



SUMMARY OF TRAY PACK FIELD ACCEPTANCE TESTS AND RESULTS

BY

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) This project report summarizes the five phases of field acceptance tests of 73 Tray Pack items. The plan to field acceptance test and accelerate the introduction of Tray Pack items into the supply system was approved by the Armed Forces Product Evaluation Committee (AFPEC) on 12 May 1983. The requirements call for testing with the Army, Marines, and Air Force. The test methodology required a minimum of two companies for each field test. All items were rated on a 9-point Hedonic scale (9=very good; 1=very poor) by a minimum of 48 subjects. From February 1984 to August 1987, the 73 items had undergone a total of 12 field tests. The 14-day, 2 meal/day, cyclic menu includes the best items from the 73 rated items based on field acceptance data. A status of developed items is as follows: 64 items are standardized and 9 items have been deleted from the program.			
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PREFACE

Tray Pack foods are one of the primary rations for the new Army Combat Field Feeding System. Troop acceptance and product quality are essential for a successful implementation of the total system. Field testing allowed Natick to accumulate a large data base on troop food likes and, just as importantly, dislikes, while participating in field exercises. Our major objective is to provide troops with the foods they want for one or two hot meals each day. From the field acceptance test data, Natick has been able to successfully reformulate many items, modify others, and engineer several new items. This report brings together all of the acceptance data from the five phases of field acceptance testing.



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INTRODUCTION

BACKGROUND:

Our combat forces in the future will be highly mobile, mechanized, and armor operating on an integrated battlefield. A major effort by Natick in the recent past was to define and develop a system of food service that takes maximum advantage of new food and packaging technology to provide mobility, flexibility, and responsiveness in the delivery of quality, hot meals to all troops on the battlefield.

The Tray Pack is an individual menu item packaged in a half-steam table can. The can serves as a package, heating vessel, and serving tray. The number of servings per tray is 12 or 18. These items require only heating, such as in hot water. The advent of the Tray Packs has reduced food service labor and fuel and water usage in the field.

Through FY87, 73 Tray Pack items have undergone an accelerated field acceptance testing schedule. The 73 items were divided into 44 primary items which originally made up the 14-day, 2 meals/day rotating menu, and 29 alternate items which would replace any of the primary items not found acceptable. A brief summary of the status of developed items is as follows:

Status of Developed Items

Primary	39 items standardized; 5 items deleted
Alternate	25 items standardized; 4 items deleted
TOTAL	64 items standardized; 9 items deleted

PROJECT METHODOLOGY:

A plan to field acceptance test and accelerate the introduction of Tray Pack items into the supply system was approved by the Armed Forces Product Evaluation Committee (AFPEC) on 12 May 1983⁽¹⁾. The requirements called for a minimum of three field tests (Army, Air Force, and Marine Corps) for the 44

primary items. The Army and Marine Corps supplied test sites for the exercises. The Air Force could not always provide test sites due to their limited test schedules, but had agreed to accept the results of the Army and Marine Corps tests. The 29 alternate items were tested under the same plan as the primary items.

The test methodology required a minimum of two companies for each field test. One group would be fed Tray Pack items, and the other group would be fed B or A Ration counterparts. The test menu would be approved by the Services. All items were to be rated on a 9-point hedonic scale (1 = extremely bad; 9 = extremely good) by a minimum of 48 subjects.

The following criteria for acceptance or rejection of Tray Pack food items were established: a Tray Pack item that received an average statistical rating of 6 or better would be considered acceptable. Conversely, a Tray Pack food item that received a rating significantly less than 5.0 would be considered unacceptable and would have to be reformulated. If the average hedonic rating of a food item fell between 5.0 and 6.0 it would be compared to a B Ration, or if not available, to an A Ration counterpart. If not statistically less acceptable than the counterpart, the Tray Pack item would be considered acceptable. If less acceptable than its counterpart, the Tray Pack item would have to be reformulated.

Although the test plan called for both A Ration and B Ration items to be used as Tray Pack counterparts, at the November 1983 AFPEC meeting, the Services expressed reservations about the advisability of using A Rations, stating that the use of A Rations should be kept to an absolute minimum (2). In some cases, there would be no B Ration comparison item. When this occurred, each item would be judged by the same criteria as other items. However, if the rating fell between 5.0 and 6.0, the Services would decide on the acceptability.

TESTING SCHEDULE

Phase One:

The first of six field tests took place during 2Q85 with the Air Force, Marine Corps, and Army, respectively (3). Twenty-one items were scheduled to be tested. However, the acidity of the Three Bean Salad was incompatible with the trays' enamel coating and could not be used. Also, during the Air Force test, some of the Spice Cake had undissolved vitamin/mineral supplement tablets. Therefore, only 19 Tray Pack items, 17 primary items, and two alternate items were tested during Phase 1.

The Air Force test was held 16-22 January 1984 at Eglin Air Force Base, FL. In accordance with Air Force policy, three hot meals were served each day. Meals were supplemented only by bread, butter, peanut butter, and assorted beverages. A range of 52 to 184 troops tested each item.

Several problems occurred with the Air Force test. The meals were served in a large, partially heated dining shelter; the Air Force airmen received three hot meals a day, whereas the Army and Marine Corps received only two. Also, some nontest foods were brought in and eaten, which undoubtedly affected the test results. The results should be interpreted with these differences in mind.

The Marine Corps test was held on 12-15 March 1984 at Fort Bragg, NC. The menu was the same except that Roast Beef and Baked Beans did not arrive in time to be tested. Two hot Tray Pack meals were served with the Meal, Ready-to-Eat (MRE) for lunch. Supplements included bread and butter, cereal, soup, salad, and assorted beverages. No nonapproved foods were apparent. A range of 49 to 196 troops tested each item.

The Army test was held on 13-26 March 1984 at Camp McCarl, Fayetteville, NC. The overall menu included all 19 Tray Pack products to be served in the

morning and evening. The MRE was served for lunch. Supplements included bread, butter, soup, and assorted beverages. A range of 42 to 244 troops tested each item.

Consolidated sensory results for all three Services tested, including the B Ration counterpart ratings in parentheses, are found in Table 1, below.

TABLE 1. Summary of Ratings for First Field Test

<u>ITEM</u>	<u>AF</u>	<u>MARINE</u>	<u>ARMY</u>
Lasagna	6.32 A	7.39 A	7.15 A
Beef Stew	7.25 A	7.36 A	8.27 A
Eggs & Ham	5.29 A [2] (5.01)	6.61 A (4.84)	6.59 A (4.00)
Frankfurters	3.00 R	6.20 A	7.31 A
BBQ Beef	6.25 A (6.80)	7.98 A (6.78)	7.50 A (5.92)
Ham	5.77 A [1] (6.23)	6.54 A (6.54)	6.51 A (6.35)
Roast Beef	5.44 A [1] (6.57)	-- (5.82)	6.64 A (4.90)
Pepper Steak	6.48 A	6.37 A	7.49 A
Pork Slices	5.77 A [1] (6.67)	7.17 A (6.33)	6.78 A (4.99)
Breakfast Bake	3.92 R	6.04 A	6.78 A
Canadian Bacon	4.77 R (5.80)	6.82 A (5.57)	6.87 A (5.42)
Green Beans	6.24 A (6.81)	7.22 A (6.57)	7.02 A (5.78)
Macaroni & Cheese	3.95 R (5.47)	5.38 A [1][2] (5.92)	5.94 A [1][2] (5.43)
Escalloped Potatoes	5.49 A [1][2] (5.59)	6.41 A (5.44)	6.04 A (5.02)
Baked Beans	4.46 R (5.90)	-- (6.31)	6.64 A (5.91)
Mixed Vegetables	5.15 A [2] (5.69)	6.79 A (5.94)	6.77 A (5.81)
Spice Cake	6.12 A		
Orange Nut Cake	3.16 R	5.04 [3]	5.96 A [1]
Cherry Nut Cake	5.88 A [1]	4.35 R	5.66 A [1]
Apple Dessert	6.69 A (7.17)	7.90 A	8.03 A (6.23)

[1] - Not Statistically Different (NSD) than 6.0

[2] - Not Statistically Different (NSD) than B Ration counterpart

[3] - AFPEC Decision

A - Accept

R - Reject

From Table 1, Orange Nut Cake was clearly below the established quality level, and Cherry Nut Cake required an AFPEC decision due to its ratings of below 6 but above 5 in two cases (4). Both items have been dropped from the program. All other items were standardized and became available for procurements.

Phase Two

The second of five tests took place during 1985 with the Air Force, Marine Corps, and Army (5). Twenty-one primary Tray Pack items were scheduled for testing with 15 B Ration comparison items.

The Air Force test was held 13-20 September 1984 at Eglin Air Force Base, FL. In accordance with Air Force policy, three hot meals each day were served. Only 17 Tray Pack items were tested, since Turkey/Gravy, Blueberry Cake, Rice, and Carrots were not received in time. Supplements included bread, butter, cereal, fruit, soup, salad, and assorted beverages. A range of condiments (salt, pepper, mustard, catsup, sugar, hot sauce, and coffee creamer) were also supplied. A range of 31 to 83 troops tested the items.

The Marine Corps test was conducted during 18-22 September 1984 at Fort Bragg, Fayetteville, NC. Eighteen items were tested since Turkey/Gravy, Chocolate Cake and Blueberry Cake did not arrive in time. Two hot Tray Pack meals were served each day. The MRE was eaten for lunch. Meal supplements included bread, butter, salad, soup, and beverages. Condiments, as with the Air Force Test, were also included. A range of 72 to 89 troops tested the items.

The Army test was conducted during 22-26 October 1984 at Fort Bragg, Fayetteville, NC. All 21 items were tested. Meal supplements included bread, butter, cereal, fruit, soup, salad, and beverages. The full complement of condiments was again available. A range of 40 to 83 troops tested the items.

Consolidated sensory results from all three Services tested, including the B Ration results in parenthesis, are found in Table 2.

TABLE 2. Summary of Ratings for Second Field Test ^{3/}

<u>ITEM</u>	<u>AF</u>	<u>MARINE</u>	<u>ARMY</u>
Pork Sausage Links	5.75 [1] A	6.39 A	6.65 A
Noodles, Buttered	5.02 [3]	5.22 [1] A	6.13 A
Potatoes, Sw, Gl	4.81 [3]	4.97 [3]	6.24 A
Spice Cake	6.74 A (6.64)	6.40 A (7.24)	6.68 A (6.48)
Meatloaf w/Gravy	5.43 [1] A (5.66)	5.90 [1] A (5.54)	6.00 A (3.37)
Potato Salad	5.12 [2] A (5.11)	5.84 [1] A (6.23)	4.99 [2] A (3.88)
Peas and Mushrooms	6.54 A (6.94)	6.63 A (6.15)	6.67 A (5.92)
Cream, Grd, Beef	5.60 [1] A (6.30)	6.05 A (6.45)	6.02 A (5.85)
Potatoes w/Butter	6.10 A (5.76)	6.15 A (5.70)	6.27 A (5.68)
Apple Coffee Cake	6.62 A	6.41 A	6.49 A (6.67)
Chicken, w/Gravy	5.27 [3] (7.14)	5.54 [3] (7.08)	6.52 A (6.78)
Chocolate Cake	4.63 R (6.68)	4	4.83 R (7.46)
Egg Loaf w/Cheese	2.95 R (4.82)	3.33 R (5.24)	4.09 R (4.01)
Egg Loaf w/Mushrooms	3.59 R (6.23)	3.97 R (6.02)	4.65 R (3.67)
Whole Corn	6.39 A (7.07)	6.34 A	6.83 A (5.91)
Chicken a la King	6.61 A (6.92)	6.30 A (6.83)	7.38 A (6.60)
Chocolate Pudding	5.52 [1] A (6.57)	5.49 [3] (6.64)	4.71 R (6.65)
Turkey Sl w/Gravy	[4]	[4]	6.85 A
Blueberry Cake	[4]	[4]	6.51 A
White Rice	[4]	6.59 A (6.15)	7.07 A (6.37)
Sliced Carrots	[4]	6.59 [2] A (5.74)	6.17 A (6.36)

[1] - NSD than 6.0

[2] - NSD than B Ration Counterpart

[3] - AFPEC decision

[4] - Item unavailable; not surveyed

A - Accept

R - Reject

From Table 2, three items required an AFPEC decision - Buttered Noodles, Glazed, Sweet Potatoes, and Roast Chicken with Gravy (6). These items were accepted with necessary formulation changes. Three items were found unacceptable - Chocolate Cake, Egg Loaf with Cheese, and Egg Loaf with Mushrooms. However, Chocolate Cake was not dropped from the system, but major reformulation was necessary. A retest was done later. Chocolate Pudding was rejected by the Army, but was accepted by AFPEC. A retest of Chocolate Pudding was conducted later.

Phase Three:

The third of five field tests took place during 4Q85 (7). Seventeen Tray Pack items were tested with the Marine Corps and Army. Fifteen items were alternates and two were primary items retested. The experimental design and methodology were consistent with testing used for the primary items.

The Marine Corps test was held 5-8 July 1985 at Pickel Meadows Training Area, Bridgeport, CA. All 17 items were tested and were supplemented by bread, butter, condiments, and assorted beverages. Some nonapproved food items were observed during the test period, such as commercial snacks and candies. A range of 64 to 102 troops tested the items.

The Army test was conducted on 22-25 September 1985 at Fort Devens, MA. All 17 items were tested and supplemented with bread, butter, condiments, and assorted beverages. No nonapproved foods were observed during the test. A range of 56 to 104 troops tested the items.

Consolidated sensory results from the Marine Corps and Army, including the B ration counterpart ratings in parenthesis, are found in Table 3.

TABLE 3. Summary of Ratings for Third Field Test 5/

<u>ITEM</u>	<u>MARINE</u>	<u>ARMY</u>
Beef Pot Roast	6.9 A	6.6 A (6.0)
Beef Tips w/Gravy	[4]	6.4 A
Chicken Breast w/Gravy	[4]	6.4 A
Chili Con Carne	7.7 A (5.3)	6.9 A (6.2)
Spaghetti w/Meatballs	7.6 A (6.3)	6.6 A (5.0)
Stuffed Peppers	7.0 A	6.6 A
Swedish Meatballs	7.2 A	6.0 A
Spanish Rice	7.0 A (5.7)	6.6 A (6.2)
Corn, Cream Style	7.7 A (6.5)	6.8 A (6.2)
Carrots, Glazed	7.1 A (5.2)	6.1 A (5.2)
Beans, Lima	6.3 A (4.8)	5.6 A [1] (5.0)
Peas & Carrots	7.1 A	6.0 A (5.8)
Blueberry Dessert	6.8 A	6.6 A

TABLE 3. Summary of Ratings for Third Field Test (cont'd)

<u>ITEM</u>	<u>MARINE</u>	<u>ARMY</u>
Cherry Dessert	7.2 A	7.0 A
Chocolate Cake	[5]	4.9 R [2] (6.7)
Chocolate Pudding	[5]	5.7 A [3]
Fruit Cake	4.1 R	4.4 R

- [1] - NSD than 6.0
- [2] - NSD than B Ration counterpart
- [3] - Not significantly less than 6.0
- [4] - Item unavailable; not surveyed
- [5] - Incorrect procurement provided; not surveyed
- A - Accept
- R - Reject

All items except three--Chocolate Cake, Chocolate Pudding, and Fruit Cake--were found acceptable. Chocolate Cake and Chocolate Pudding were retested during Phase Four. Fruit Cake was dropped from the system.

Phase Four:

The fourth of five field tests took place during 2Q86 with the Air Force, Army, and Marine Corps (9). Fourteen menu items were scheduled to be field acceptance tested per the criteria for the primary items. Macaroni Salad was not available for the test due to lack of production bids; therefore, 13 items were tested. Eleven alternate items were tested, which included two previously partially tested items. Two primary items required retesting.

The Air Force test was conducted 5-18 January 1986 at Eglin Air Force Base, FL. Both Tray Pack and B Ration meals were supplemented with bread, butter, salad, a full range of condiments, and assorted beverages. A range of 66 to 99 troops tested the Tray Pack items.

The Army test was conducted 23-28 February 1986 at Fort Polk, LA. All meals were supplemented with bread, butter, soup, salad, condiments, and assorted beverages. A range of 81 to 94 troops tested the items.

The Marine Corps test was conducted 10-13 March 1986 at Fort Bragg, NC. All meals were supplemented with bread, butter, soup, salad, condiments, and assorted beverages.

Consolidated sensory results for all three Services tested, including the B Ration counterpart ratings in parenthesis, are found in Table 4, below.

TABLE 4. Summary of Ratings for Fourth Field Test 7/

<u>ITEM</u>	<u>AF</u>	<u>MARINE</u>	<u>ARMY</u>
Swiss Steak w/Gravy	6.71 A (6.09)	6.43 A (6.79)	5.62 [1] A
Chicken Cacciatore	6.11 A (6.58)	6.60 A (6.73)	6.14 A (5.74)
Meatballs/Cabbage	6.89 A	7 34 A	6.92 A
Chicken Breasts/Gravy	6.24 A		6.05 A
Beef/Macaroni	5.81 A [1] (6.01)	6.36 A (5.22)	6.12 A (5.00)
Chicken/Noodles	6.43 A	6.83 A	5.93 A [1]
Chicken Stew	5.94 A [1] (6.0)	6.60 A (6.31)	6.63 A (5.94)
Potatoes w/Chic Sauce	5.39 R (6.44)	5.11 R (6.48)	5.11 R (6.04)
Lima Beans	5.15 3 (6.29)		
Chocolate Pudding	6.73 A (6.71)	6.80 A (6.92)	6.92 A [1] (6.83)
Marble Cake	6.58 A (6.77)	6.01 A	5.52 A [1] (6.50)
Pound Cake	5.80 A [1] (6.38)	5.38 R (6.78)	5.00 [3] (7.41)
Chocolate Cake	6.30 A (6.89)	4.37 R (6.90)	5.02 R (7.55)
Macaroni Salad	[4]	[4]	[4]

[1] - NSD than 6.0

[2] - NSD than B Ration counterpart

[3] - AFPEC Decision

[4] - Item unavailable; not surveyed

A - Accept

R - Reject

All seven entrees (items 1 to 7 above) were found acceptable. The Potatoes w/Chicken Sauce item was rejected and the Lima Beans required an AFPEC decision. At the 7-8 May 1986(10) AFPEC meeting, the members voted to drop both items from the program. The new Chocolate Pudding formulation was retested and found

acceptable. The three cakes were borderline; however, AFPEC voted to accept the Marble Cake and delay action on Chocolate and Pound Cakes to the July 1986 meeting. Standardization action was then taken to include all accepted items into the program.

At the 10 July 1986 AFPEC meeting, Chocolate Cake and Pound Cake were evaluated by the Committee and found acceptable (11). Standardization action was taken to include these cakes in the program.

Phase Five

The last field test was conducted with the Army at Fort Ord, CA, during 25-26 August 1987. The final two alternate menu items, Pork with BBQ Sauce and Macaroni Salad, were evaluated. Additionally, White Rice was retested due to a change in formulation from a pH controlled item to a fully retorted item.

The test was held at Fort Hunter-Liggett at Fort Ord with the 7th Support and Transport Battalion. A range of 82 to 105 troops tested all items. The results are given in Table 5:

TABLE 5. Summary of Ratings, Phase Five

<u>ITEM</u>	<u>ARMY</u>
Pork w/BBQ Sauce	6.78 A
Macaroni Salad	6.71 A
White Rice	6.71 A

A = Accept

R = Reject

These data were presented to the AFPEC at the 5 November 1987 meeting. The three items were accepted for inclusion into the supply system.

SUMMARY:

The five tests conclude the accelerated program for field acceptance testing of the 44 primary and 29 alternate Tray Pack items.

A summary of the number and types of items tested during each phase is found in Table 6, below.

TABLE 6. Number of Items Tested in Each Phase

	<u>Total Item Tested</u>	<u>Primary</u>	<u>Alternate</u>	<u>Retest</u>
Phase I	19	17	2	
Phase II	21	21		
Phase III	17		15	2
Phase IV	13		9	4
Phase V	3		2	1
Never Tested ¹	<u>7</u>	<u>6</u>	<u>1</u>	<u> </u>
Totals	80	44	29	7

¹The five fruits in #10 cans were never supplied in Tray Packs due to the lack of bids from suppliers. The Three-Bean Salad and Stewed Tomatoes were deleted prior to field testing.

The Tray Pack items are no longer separated into two groups, but are now consolidated into one listing. The 14-day, two meal/day, cyclic menu includes the best items from the 73 rated items based on the field test data.

A summary of test sites and dates is shown in Table 7; a summary of ratings by Services is found in Appendix A; and a summary of standardized items with their respective National Stock Numbers (NSNs) is found in Appendix B.

TABLE 7. Summary of Test Sites and Dates

Phase I	USAF Eglin AFB, FL	16-22 Jan 84
	USMC Ft. Bragg, NC	12-15 Mar 84
	USA Ft. Bragg, NC	23-26 Mar 84
Phase II	USAF Eglin AFB, FL	13-20 Sep 84
	USMC Ft. Bragg, NC	18-21 Sep 84
	USA Ft. Bragg, NC	23-26 Oct 84
Phase III	USMC Bridgeport, CA	5-8 Jul 85
	USA Ft. Devens, MA	22-25 Sep 85
Phase IV	USAF Eglin AFB, FL	6-17 Jan 86
	USA Ft. Polk, LA	24-27 Feb 86
	USMC Ft. Bragg, NC	10-13 Mar 86
Phase V	USA Ft. Ord, CA	24-26 Aug 87

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11. Minutes of the Armed Forces Product Evaluation Committee, 9-10 July 1986. Distributed 2 September 1986.
12. Field Acceptance Test Plan for U.S. Army Test of New Tray Pack Dinner Items, 7 August 1987.
13. Information Paper (3 August 1987). Subject: Tray Pack Field Test of Dinner Items.

APPENDIX A

RATING SUMMARY BY SERVICE

PRIMARY ITEMS (44)	ARMY		MARINES		AIR FORCE	
	MEAN	SD	MEAN	SD	MEAN	SD
Apple Dessert	8.03	1.21	7.90	1.43	6.69	1.69
Applesauce ²	----	----	----	----	----	----
Beans, Green	7.02	1.61	6.61	1.89	6.06	1.72
Beans w/Bacon Sauce	6.64	1.96	----	----	4.37	2.28
Beef in BBQ Sauce	7.50	1.22	7.98	1.17	6.25	2.18
Beef, Ground, Creamed	6.02	1.97	6.05	2.11	5.6	2.07
Beef Strips in Gr Peppers	7.49	1.12	6.37	2.12	6.4	1.51
Beef Roast w/Mushroom Gravy	6.64	1.87	----	----	----	----
Beef Stew	8.27	0.95	7.36	1.08	7.25	1.44
Breakfast Cake	6.78	1.92	6.03	1.96	3.92	2.19
Cake, Coffee Apple	6.49	1.76	6.41	1.99	6.62	1.71
Cake, Blueberry	6.51	1.86	----	----	----	----
Cake, Cherry Nut ¹	5.66	2.63	4.12	2.26	5.88	1.95
Cake, Chocolate	4.83	2.57	----	----	4.63	1.97
Retest	5.02	1.90	4.37	2.20	6.30	1.68
Cake, Orange Nut ¹	5.96	2.61	5.04	2.37	3.16	2.21
Cake, Spice	6.68	2.14	6.40	1.97	6.74	1.21
Canadian Bacon	6.87	1.65	6.83	1.50	4.78	1.86
Retest	----	----	----	----	5.6	2.27
Carrots, Sliced	6.17	1.99	5.32	2.37	----	----
Chicken A La King	7.38	1.66	6.30	1.74	6.61	1.62
Chicken Roast w/Gravy	6.52	1.62	5.54	2.09	5.27	1.95
Corn, Whole Kernel	6.83	1.57	6.34	1.82	6.39	1.48
Egg Loaf w/ Cheddar Cheese ¹	4.09	2.14	3.33	1.86	2.95	2.24
Egg Loaf w/ Mushrooms ¹	4.65	2.50	3.33	1.86	2.95	2.24
Eggs, Scrambled w/Ham	6.59	1.67	6.61	1.67	5.29	2.00
Escalloped Potatoes	6.04	1.89	6.41	2.00	5.20	2.02
Frankfurters in Brine	7.30	1.44	6.20	1.83	3.00	1.70
Fruit Cocktail ²	----	----	----	----	----	----
Ham Slices	6.50	1.57	6.56	1.69	5.57	1.90
Macaroni & Cheese	5.94	2.32	5.38	2.30	3.95	2.36
Meatloaf w/Mushroom Gravy	6.00	2.05	5.90	2.03	5.43	2.13
Noodles, Buttered	6.13	1.87	5.02	1.17	5.02	1.71
Peaches, Sliced ²	----	----	----	----	----	----
Pears, Sliced ²	----	----	----	----	----	----
Peas and Mushrooms	6.67	2.12	6.63	1.95	6.54	2.05
Pineapple ²	----	----	----	----	----	----
Pork Sausage Links	6.65	1.78	6.39	1.78	5.75	1.39
Potato Salad	4.99	2.58	5.80	1.93	5.12	2.22
Potatoes, Sweet, Glazed	6.24	2.09	4.97	2.31	4.81	1.79
Retest	----	----	----	----	6.10	1.94
Potatoes w/Butter Sauce	6.04	1.89	6.41	2.00	5.20	2.02

APPENDIX A

RATING SUMMARY BY SERVICE

PRIMARY ITEMS (continued)	ARMY		MARINES		AIR FORCE	
	MEAN	SD	MEAN	SD	MEAN	SD
Retest	6.27	1.58	6.14	1.95	----	----
Pudding, Chocolate	4.71	2.57	5.49	2.20	5.52	2.29
Retest	5.70	----	----	----	----	----
Retest	6.80	2.19	6.92	1.71	6.73	1.92
Rice, White	7.07	1.51	6.59	1.69	----	----
Retest	6.71	1.80	----	----	----	----
Three Bean Salad ³	----	----	----	----	----	----
Turkey Slices w/Gravy	6.85	1.54	----	----	----	----
Vegetables, Mixed	6.77	1.63	6.47	2.00	5.15	2.09
ALTERNATE ITEMS (29)						
Beans, Lima ¹	5.6	1.9	6.3	2.00	5.15	2.32
Beef, Pot Roast w/Gravy	6.6	1.8	6.9	1.6	----	----
Beef Tips w/Gravy	6.4	1.8	----	----	----	----
Blueberry Dessert	6.6	1.7	6.8	1.6	----	----
Beef Swiss Steak	6.43	1.68	5.62	2.0	6.71	1.35
Cake, Fruit ¹	4.4	2.5	4.1	2.4	----	----
Cake, Marble	6.01	1.60	5.52	2.20	6.58	1.81
Cake, Pound	5.38	1.96	5.00	2.24	5.88	1.88
Carrots, Glazed	6.1	1.7	7.0	1.6	5.80	1.88
Cherry Dessert	7.0	1.6	7.2	1.6	----	----
Chicken Breasts w/Gravy	6.4	1.4	6.05	1.85	6.24	2.14
Chicken Cacciatore	6.60	1.76	6.14	1.85	----	----
Chicken Stew	6.60	1.62	6.63	1.64	5.94	1.80
Chicken and Noodles	6.83	1.38	5.93	2.26	6.43	1.60
Chili Con Carne	6.9	1.5	7.7	1.2	6.43	1.60
Corn, Sweet, Creamstyle	6.8	1.8	7.7	1.2	----	----
Lasagna	7.15	1.68	7.39	1.26	6.32	1.68
Macaroni w/Beef and Sauce	6.36	1.77	6.12	2.11	5.81	1.65
Macaroni Salad	6.71	2.15	----	----	----	----
Meatballs, Swedish	6.0	2.0	7.2	1.3	----	----
Meatballs w/Rice & Cabbage	7.34	1.37	6.92	1.63	6.89	1.56
Peas and Carrots	6.0	1.9	7.1	1.6	----	----
Peppers, Green Stuffed	6.6	1.5	7.0	1.8	----	----
Potatoes in Chicken Sauce ¹	5.1	2.06	5.1	2.13	5.39	1.99
Pork in BBQ Sauce	6.78	1.90	----	----	----	----
Pork slices/Gravy	6.78	1.62	7.15	1.50	5.77	1.99
Rice, Spanish	6.6	1.7	7.6	1.3	----	----
Spaghetti W/Meatballs	6.6	1.4	7.0	1.8	----	----
Tomatoes, Stewed ³	----	----	----	----	----	----

1 - Item deleted from program

2 - Items procured in #10 cans due to lack of primary supplier

3 - Item deleted prior to testing

APPENDIX B

STANDARDIZED TRAY PACK ITEMS

<u>Item</u>	<u>NSN</u>	<u>Item</u>	<u>NSN</u>
Beef Stew	8940-01-009-7993	Sliced Turkey/Gravy	8940-01-143-3326
Beef/BBQ Sauce	8940-01-010-0881	Buttered Noodles	8940-01-151-5844
Beef Pepper Steak	8940-01-123-2191	Meatloaf/Gravy	8940-01-151-6919
Ham Slices	8905-01-143-3326	Glazed Sweet Potatoes	8940-01-153-0710
Spice Cake	8920-01-144-0565	Creamed Ground Beef	8940-01-151-5845
Franks in Brine	8905-01-124-88628	Pork Sausage Links	8905-01-151-6920
Roast Beef/Gravy	8940-01-150-2857	Apple Coffee Cake	8920-01-151-6922
Canadian Bacon	8905-01-151-2488	Potatoes/Butter Sauce	8940-01-152-6821
Eggloaf/Ham	8940-01-151-4134	Whole Kernel Corn	8915-01-151-7947
Green Beans	8915-01-150-2861	Sliced Carrots	8915-01-151-6914
Breakfast Bake	8920-01-150-8381	Chicken ala King	8940-01-154-3525
Escalloped Potatoes	8940-01-147-6362	Potato Salad	8940-01-162-2178
Macaroni/Cheese	8940-01-150-2860	Peas/Mushrooms	8915-01-165-4928
Mixed Vegetables	8915-01-150-2859	Rice	8920-01-151-8019
Apple Dessert	8940-01-147-7855	Blueberry Cake	8920-01-166-3576
Beans/Bacon	8915-01-147-7853	Apple Sauce ^{1/}	8915-00-127-8272
Peaches/Syrup ^{1/}	8915-00-577-4203	Fruit Cocktail ^{1/}	8915-00-286-5482
Pineapple/Syrup ^{1/}	8915-00-170-5148	Pears/Syrup ^{1/}	8915-00-616-0223
Pork Slices/Gravy	8940-01-010-4843	Glazed Carrots	8940-01-151-6910
Blueberry Dessert	8940-01-151-5464	Swedish Meatballs	8940-01-123-1585
Cherry Dessert	8940-01-152-5507	Peas/Carrots	8915-01-151-6917
Lasagna	8940-01-124-4544	Spanish Rice	8940-01-152-0479
Chili con Carne	8940-01-124-4544	Spanish Rice	8940-01-151-6913
Beef Pot Roast	8940-01-123-1584	Spaghetti/Meatballs	8940-01-151-6921
Creamed Style Corn	8915-01-151-9936	Beef Tips/Gravy	8940-01-173-2427
Marble Cake	8920-01-173-1939	Meatballs/Cabbage	8940-01-173-2432
Chicken Stew	8940-01-173-2430	Macaroni/Beef	8940-01-173-2428
Chix Breasts/Gravy	8940-01-173-4839	Swiss Steak	8940-01-151-4185
Chicken Noodles	8940-01-173-2431	Chocolate Pudding	8940-01-159-1569
Chicken Cacciatore	8940-01-173-2429	Chocolate Cake	8920-01-151-8839
Sliced Chicken/Gravy	8940-01-153-8540	Pound Cake	8920-01-173-1940
Macaroni Salad	8940-01-173-1875	BBQ Pork	8940-01-151-6918
Orange Nut Cake ^{2/}	8920-02-144-0564	Eggloaf/Cheese ^{2/}	8940-01-154-1927
Cherry Nut Cake ^{2/}	8920-01-144-0563	Eggloaf/Mushrooms ^{2/}	8940-01-160-1528
Three Bean Salad ^{2/}	8915-01-147-6363	Fruit Cake ^{2/}	8940-01-173-4843
Lima Beans ^{2/}	8915-01-151-5460	Stewed Tomatoes	8940-01-173-1877
Pot/Chicken Sauce ^{2/}	8940-01-173-1876		

^{1/} Item procured in #10 can
^{2/} Item deleted from program

Food Survey Form

Date _____

Meal Type _____

We would like your help in evaluating each of the following food items for how acceptable the foods are and how satisfied you are with their appearance and portion size. For each of these characteristics, circle the number that best expresses your opinion. Please fill this in yourself without discussing it with your friends.

1. Please rate the acceptability of each food item in your meal by circling the number that best expresses your opinion.

9 Extremely Good	9 Extremely Good	9 Extremely Good	9 Extremely Good
8 Very Good	8 Very Good	8 Very Good	8 Very Good
7 Moderately Good	7 Moderately Good	7 Moderately Good	7 Moderately Good
6 Slightly Good	6 Slightly Good	6 Slightly Good	6 Slightly Good
5 Neutral	5 Neutral	5 Neutral	5 Neutral
4 Slightly Bad	4 Slightly Bad	4 Slightly Bad	4 Slightly Bad
3 Moderately Bad	3 Moderately Bad	3 Moderately Bad	3 Moderately Bad
2 Very Bad	2 Very Bad	2 Very Bad	2 Very Bad
1 Extremely Bad	1 Extremely Bad	1 Extremely Bad	1 Extremely Bad

2. Please rate your satisfaction with the portion size of each food item.

9 Extremely Good	9 Extremely Good	9 Extremely Good	9 Extremely Good
8 Very Good	8 Very Good	8 Very Good	8 Very Good
7 Moderately Good	7 Moderately Good	7 Moderately Good	7 Moderately Good
6 Slightly Good	6 Slightly Good	6 Slightly Good	6 Slightly Good
5 Neutral	5 Neutral	5 Neutral	5 Neutral
4 Slightly Bad	4 Slightly Bad	4 Slightly Bad	4 Slightly Bad
3 Moderately Bad	3 Moderately Bad	3 Moderately Bad	3 Moderately Bad
2 Very Bad	2 Very Bad	2 Very Bad	2 Very Bad
1 Extremely Bad	1 Extremely Bad	1 Extremely Bad	1 Extremely Bad

3. Please rate your satisfaction with the appearance of each food item.

9 Extremely Good	9 Extremely Good	9 Extremely Good	9 Extremely Good
8 Very Good	8 Very Good	8 Very Good	8 Very Good
7 Moderately Good	7 Moderately Good	7 Moderately Good	7 Moderately Good
6 Slightly Good	6 Slightly Good	6 Slightly Good	6 Slightly Good
5 Neutral	5 Neutral	5 Neutral	5 Neutral
4 Slightly Bad	4 Slightly Bad	4 Slightly Bad	4 Slightly Bad
3 Moderately Bad	3 Moderately Bad	3 Moderately Bad	3 Moderately Bad
2 Very Bad	2 Very Bad	2 Very Bad	2 Very Bad
1 Extremely Bad	1 Extremely Bad	1 Extremely Bad	1 Extremely Bad

4. Please rate this meal for overall acceptability.

9 Extremely Good	4 Slightly Good
8 Very Good	3 Moderately Bad
7 Moderately Good	2 Very Bad
6 Slightly Good	1 Extremely Bad
5 Neutral	

**T-Ration Menu for the Army/Marine Corps
(Four days)**

	Breakfast	Dinner
Day 1	T-9 (Breakfast) Fruit Cocktail Breakfast Bake Canadian Bacon Baked Beans Bread/Butter or Margarine Coffee/Tea/Milk/Cocoa	T-1 Lasagna Green Beans Spice Cake Apple Sauce Bread/Butter or Margarine Lemon Lime Beverage Coffee/Tea/Milk
Day 2	T-10 (Breakfast) Apple Sauce Eggs/Ham Scalloped Potatoes Bread/Butter or Margarine Coffee/Tea/Milk/Cocoa	T-2 Franks/Brine Baked Beans Peas Orange Nut Cake Bread/Butter or Margarine Cherry Beverage Coffee/Tea/Milk
Day 3	T-9 (Breakfast) Fruit Cocktail Breakfast Bake Canadian Bacon Baked Beans Bread/Butter or Margarine Coffee/Tea/Milk/Cocoa	T-3 Ham Slices/Brine Macaroni/Cheese Mixed Vegetables Pears/Syrup Bread/Butter or Margarine Orange Beverage Coffee/Tea/Milk
Day 4	T-10 (Breakfast) Apple Sauce Eggs/Ham Scalloped Potatoes Bread/Butter or Margarine Coffee/Tea/Milk/Cocoa	T-4 Pepper Steak Scalloped Potatoes Green Beans Cherry Nut Cake Bread/Butter or Margarine Lemonade Beverage Coffee/Tea/Milk