091	.046	
	Strawberry Shortcake 2"x3"	.5	.21	.105	.21*	.105	.21
	Banana Cream Pie 1/9	.5	.10	.05	.21	.106	.10
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.00		1.008	1.215
Dinner	Cream of Tomato Soup 8 oz.	1.0	.034	.034	.149	.149	.149
	Spaghetti w/Meat Sauce 1 c./6 oz.	.5	.653	.327	.471	.236	
	Pepper Steak 4 oz.	.5	1.186	.593	.96	.48	.96
	Baked Potato 4 oz.	.5	.018	.009	.018*	.009	.018
	Peas 1/2 c.	.25	.068	.017	.068*	.017	
	Corn 1/2 c.	.25	.069	.017	.069*	.017	.069
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237
	Red Gelatin 2"x3"	.5	.028	.014	.028*	.014	
	Peach Cobbler 2"x3"	.5	.295	.148	.296*	.148	.295
	Yellow Cake w/Frosting 2"x3"	.5	.086	.033	.083	.042	
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.412		1.332	1.828
	Day 19 Totals			3.11		3.04	3.74

* Items remain the same as in conventional system.

Day 20

Meal	Menu item	Conventional			Convenience			Most expensive choices
		Weighted average	Cost/portion	Weighted cost	Cost/portion	Weighted cost	Weighted cost	
Breakfast				.70		.70	.70	
Lunch	Beef w/Berley Soup 8 oz.	1.0	.021	.021	.101	.101	.101	.101
	Chicken Fried Beef Patties 5 oz.	.5	1.11	.555	.328	.169	.169	.532
	Hot Roast Pork Sandwich 3 oz./2 sli.	.5	.532	.266	.532*	.266	.266	.036
	Mashed Potatoes 1/2 c.	.5	.033	.017	.035	.018	.018	.105
	Broccoli 1/2 c.	.25	.105	.026	.105*	.026	.026	.237
	Squash 1/2 c.	.25	.051	.013	.051*	.013	.013	.101
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.12	.038
	Macaroni Salad 1/2 c.	.5	.100	.05	.085	.038	.038	.131
	Carrot Cake 1/16	.5	.23	.115	.261	.131	.131	.079
	Chocolate Cream Pie 1/9	.5	.110	.055	.158	.079	.079	.10
	Beverage	1.0	.10	.10	.10*	.10	.10	
	Meal Total			1.338		1.061	1.061	1.371
Dinner	Clam Chowder 8 oz.	1.0	.323	.323	.187	.187	.187	.613
	Chili 8 oz.	.5	.440	.22	.613	.307	.307	.08
	Fried Shrimp 3 oz.	.5	.591	.296	.591*	.296	.296	.11
	French Fried Potatoes 3 oz.	.5	.089	.035	.080	.03	.03	.237
	Spinach 1/2 c.	.25	.110	.028	.110*	.028	.028	.408
	Lima Beans 1/2 c.	.25	.048	.012	.048*	.012	.012	.10
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.12	
	Cole Slaw 1/2 c.	.5	.046	.023	.063	.027	.027	
	German Chocolate Cake 2"x3"	.5	.110	.055	.406	.203	.203	
	Tapioca Pudding 1/2 c.	.5	.064	.027	.101	.061	.061	
	Beverage	1.0	.10	.10	.10*	.10	.10	
	Meal Total			1.239		1.361	1.361	1.713
	Day 20 Totals			3.28		3.12	3.12	3.78

*Items remain the same as in conventional system.

Day 21

Meal	Menu item	Weighted average	Conventional		Convenience		Most expensive choices
			Cost/portion	Weighted cost	Cost/portion	Weighted cost	
Breakfast				.70		.70	.70
Lunch							
	Cream of Mushroom Soup 8 oz.	1.0	.125	.125	.130	.130	.130
	Steak Sandwich 3 oz.	.5	.920	.46	.920*	.46	.92
	Roast Turkey w/Gravy 3 oz./2 oz.	.5	.548	.274	.373	.187	
	Candied Sweet Potatoes 4 oz.	.5	.142	.071	.142*	.071	.142
	Green Beans 1/2 c.	.25	.060	.015	.060*	.015	
	Whole Kernel Corn 1/2 c.	.25	.069	.017	.069*	.017	.069
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237
	Cottage Cheese w/Peach #12+1	.5	.146	.073	.146*	.073	
	Strawberry Rhubarb Pie 1/8	.5	.156	.078	.189	.095	.189
	Boston Cream Pie 1/8	.5	.100	.055	.158	.079	
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.388		1.347	1.787
Dinner							
	Vegetable Beef Soup 8 oz.	1.0	.096	.096	.103	.103	.103
	Fried Fish Filet 4 oz.	.5	.390	.195	.390*	.195	
	Beef Stew 6 oz.	.5	.69	.395	.720	.36	.72
	Mashed Potatoes 1/2 c.	.5	.033	.017	.035	.018	.035
	Brussels Sprouts 1/2 c.	.25	.114	.029	.114*	.029	.114
	Succotash 1/2 c.	.25	.076	.019	.076*	.019	
	Tossed Salad 3/4 c.	.5	.239	.12	.237	.12	.237
	Gelatin w/Fruit 2"x3"	.5	.061	.031	.061*	.031	
	Banana Cake w/Frosting 2"x3"	.5	.052	.026	.178	.089	.178
	Apple Crisp 2"x3"	.5	.109	.055	.153	.077	
	Beverage	1.0	.10	.10	.10*	.10	.10
	Meal Total			1.083		1.141	1.487
	Day 21 Totals			3.17		3.19	3.97

*Items remain the same as in conventional system.

convenience system food costs were computed for each day of the 21-day menu cycle (Table 2) using a recipe computer food cost listing. For those menu items not listed in this record, the standard recipe was given a per serving cost using available raw ingredient price lists.

The convenience foodservice system combined both convenience and selected conventional food costs because the conventional recipe remained on the menu when it was not available in convenience form. As stated previously, selected vendor price lists were used to compute per portion food costs for each item listed on the 21-day menu cycle. Menu items not available as a convenience product often could be prepared by using ingredients in convenience form. For example, cole slaw could be prepared from precut cabbage, onions and other fresh vegetables to require only final mixing, dressing and portioning.

A weighted food cost average was computed for each meal and for the total day to project a meal/daily food cost per customer for both systems. Weights used were based upon the number of menu items available within a category such as entrees, salads or desserts. Where two choices, such as entrees, were available, a 50 percent/50 percent selection ratio indicating equal preference was used; for vegetables a 50 percent/25 percent/25 percent selection ratio was used assuming that 50 percent of the customers would select the starch and selection would be divided between the two vegetables available.

A maximum food cost was also computed for the most expensive choice in each day's menu for the convenience food system. This represents the maximum daily food cost that might be selected by an individual.

Breakfasts remained the same in both alternatives and were prepared in the conventional method. A food cost of \$0.70 per customer was computed.

2. Labor Costs. Labor cost for the conventional foodservice system was determined through use of the Navy military standard pay rates by grade (Table 3) and the staffing levels scheduled for the USS Alamo and USS Kitty Hawk (Table 1).

Labor costs for the convenience foods system were projected by first estimating the number of servings to be prepared for each of the two customer levels (i.e., 500, 1,000 meals). An estimate of the number of personnel selecting a given item was based on a weighted average use a 50 percent/50 percent ratio in menu item categories where two choices were available. Table 4 shows a three-day sample of volume requirements used to project labor requirements for two customer levels.

The skill levels reflected in the manning schedules were used to determine the levels of qualified skills required for preparing and serving convenience foods. From these data, a labor time schedule for the convenience foodservice system was developed for the two feeding levels (applying a "5 and 2" schedule for all personnel). The schedule listed individual work assignments throughout the day for the production of the meals. Time requirements and division of work assignments were based upon the degree of preparation required, the volume to be prepared (Table 4), and the expected level of skill as related to the rank available on each ship. Tables 5 and 6 show individual assignments for a three-day period for the USS Alamo and the USS Kitty Hawk, respectively.

Table 3**Estimated composite military standard pay rates (effective 1 October 1980)**

Rank/grade	FY 81 Estimated hourly	FY 81 Estimated monthly	Estimated FY 81
O-10	30.73	5,344.85	64,138.14
O-9	29.61	5,169.92	62,039.07
O-8	28.55	4,067.79	59,613.49
O-7	25.74	4,478.01	53,736.10
O-6	23.27	4,048.48	48,581.73
O-5	19.01	3,307.97	39,695.68
O-4	15.77	2,744.33	32,932.02
O-3	12.92	2,248.72	26,984.66
O-2	9.94	1,729.79	20,757.43
O-1	7.37	1,282.76	15,393.15
W-4	14.96	2,602.45	31,229.44
W-3	12.03	2,093.24	25,118.83
W-2	10.40	1,809.47	21,713.68
W-1	8.84	1,537.37	18,448.46
E-9	12.63	2,198.19	26,378.27
E-8	10.83	1,885.27	22,623.27
E-7	9.26	1,611.23	19,334.73
E-6	7.79	1,354.68	16,256.10
E-5	6.57	1,142.83	13,713.90
E-4	5.59	971.79	11,661.48
E-3	4.98	866.84	10,402.04
E-2	4.51	785.21	9,422.48
E-1	4.01	697.75	8,372.94
Cadets	3.09	538.37	6,460.46

174 Hours = Military Man Month.
2,088 Hours = Military Man Year.

Table 4

Sample three-day production estimate for two customer levels

Day 1

Item	500	1000
A. Lunch:		
Chicken Noodle Soup 11\$/#5 cn	500-45½ cns	1000-91 cns
Grilled Reuben Sandwich* .3 min/batch	250-125#	500-250#
Baked Lasagna	250-11 pans	500-21 pans
French Fried Potatoes	250-50#	500-100#
Broccoli	125-25#	250-50#
Whole Kernel Corn	125-5#10 cns	250-10#10 cns
Tossed Salad 20\$/gal 1#-2 qt	250-12½ gal/25#	500-25 gal/50#
Peach w/Cottage Cheese 32/#10 cn	250-9#10 cns/21#	250-8#10 cns/42#
Cherry Pie	250-33 pies	500-63 pies
Tapioca Pudding	250-11#10 cns	500-21#10 cns
B. Dinner:		
Cream of Tomato Soup 8 oz.	500-45½ cns	1000-91 cns
Sliced Roast Beef 2½-6.4\$/	250-39#	500-78#
Fried Chicken 10 oz.	250-160#	500-320#
Mashed Potatoes 24\$1# Instant; 32\$/1 gal	500-21#/16 gal	1000-42#/32 gal
Green Peas 1/2 c.	250-50#	500-100#
Stewed Tomatoes 1/2 c.	250-21#10 cns	500-42#10 cns
Tossed Salad 3/4 c. 20\$/gal	250-12½ gal/25#	500-25 gal/50#
Mixed Fruit Gelatin** 7 p	250-10 pans	500-20 pans
Angel Food Cake 1/12	250-21 cakes	500-42 cakes
Chocolate Pudding 1/2 c.	250-11#10 cns	500-21#10 cns

*Advanced preparation previous day.

**Advanced preparation Day 1 = Bing Cherry Gelatin.

Day 2

Item	500	1000
A. Lunch:		
Split Pea Soup 11\$/#5 cn	500-45½ cns	1000-91 cns
BBQ Ham Steak 5\$/#/1 oz Sc.	250-50#/4 gal	500-100#/8 gal
Pizza 6\$/	250-42π	500-84π
Sweet Potatoes 24\$/#10	250-11#10 cns	500-21#10 cns
Bu. Spinach 5\$/#	250-50#	500-100#
Carrots 24\$/#10	250-11#10 cns	500-21#10 cns
Tossed Salad 20\$/gal 1#=2 qt	250-12½ gal/25#	500-25 gal/50#
Bing Cherry Gelatin* 2½ c prepared = 1#;1 gal=45\$	250-10 pans	500-20 pans
Chocolate Chip Cookies 6#6 oz=1 sheet; 1 sheet=64\$	250-21 doz	500-41 doz
Butterscotch Pudding 24\$/#10	250-5#10 cns	250-10#10 cns
B. Dinner:		
Chicken w/Rice Soup 11\$/#5 cn	500-45½ cns	1000-91 cns
Salisbury Steak 3\$/#	250-84#	500-167#
Polish Sausage Sandwich 5\$/# bun	250-50#/21 doz	500-100#/42 doz
German Potato Salad 24\$/#20	500-21#10 cns	1000-42#10 cns
Brussels Sprouts 5\$/#	250-50#	500-100#
Succotash 24\$/#10	250-21#10 cns	500-42#10 cns
Tossed Salad 20\$/gal 1#=2 qt	250-12½ gal/25#	500-25 gal/50#
Three Bean Salad 24\$/#10	250-10#10 cns	500-20#10 cns
Blackberry Pie 1/8	250-33 pies	500-63 pies
Spice Cake/Butter Cream Icing	250-4 pans	500-8 pans

*Advanced preparation previous day.

**Advanced preparation Day 2 = Orange Gelatin
Gelatin with Peach Slices.

Day 3

Item	500	1000
A. Lunch:		
French Onion Soup 11\$/#5 on	500-45½ cns	1000-91 cns
Swiss Steak 3\$/#	250-84#	500-167#
Pork Chop Suey 20\$/gal	250-12½ gal	500-25 gal
Rice 2 c AP=1#; 2 qt ck=2#10 oz; 2½#AP=25\$	500-50#	500-100#
Beets	250-11#10 cns	500-21#10 cns
Green Beans	250-11#10 cns	500-21#10 cns
Tossed Salad	250-12½ gal/25#	500-25 gal/50#
Orange Gelatin* 1 gal=45\$	250-10 pans	500-20 pans
Lemon Meringue Pie	250-33 pies	500-63 pies
Chocolate Brownies 72\$/sheet pan	250-3½ pans	500-7 pans
B. Dinner:		
Beef Vegetable	500-45½ cns	500-91 cns
Veal Parmesan 2.5\$/#	250-100#	500-200#
Chicken A La King 21\$/gal	250-12 gal	500-24 gal
Mashed Potatoes 24\$/1# instant; 32\$/gal	500-21#/16 gal	1000-42#/32 gal
Broccoli 5\$/#	250-50#	500-100#
Tossed Salad 20\$/gal 1#=2 qt	250-12½ gal/25#	500-25 gal/50#
Cole Slaw 32\$/gal 1#=1 qt	250-8 gal/32#	500-16 gal/64#
Yellow Cake w/Frosting 64\$/sheet pan	250-4 pans	500-8 pans
Blueberry Crisp 72\$/pan 2"x3"	250-3½ pans	500-7 pans

* Advanced preparation.

** Advanced Preparation for Day 4 = Mixed Fruit Gelatin.

USS Alamo projected labor schedule for convenience food system – Day 1 (500 estimate)

[illegible]

Table 5

USS Alamo projected labor schedule for convenience food system - Day 1 (500 estimate) (cont'd)

Rank Require- ment	MS1 (E6) Watch #2	MS1 (E7) Supply Man	MS1 (E6) Chief Cook	MS2 (E5) MS2 (E5) Cook	MS3 (E4) MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.
1300				Food Disposal 1300-1330	Food Disposal 1300-1330	Food Disposal 1300-1330	Counter Clean-up 1300-1330	Pots & Pans 1300-1330	
1400				Break 1330-1345 Fried Chick. Prep. 1345-1445 Roast Beef Prep. 1445-1545 (Sli., Portion, Heat)	Break 1330-1345 Angel Food Cake Assbly. 1345-1445 Choc. Pudding Assbly. 1445-1545	Break 1330-1345 Tossed Salad Assbly.* 1345-1450 Gel. Assbly. 1430-1500 Veg. Prep. (Mash Pot., Peas, Tomatoes) 1500-1545	Break 1330-1345 Garbage Detail 1345-1500 Pot & Pan, Equipment, Floor Sanitation 1500-1800		
1500				Food to Counter 1545-1600 Supper 1600-1630	Food to Counter 1545-1600 Supper 1600-1630	Food to Counter 1545-1600 Supper 1600-1630	Food to Counter 1545-1600 Supper 1600-1630	Supper 1600-1630	
1600	Supper 1600-1630		Supper 1600-1630	Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1900	Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up 1630-1800	Supper Counter Service 1630-1800	Sanitation/Close-up 1600-1800	
1700				Food Disposal 1800-1900 Clean-up	Food Disposal 1800-1900 Clean-up	Food Disposal 1800-1900 Clean-up	Counter Clean-up 1800		
1800									

* Less time due to lunch leftovers.

USS Alamo projected labor schedule for convenience food system – Day 2 (500 estimate) (cont'd)

Rank	Requirement	MS1 (E6)	MS1 (E6) Chief Cook	MS2 (E5)	MS3 (E4)	MSSN (E3)	MSSN (E3)
Watch #2	MSC (E7) Supply Man	MS1 (E6)	MS1 (E6) Chief Cook	MS2 (E5) Cook	MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.	MSSN (E3) Kitchen Help
0500	Receives/Issues Supplies for Day Breakfast 0530-0600	Coordinate Day's Production Breakfast 0530-0600	Breakfast Production Breakfast 0530-0600	Breakfast Production Breakfast 0530-0600	Choc. Chip Cookie Prep. 0600-0700	Tossed Salad Assembly 0600-0645 Bing Cherry Gelatin Assblly. 0645-0715 Adv. Prep. Gelatin 0715-0800	Pot & Pan. Garbage Set-up Breakfast 0530-0600
0600	Receives/Issues, Maintenance of Supplies	Supervision, Record Keeping, Training, Inspection, Assisting	Ham Assbly., Sauce Prep. 0600-0730	Pizza Assembly 0730-0800	Butterscotch Pudding Assembly 0700-0800	Brek 0800-0815 Veg. Preprep. (Pot., Spinach, Carrots) 0845-0915 Blackberry Pie Prep. to Oven 0930-1015	Sanitation Rotation (Refrig., Freeze, Storeroom) 0600-0730 Garbage Detail 0730-0800
0700	Inventory/Record Keeping as required throughout the day						
0800							
0900							
1000							
1100							
1200							

USS Alamo projected labor schedule for convenience food system – Day 2 (500 estimate) (cont'd)

Rank	Requirement	MS1 (E6)	MS1 (E6) Chief Cook	MS2 (E5)	MS3 (E4)	MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.	MSSN (E3)
Watch #2	Watch #1	MSC (E7) Supply Man						MSSN (E3) Kitchen Help
1300				Food Disposal 1300-1330	Food Disposal 1300-1330	Counter Clean-up 1300-1330	Pots & Pans 1300-1330	
1400				Break 1330-1345 Polish Sand. Assbly. 1345-1445 Salisbury Steak Assbly. to Oven 1445-1545	Break 1330-1345 Blackberry Pie Assbly. 1345-1445 Spice Cake Assembly 1445-1545	Break 1330-1345 Tossed Salad Assbly.* 1345-1430 3-Bean Assembly 1430-1500	Break 1330-1345 Garbage Detail 1345-1500	
1500						Veg. Prep. (Pot. Salad, B. Sprouts, Succotash) 1500-1545 Food to Counter 1545-1600 Supper 1600-1630	Pot & Pan, Equipment, Floor Sanitation 1500-1900	
1600		Supper 1600-1630	Supper 1600-1630	Food to Counter 1545-1600 Supper 1600-1630	Food to Counter 1545-1600 Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	
1700				Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1800	Supper Production Maintenance & Clean-up (Veg., Salad, Dessert) 1630-1800	Supper Counter Service 1630-1800	Sanitation/Close-up 1600-1900	
1800				Food Disposal/Clean-up 1800-1900	Food Disposal/Clean-up 1800-1900	Counter Clean-up 1800-1900		

* **Less time due to lunch leftovers**

USS Alamo projected labor schedule for convenience food system -- Day 3 (500 estimate) (cont'd)

Rank	Requirement	MS1 (E6)		MS2 (E5)		MS3 (E4)		MSSN (E3)	
Watch #2	Watch #1	MSC (E7) Supply Man	MS1 (E6) Chief Cook	MS2 (E5) Cook		MS3 (E4) Cook Asst/Serv.		MSSN (E3) Kitchen Help	
0500	Receives/Issues Supplies for Day Breakfast 0530-0600	Coordinate Day's Production Breakfast 0530-0600	Breakfast Production Breakfast 0530-0600	Breakfast Production Breakfast 0530-0600	Choc. Brownie Prep. 0600-0630 Lemon Pie Assembly 0630-0745 Brownies from Oven 0745-0800 Break 0800-0815 Dinner Dessert Preprep. 0815-0845 (Cake) Brownie Assembly 0845-0945 Cake from Oven 0945-1015 Food to Counter 1015-1030 Lunch 1030-1100	Breakfast Counter/ Beverage Set-up Breakfast 0630-0600 Tossed Salad Assembly 0600-0645 Org. Gel. Assembly 0645-0715 Adv. Prep. (Bk. Pot., Carrot Glaze) 0715-0815 Veg. Preprep. (Rice) 0815-0830 Break 0830-0845 Veg. Preprep. (Beans, Beets) 0845-9015 Veg. Prep. (3) 0945-1015 Food to Counter 1015-1030 Lunch 1030-1100	Pot & Pan. Garbage Set-up Breakfast 0630-0600 Sanitation Rotation (Refrig., Freezer, Storeroom) 0600-0730 Garbage Detail 0730-0800 Pot & Pan Set-up 0800-0830 Break 0830-0845 Pot & Pan, Dish, Equip- ment, Floor Sanitation 0845-1030 Lunch 1030-1100		
0600	Reveives/Issues Maintenance of Supplies	Supervision, Record Keeping, Training Inspection, Assisting	Pork Chop Suey Prep. 0600-0730 Swiss Steak Prep. for Oven 0730-0800 Break 0800-0815 Soup Prep. 0815-0900 Swiss Steak Prep. to Oven 0900-0945 Adv. Prep. (BBQ Chick/ Sauce) 0915-1015 Food to Counter 1015-1030 Lunch 1030-1100	Lunch Production Maintenance 1100-1300 Icing Prep. 1230-1300 Adv. Prep. Assembly (Fruit Bar) 1100-1300 Soup Prep. 1230-1300	Lunch Counter Service maintenance, Floor Main-	Pot/Pan/Dish Equip- ment, Floor Main- tenance as appropriate 1100-1300			
0700	Inventory/Record keeping, Training, Coordination as required throughout the day								
0800									
0900									
1000									
1100									
1200									

UISS Alamo projected labor schedule for convenience food system – Day 3 (500 estimate) (cont'd)

Rank	Requirement	MS1 (E6)	MS1 (E6)	MS2 (E5)	MS3 (E4)	MS3 (E4)	MS3 (E3)	MS3 (E3)
Watch #2	Watch #1	MSC (E7) Supply Man	MS1 (E6) Chief Cook	MS2 (E5) Cook	MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.	MS3 (E4) Cook Asst/Serv.	MS3 (E3) Kitchen Help
1300				Food Disposal 1300-1330	Food Disposal 1300-1330	Counter Clean-up 1300-1330	Pots & Pans 1300-1330	
1400				Break 1330-1345 Chicken A La King Prep. 1345-1445 Veal Parmesan Prep. to Oven 1445-1515 (snack time)	Break 1330-1345 Blueberry Crisp Prep. 1345-1415 Cake Assbly. 1415-1515 Crisp Assembly 1515-1545	Break 1330-1345 Bk. Pot. to Oven 1345-1400 Tossed Saled Assembly* 1400-1445 Cole Slaw Assembly 1445-1515	Break 1330-1345 Garbage Detail 1330-1500	
1500								
1600				Food to Counter 1545-1600 Supper 1600-1630	Food to Counter 1545-1600 Supper 1600-1630	Food to Counter 1545-1600 Supper 1600-1630	Pot & Pan, Equipment, Floor Sanitation 1500-1900 Supper 1600-1630	
1700				Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up (Veg., Saled, Dessert) 1630-1800	Supper Counter Service 1630-1800	Sanitation/Close-up 1600-1900	
1800				Food Disposal/Clean-up 1800-1900	Food Disposal/Clean-up 1800-1900	Counter Clean-up 1800-1900		

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Table 6

USS Kitty Hawk projected labor schedule for convenience food system - Day 1 (1,000 estimate)

Rank Requirement	Watch #1 Watch #2	MSC (E7) Supply Man	MS1 (E6) Chief Cook	MS2 (E5) MS2 (E5) Cook	MS2 (E5) MS2 (E5) Cook	MS2 (E5) MS2 (E5) Cook
0500		Receives/Issues Supplies for Day Breakfast 0530-0600	Check-in; Coordinate Day's Activities Breakfast 0530-0600	Breakfast Preparation 0500-0530 Breakfast 0530-0600	Breakfast Preparation 0500-0530 Breakfast 0530-0600	Breakfast Preparation 0500-0530 Breakfast 0530-0600
0600		Receives/Issues Maintenance of Supplies	Supervise Record Keeping, Training, Inspection, Assisting as required throughout the day	Reuben Sand. Assembly 0600-0730	Cherry Pie Prep. 0600-0700	Tossed Salad Assembly 0600-0730
0700		Inventory/Record Keeping, Training, Coordination as required throughout the day		Lasagne Prep. for Oven 0730-0830	Angel Food Assembly 0700-0800 Cherry Pie Out/Cake In Oven 0800-0830	Peach/Cott. Ch. Assbly. 0730-0830
0800				Break 0830-0845 Lasagne Prep. to Oven 0845-0915 Reuben Grill 0915-1015	Break 0830-0845 Cherry Pie Assembly 0845-0915 Choc. Chip Cookie Assembly 0915-1015	Break 0830-0845 Peach/Cott. Ch. Assbly. 0845-0915 Adv. Prep. 0915-1015 Cherry Gelatin Food to Counter 1015-1030 Lunch 1030-1100
1000				Food to Counter 1015-1030 Lunch 1030-1100		
1100		Lunch 1030-1100	Lunch 1030-1100	Lunch Production Maintenance 1100-1300 Adv. Prep. Assembly 1100-1300 (sli. Ham Steak)	Lunch Production Maintenance 1100-1300 Icing Prep. 1215-1300 Adv. Prep. 1100-1300	Lunch Production Maintenance 1100-1300 Adv. Prep. cont. 1100-1300
1200				Food Disposal 1300-1330 Break 1330-1345 Fried Chick. Prep. 1400-1500 Roast Beef Prep. 1500-1545 Food to Counter 1545-1600 Supper 1600-1630	Food Disposal 1300-1330 Break 1330-1345 Angel Food Cake Assbly. 1345-1500 Choc. Pudding Assembly 1500-1545 Food to Counter 1545-1600 Supper 1600-1630	Food Disposal 1300-1330 Break 1330-1345 Tossed Salad Assembly 1345-1445 Mixed Gel. Assembly 1500-1545 Food to Counter 1545-1600 Supper 1600-1630
1300						
1400						
1500						
1600		Supper 1600-1630	Supper 1600-1630	Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1900	Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1900	Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1900
1700						

Table 6

USS Kitty Hawk projected labor schedule for convenience food system - Day 2 (1,000 estimates) (cont'd)

Rank Require- ment	Watch #2 Watch #1	MSC (E7) MSC (E7) Supply Man Receives/Issues Sup- plies for Day Breakfast 0630-0600 Receives/Issues Maintenance of Supplies	MS1 (E6) MS1 (E6) Chief Cook Coordinate Day's Activities Breakfast 0630-0600 Supervise Record Keep- ing, Training, Inspec- tion, Assisting as	MS2 (E5) MS2 (E5) Cook Breakfast Preparation 0600-0630 Breakfast 0630-0600 Ham/Sc. Assembly 0600-0730	MS2 (E5) MS2 (E5) Cook Breakfast Preparation 0600-0630 Breakfast 0630-0600 Choc. Chip Cookie Prep. 0600-0730	MS2 (E5) MS2 (E5) Cook Breakfast Preparation 0600-0630 Breakfast 0630-0600 Tossed Salad Assembly 0600-0730
0700		Inventory/Record Keep- ing, Training, Cordi- nation as required throughout the day				
0800			Pizza Assbly. for Oven 0730-0830 Break 0830-0845 Pizza Prep. to Oven 0845-0915 Ham Grilled 0915-1015			Gel. Assembly 0730-0830 Break 0830-0845 Adv. Prep. (Org. Gel.) 0845-0945 Assembly 0945-1015
0900						
1000						
1100		Lunch 1030-1100	Lunch 1030-1100			
1200						
1300						
1400						
1500						
1600		Supper 1800-1630	Supper 1600-1630			
1700						
1800						

Table 6

USS Kitty Hawk projected labor schedule for convenience food system - Day 2 (1,000 estimate) (cont'd)

MS3 (E4)	MS3 (E4)	MS3 (E4)	MSSN (E3)	MSSN (E3)	MSSA (E2)	MSSR (E1)
MS3 (E4) Cook's Asst.	MS3 (E4) Cook's Asst.	MS3 (E4) Cook's Asst.	MSSN (E3) Kit. Help/Serv.	MSSN (E3) Kit. Help/Serv.	MSSA (E2) Server/Sanita.	MSSR (E1) Sanitation
Breakfast Preparation 0500-0530	Breakfast Preparation 0500-0530	Breakfast Preparation 0500-0530	Breakfast Counter Set- up 0500-0530	Breakfast Counter Set- up 0500-0530	Pot & Pan Set-up	Garbage Detail Set-up
Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600
Reuben Sand. Assembly 0600-0815	Soup Prep. 0600-0700	Tapioca Assembly 0600-0815		Breakfast Service 0600-0730	Pot & Pan/Dish/Equip- ment, Sanitation as appropriate 0600-0815	Sanitation Rotation (Refrig., Freezer, Storeroom); Garbage Detail as appropriate 0600-0815
	Vegetable Assembly 0700-0815			Counter Clean-up 0730-0815		
Break 0815-0830	Break 0815-0830	Break 0815-0830	Break 0815-0830	Break 0815-0830	Break 0815-0830	Break 0815-0830
Reuben Grill 0830-1015	Veg. Prep. 0830-1015 (Pot., Broc., Corn)	Cherry Pie Assembly 0830-1015		Conducting/Counter Set- up; Rotation Sanitation 0830-1030	Pot & Pan/Equip/Dish Sanitation as appropri- ate 0830-1030	Sweep/Clean BOH-FOH Garbage Detail 0830-1030
Food to Counter 1015-1030	Food to Counter 1015-1030	Food to Counter 1015-1030		Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100
Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100		Lunch Counter Service 1100-1300	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1100-1400	Sanitation Rotation as appropriate 1100-1400
Lunch Production Maintenance 1100-1300	Lunch Production Maintenance 1100-1300	Lunch Counter Service 1100-1300		Counter Clean-up 1300-1400		
Food Disposal/Clean-up 1300-1400	Food Disposal/Clean-up 1300-1400	Counter Clean-up 1300-1400		Break 1400-1415	Break 1400-1415	Break 1400-1415
Break 1400-1415	Break 1400-1415	Break 1400-1415		Counter Sanitation 1415-1500	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1415-1600	Sweep/Clean BOH-FOH Garbage Detail 1415-1600
Fried Chick. Prep. 1415-1515	Veg. Assembly 1415-1500	Angel Food Cake Assbly. 1415-1500		Conducting/Counter Set- up 1500-1600		
Roast Beef Prep. 1515-1600	Veg. Prep. 1500-1545	Choc. Pudding Assbly. 1500-1545		Supper 1600-1630	Supper 1600-1630	Supper 1600-1630
Food to Counter 1545-1600	Food to Counter 1545-1600	Food to Counter 1545-1600		Counter Service 1630	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1630-1900	BOH-FOH Sanitation, Garbage Detail as appropriate 1630-1900
Supper 1600-1630	Supper 1600-1630	Supper 1600-1630		Counter Clean-up 1800-1900		
Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up 1630-1800	Counter Service 1630-1800				
Food Disposal/Cleanup 1800-1900	Food Disposal/Cleanup 1800-1900	Counter Clean-up 1800-1900				

Table 6

USS Kitty Hawk projected labor schedule for convenience food system -- Day 3 (1,000 estimate) (cont'd)

MS3 (E4)	MS3 (E4) Cook's Asst.	MS3 (E4) Cook's Asst.	MSSN (E3) Kit. Help/serv.	MSSN (E3) Kit. Help/serv.	MSSA (E2) Server/Sanita.	MSSR (E1) Sanitation
Breakfast Preparation 0500-0530	Breakfast Preparation 0500-0530	Breakfast Preparation 0500-0530	Breakfast Counter Set- up 0500-0530	Breakfast Counter Set- up 0500-0530	Pot & Pan Set-up	Garbage Detail Set-up
Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600
Ham Sc. Assembly 0600-0815	Soup Assembly 0600-0700	Soup Assembly 0600-0700	Butterscotch Assembly 0600-0815	Breakfast Service 0600-0730	Pot & Pan/Dish/Equip- ment, Sanitation as appropriate 0600-0815	Sanitation Rotation (Refrig., Freezer, Storeroom); Garbage Detail as appropriate 0600-0815
Break 0815-0830	Veg. Assembly 0700-0815	Break 0815-0830	Break 0815-0830	Counter Clean-up 0730-0815	Break 0815-0830	Break 0815-0830
Ham Grill 0830-0930	Veg. Prep. 0830-1015 (Sw. Pot., Spinach, Carrots)	Choc. Chip Assembly 0830-1015	Conduit/Counter Set- up; Rotation Sanitation 0830-1030	Pot & Pan/Equip/Dish Sanitation as appropri- ate 0830-1015	Sweep/Clean BOD-FOH Garbage Detail 0830-1030	
Pizza Assembly 0830-1015						
Food to Counter 1015-1030	Food to Counter 1015-1030	Food to Counter 1015-1030	Food to Counter 1015-1030	Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100
Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100	Lunch Counter Service 1100-1300	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1100-1400	Sanitation Rotation as appropriate 1100-1400
Lunch Production Maintenance 1100-1300	Lunch Production Maintenance 1100-1300	Lunch Production Maintenance 1100-1300	Lunch Counter Service 1100-1300	Counter Clean-up 1300-1400	Break 1400-1415	Break 1400-1415
Food Disposal/Clean-up 1300-1400	Food Disposal/Clean-up 1300-1400	Food Disposal/Clean-up 1300-1400	Counter Clean-up 1300-1400	Break 1400-1415	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1415-1600	Sweep/Clean BOH-FOH Garbage Detail 1415-1600
Break 1400-1415	Break 1400-1415	Break 1400-1415	Break 1400-1415	Counter Sanitation 1415-1500	Supper 1600-1630	Supper 1600-1630
Polish Sand. Assbly. 1415-1500	Veg. Assembly 1415-1500	Veg. Assembly 1415-1500	Cake Assembly 1415-1500	Conduit/Counter Set- up 1500-1600	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1630-1900	BOH-FOH Sanitation, Garbage Detail as appropriate 1630-1900
Swiss Steak Prep. 1500-1545	Veg. Prep. 1500-1545 (Pot.Sal,B.Sp., Succ.)	Veg. Prep. 1500-1545 (Pot.Sal,B.Sp., Succ.)	Pie Assembly 1500-1545	Food to Counter 1545-1600		
Food to Counter 1545-1600	Food to Counter 1545-1600	Food to Counter 1545-1600	Food to Counter 1545-1600	Supper 1600-1630		
Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Counter Service 1630-1800		
Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up 1630-1800	Counter Service 1630-1800	Counter Clean-up 1800-1900		
Food Disposal/Clean-up 1800-1900	Food Disposal/Clean-up 1800-1900	Food Disposal/Clean-up 1800-1900	Counter Clean-up 1800-1900			

Table 6
USS Kitty Hawk projected labor schedule for convenience food system - Day 3 (1,00 estimate) (cont'd)

Rank Requirement	MSC (E7) MSC (E7) Supply Man	MS1 (E6) MS1 (E6) Chief Cook	MS2 (E5) MS2 (E5) Cook	MS2 (E5) MS2 (E5) Cook	MS2 (E5) MS2 (E5) Cook
Watch #2 Watch #1					
0500	Reveives/Issues Supplies for Day Breakfast 0530-0600	Check-in; Coordinate Day's Activities Breakfast 0530-0600	Breakfast Preparation 0500-0530 Breakfast 0530-0600	Breakfast Preparation 0500-0530 Breakfast 0530-0600	Breakfast Preparation 0500-0530 Breakfast 0530-0600
0600	Recieves/Issues Maintenance of Supplies	Supervise Record Keeping, Training, Inspection, Assisting as required throughout the day	Swiss Steak Assembly 0600-0730	Choc. Brownie Prep. 0600-0700	Tossed Salad Assembly 0600-0730
0700	Inventory/Record Keeping, Training, Coordination as required throughout the day		Pork Chop Suey Prep. 0730-0830	Lemon Meringue Pie Assembly 0700-0830	Gelatin Assembly 0730-0830
0800			Break 0830-0845 Swiss Steak Prep. to Oven 0845-0915 Final Prep. 0915-1015	Break 0830-0845 Brownie Assembly 0845-0930 Yellow Cake Prep. 0830-1015 Cake to Oven 1000-1015	Break 0830-0845 Adv. Prep. 0845-0945
0900					
1000			Food to Counter 1015-1030 Lunch 1030-1100	Food to Counter 1015-1030 Lunch 1030-1100	Food to Counter 1015-1030 Lunch 1030-1100
1100			Lunch Production Maintenance 1100-1300 Adv. Prep. Assembly 1100-1300 (Rst. Beef Sand., Veal Parm. Assembly)	Lunch Production Maintenance 1100-1300 Cake Out, Icing Prop. 1215-1300 Adv. Prep. 1100-1300 (Blueberry Crisp)	Lunch Production Maintenance 1100-1300 Adv. Prep. 1100-1300
1200			Food Disposal 1300-1330 Break 1330-1345 Chick. Ala King Prep. 1400-1500	Food Disposal 1300-1330 Break 1330-1345 Cake Assembly 1345-1500	Food Disposal 1300-1330 Break 1330-1345 Tossed Salad Assembly 1345-1445
1300			Veal Parm. Prep. to Oven 1500-1545 Food to Counter 1545-1600 Supper 1600-1630	Crisp Assembly 1550-1545 Food to Counter 1545-1600 Supper 1600-1630	Cole Slaw Assembly 1445-1545 Food to Counter 1545-1600 Supper 1600-1630
1400					
1500					
1600	Supper 1600-1630	Supper 1600-1630	Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1900	Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1900	Supper Production Maintenance & Clean-up 1630-1800 Record Keeping 1630-1900
1700					

Table 6

USS Kitty Hawk projected labor schedule for convenience food system - Day 3 (1,000 estimates) (cont'd)

MSS3 (E4)	MSS3 (E4) Cook's Asst.	MSS3 (E4) Cook's Asst.	MSS3 (E4) Cook's Asst.	MSSN (E3)	MSSN (E3) Kit. Help/Serv.	MSSA (E2)	MSSA (E2) Server/Sanita.	MSSR (E1)	MSSR (E1) Sanitation
Breakfast Preparation 0600-0530	Breakfast Preparation 0500-0530	Breakfast Preparation 0500-0530	Breakfast Preparation 0500-0530	Breakfast Counter Set- up 0500-0530	Breakfast Counter Set- up 0500-0530	Put & Pan Set-up	Breakfast 0530-0600	Garbage Detail Set-up	Garbage Detail Set-up
Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600	Breakfast 0530-0600
Swiss Steak Assembly 0600-0815	Soup Assembly 0600-0700	Soup Assembly 0600-0700	Soup Assembly 0600-0700	Pie Assembly 0600-0815	Breakfast Service 0600-0730	Pot & Pan/Dish/Equip- ment, Sanitation as appropriate 0600-0815	Sanitation Rotation (Refrig., Freezer, Storeroom); Garbage Detail as appropriate 0600-0815	Sanitation Rotation (Refrig., Freezer, Storeroom); Garbage Detail as appropriate 0600-0815	Sanitation Rotation (Refrig., Freezer, Storeroom); Garbage Detail as appropriate 0600-0815
Break 0815-0830	Veg. Assembly 0700-0815	Veg. Assembly 0700-0815	Veg. Assembly 0700-0815	Break 0815-0830	Break 0815-0830	Break 0815-0830	Break 0815-0830	Break 0815-0830	Break 0815-0830
Pork Chop Suet Assbly. 0830-0930	Veg. Prep. 0830-1015 (Rice, Beets, Gr. Beans)	Veg. Prep. 0830-1015 (Rice, Beets, Gr. Beans)	Veg. Prep. 0830-1015 (Rice, Beets, Gr. Beans)	Brownie Assembly 0830-1015	Condiment/Counter Set- up; Rotation Sanitation 0830-1030	Pot & Pan/Equip/Dish Sanitation as appropri- ate 0830-1015	Pot & Pan/Equip/Dish Sanitation as appropri- ate 0830-1015	Sweep/Clean BOH-FOH Garbage Detail 0830-1030	Sweep/Clean BOH-FOH Garbage Detail 0830-1030
Swiss Steak Assbly. 0830-1015									
Food to Counter 1015-1030	Food to Counter 1015-1030	Food to Counter 1015-1030	Food to Counter 1015-1030	Food to Counter 1015-1030	Lunch Counter Service 1100-1300	Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100
Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100	Lunch 1030-1100	Lunch Counter Service 1100-1300	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1100-1400	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1100-1400	Sanitation Rotation as appropriate 1100-1400	Sanitation Rotation as appropriate 1100-1400
Lunch Production Maintenance 1100-1300	Lunch Production Maintenance 1100-1300	Lunch Production Maintenance 1100-1300	Lunch Production Maintenance 1100-1300	Lunch Counter Service 1100-1300	Lunch Counter Service 1100-1300				
	Soup Prep. 1200-1300 (Beef Veg.)	Soup Prep. 1200-1300 (Beef Veg.)	Soup Prep. 1200-1300 (Beef Veg.)						
Food Disposal/Clean-up 1300-1400	Food Disposal/Clean-up 1300-1400	Food Disposal/Clean-up 1300-1400	Food Disposal/Clean-up 1300-1400	Counter Clean-up 1300-1400	Counter Clean-up 1300-1400	Break 1400-1415	Break 1400-1415	Break 1400-1415	Break 1400-1415
Break 1400-1415	Break 1400-1415	Break 1400-1415	Break 1400-1415	Break 1400-1415	Break 1400-1415	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1415-1600	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1415-1600	Sweep/Clean BOH-FOH Garbage Detail 1415-1600	Sweep/Clean BOH-FOH Garbage Detail 1415-1600
Chick. Ala King Prep. 1415-1500	Veg. Assembly 1415-1500	Veg. Assembly 1415-1500	Veg. Assembly 1415-1500	Cake Assembly 1415-1500	Counter Sanitation 1415-1500				
Veal Parm. Prep. 1500-1545	Veg. Prep. 1500-1545 (Pot., W. Beans, Croc.)	Veg. Prep. 1500-1545 (Pot., W. Beans, Croc.)	Veg. Prep. 1500-1545 (Pot., W. Beans, Croc.)	Crisp Assembly 1500-1545	Condiment/Counter Set- up 1500-1545				
Food to Counter 1545-1600	Food to Counter 1545-1600	Food to Counter 1545-1600	Food to Counter 1545-1600	Food to Counter 1545-1600	Food to Counter 1545-1600				
Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630	Supper 1600-1630
Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up 1630-1800	Supper Production Maintenance & Clean-up 1630-1800	Counter Service 1630-1800	Counter Service 1630-1800	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1630-1900	Pot & Pan/Dish/Equip. Sanitation as appropri- ate 1630-1900	BOH-FOH Sanitation, Garbage Detail as appropriate 1630-1900	BOH-FOH Sanitation, Garbage Detail as appropriate 1630-1900
Food Disposal/Clean-up 1800-1900	Food Disposal/Clean-up 1800-1900	Food Disposal/Clean-up 1800-1900	Food Disposal/Clean-up 1800-1900	Counter Clean-up 1800-1900	Counter Clean-up 1800-1900				

The projected labor schedules for the convenience foodservice system and corresponding pay rate codes were then used to estimate the labor costs for the proposed 21-day menu cycle. These data were subsequently compared to labor costs for conventional production, to determine any differences which might accrue from the use of convenience foods in the menu.

B. Results

1. Food Costs — Conventional System. Direct weighted food costs for the 21-day cycle ranged for lunch total menu selection from \$.77 to \$2.01 (Table 7). Costs reflect menu selection differences with pizza and BBQ ham steak featured on the low-cost menu and grilled steak and fried chicken featured on the high-cost menu. Direct food costs for dinner ranged from \$.83 to \$1.68. Low-cost menu selections featured chicken chow mein and pork chops; high-cost menu selections featured grilled steak and BBQ chicken.

Analyses of the combined direct weighted food costs for the 21-day lunch and dinner menu cycle daily selections ranged from \$2.45 to \$3.87. The average combined direct food cost for the 21-day menu cycle was \$3.03.

2. Food Costs — Convenience System. Direct food costs for 21 luncheon total menu selections for the convenience system ranged from \$.93 to \$2.02. The average food cost for the 21-day cycle luncheon was \$1.19, a .42 percent increase over the \$1.183 average direct weighted food cost for luncheon menus from the conventional system. Eight convenience food luncheons had less weighted food cost than the conventional production system.

Dinner convenience menu selections direct weighted food costs ranged from \$.91 to \$1.75 with an average weighted food cost of \$1.25 per day. The range for conventional dinner weighted food costs was \$.83 to \$1.68; the average weighted food cost was \$1.15 per day.

3. Total Average Costs. Total average weighted daily food costs for lunch and dinner in the 21-day menu cycle ranged from \$2.65 to \$3.99 with an average combined direct food cost for both meals of \$3.14. The percentage difference between the conventional and convenience systems for the average direct weighted food cost for the combined lunch and dinner menu selections over the 21-day cycle was calculated. The convenience production system direct weighted cost averaged 3.63 percent higher over the 21-day cycle than the conventional system.

The most expensive choices per meal and per day were calculated for the convenience food system. The average daily food costs per meal for lunch and dinner were \$1.51 and \$1.57, respectively. The average total food cost for both meals for the most expensive choice was \$3.79 per day. This last figure represents a 25.1 percent cost increase over the conventional system.

4. Labor Costs — Conventional System. Direct labor costs for the conventional production system for the USS Alamo and USS Kitty Hawk are summarized by actual positions and actual costs in Tables 8 and 9. All positions were scheduled using a "5 and 2" schedule in which a person is scheduled for 14 hours per day. Over a two-week period a person will work five days and be off two days, work two days and be off five days in a continuing sequential manner.

Summary of direct weighted food costs for 21-day menu cycle

****Total includes cost of breakfast and is rounded to nearest one cent.**

Table 8

USS Alamo: Comparison of personnel requirement and labor costs between two food systems

Rank requirement	\$ Rate monthly	\$ Rate annual	Conventional system				Convenience system			
			# Personnel	\$ Value		Annual	# Personnel	\$ Value		Annual
				Monthly	Monthly			Monthly	Monthly	
MSCM (E9)	\$2,198.19	\$26,378.27	---	\$ ---	\$ ---	---	---	\$ ---	\$ ---	---
MSCS (E8)	1,885.27	22,623.27	---	---	---	---	---	---	---	---
MSC (E7)	1,611.23	19,334.73	1	1,611.23	19,334.73	1	1	1,611.23	19,334.73	19,334.73
MS1 (E6)	1,354.68	16,256.10	4	5,418.72	65,024.40	3	3	4,064.04	48,768.30	48,768.30
MS2 (E5)	1,142.83	13,713.90	3	3,428.49	4,141.70	2	2	2,285.66	27,427.80	27,427.80
MS3 (E4)	971.79	11,661.48	3	2,915.37	34,984.44	3	3	2,915.37	34,984.44	34,984.44
MSSN (E3)	866.84	10,402.04	8	6,934.72	83,216.32	3	3	2,600.52	31,206.12	31,206.12
MSSA (E2)	785.21	9,422.48	---	---	---	---	---	---	---	---
MSSR (E1)	697.75	8,372.94	---	---	---	---	---	---	---	---
Total Labor Requirements & Labor Costs			20	\$20,208.53	\$243,701.59	12	12	\$13,476.82	\$161,721.39	
Labor Cost Savings								6,831.71	81,980.20	
Percentage Decrease from Conventional System							40	33.6	33.6	

Table 9

USS Kitty Hawk: Comparison of personnel requirement and labor costs between two food systems

Rank requirement	Conventional system				Convenience system			
	\$ Rate monthly	\$ Rate annual	# Personnel	\$ Value Monthly	\$ Value Annual	# Personnel	Monthly	Annual
MSCM (E9)	\$2,198.19	\$26,378.21	1	\$ 2,198.19	\$ 26,378.27	--	\$ --	\$ --
MSCS (E8)	1,885.27	22,623.27	--	--	--	--	--	--
MSC (E7)	1,611.23	19,334.73	2	3,222.46	38,669.46	2	3,222.46	38,669.46
MS1 (E6)	1,354.68	16,256.10	7	9,482.76	113,792.70	2	2,709.36	32,512.20
MS2 (E5)	1,142.83	13,713.90	9	10,285.47	123,425.10	6 + 2*	9,142.64	109,711.20
MS3 (E4)	971.79	11,661.48	15	14,576.85	174,172.20	4 + 4*	7,774.32	93,291.84
MSSN (E3)	866.84	10,402.04	15	13,002.60	156,030.60	4	3,467.36	41,608.16
MSSA (E2)	785.21	9,422.48	8	6,281.68	75,379.84	2	1,570.42	18,844.96
MSSR (E1)	697.75	8,372.94	12	8,373.00	100,475.28	2	1,395.50	16,745.88
Total Labor Requirements & Labor Costs			70	\$67,423.01	\$808,323.45	22 + 6*	\$29,282.06	\$351,383.70
Labor Cost Savings							\$38,140.95	\$456,939.75
Percentage Decrease from Conventional System						68.6	56.5	56.5

*Personnel required (3 per watch) to operate fast food outlet.

At the time of the study the USS **Alamo** had 20 actual positions available for the conventional food production system and the USS **Kitty Hawk** had 70 actual positions. The monthly direct labor cost for each ship was \$20,308.53 and \$67,423.01, respectively.

5. **Labor Costs — Convenience System.** To determine a daily direct labor cost for the convenience food system for both ships, a labor schedule was projected by hours scheduled on a "5 and 2" schedule basis (Tables 8 and 9). Responsibilities were assigned to appropriate pay grades to provide the skills required. A schedule of relief personnel was included, which indicates personnel are available within appropriate pay rate codes to maintain a "5 and 2" schedule under a convenience system.

The number of positions by pay rate code available in the USS **Alamo** and USS **Kitty Hawk** for the projected convenience food system and the number of positions that would be required by pay rate code were used to compute the labor cost of personnel requirements under both the conventional and convenience systems (Tables 8 and 9). The projected convenience food system would require use of 12 positions out of the 20 positions available on the USS **Alamo**. Direct labor cost for the 12 positions required was computed at \$13,476.82 monthly, a savings of 33.6 percent over the conventional system. USS **Kitty Hawk** had 70 positions available. A convenience food system was projected to require 28 positions at a direct labor cost of \$29,282.06 per month, a savings of 56.5 percent. Six positions in the convenience system were used to maintain the fast-food operation. In the case of the USS **Alamo**, the convenience system reduced the number of positions required from the number for the conventional system by a total of 8 (33.6 percent), and for the USS **Kitty Hawk** by a total of 42 (56.5 percent). Monthly direct labor cost savings resulting from these reductions were \$6,831.71 and \$38,140.95 for each ship, respectively.

VI. CONCLUSIONS AND RECOMMENDATIONS

The six major areas of study produced the following conclusions and recommendations.

1. Direct weighted food costs for individual customer cost on the 21-day menu cycle averaged \$3.03 per day for the conventional food system and \$3.14 per day for the convenience food system, an increase of 3.63 percent per person for the convenience food system.

2. The most expensive choice selection daily food cost was \$3.79, representing a 25.1 percent increase over the conventional food system.

3. Current actual staffing levels for the conventional system and projected staffing levels for the convenience system utilized a "5 and 2" scheduling system. A projected convenience system reduced the number of personnel a conventional system required by 8 positions for the USS **Alamo** and 42 positions for the USS **Kitty Hawk**.

4. Daily manhour cost savings accrued from the convenience food system. Direct labor cost saved per month for the USS **Alamo** was \$6,831.71 and for the USS **Kitty Hawk** was \$38,140.95.

5. Percentage of direct labor cost savings resulting from a projected convenience food system as compared to the conventional food system for the USS Alamo and the USS Kitty Hawk were 33.6 percent and 56.5 percent, respectively.

6. Labor savings realized from implementing the convenience system could readily offset the slight projected increase in direct food costs of the convenience system, and, even though costs cannot be transferred between subsistence and military pay, the overall effect is a significant productivity improvement. Furthermore, the reduced manpower would permit greater participation of the shipboard foodservice personnel in shorebased training for advancement of skills, increased liberty and improved morale, and greater flexibility for the Command in providing foodservice.

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