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WILL TRAY RATIONS BE AVAILABLE FOR THE NEXT WAR?

BY

COLONEL FRANCIS M. PITARO

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JUN 20 1990

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18 March 1990



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USAWC MILITARY STUDIES PROGRAM PAPER

WILL TRAY RATIONS BE AVAILABLE FOR THE NEXT WAR?
AN INDIVIDUAL STUDIES PROJECT

by

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ABSTRACT

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There is an insidious problem with Tray Rations (T-Rations). There aren't enough to feed the Army should we go to war tomorrow. This lack of stockage is caused by inadequate demands being placed on the industrial base, yet the reasons behind the inadequate demands are because of problems with the Ration. One problem feeds on the other and unless they are fixed, both in supply and demand, the operational ration (the heart of the Army Field Feeding System (AFFS)) is in jeopardy. This study focuses on the myriad problems associated with Tray Ration production and fielding. It attempts to give the reader some historical perspectives on T- Ration development, highlight fielding problems, and present solutions which are currently being implemented. Finally, recommendations will be offered which may ensure that T-Rations are available for the next war. (GWO)

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WILL TRAY RATIONS BE AVAILABLE FOR THE NEXT WAR?

CHAPTER I

INTRODUCTION

Will we be able to sustain our soldiers with Tray Rations (T-Rations) under the Army Field Feeding System (AFFS) when we go to war? Numerous problems with T-Rations have caused this question to be asked often at all levels of command throughout the Army.

"An army marches on its stomach." This quote by Napoleon is as true today as it was over 100 years ago, and feeding an organization as large as an army is no easy task. Feeding methods employed by armies have evolved since the pre-Napoleonic Wars when they lived off the resources of the enemies they conquered. The U.S. Army, probably one of the best fed armies in the world, has employed a number of feeding systems throughout the course of its history, however, since World War II there have been few significant changes in the methods used to feed its soldiers. Owing largely to technological advances in the food service industry and a desire to bring an outdated feeding system on line to support the modern battlefield, the Combat Field Feeding System (CFFS) was developed. At the heart of CFFS is the Tray Ration, or T-Ration as it is called.

What are T-Rations? Why are there so many problems surrounding them? Can we count on their availability if we go to war?

This study attempts to answer these questions and show the reader that while there are significant problems with T-Rations, the problems can be overcome. Recommendations will also be offered to ensure that once these problems are resolved, adequate demands will be placed on the industrial base to fill both peacetime and wartime requirements.

Before tackling T-Ration problems, it's important to understand the background of the system which led to the production of the ration.

HISTORY OF THE COMBAT FIELD FEEDING SYSTEM

The initial requirement to change the Army's WW II era feeding system to better support AirLand Battle doctrine gave rise to the Combat Field Feeding System (CFFS). Technological advances in the food service industry offered savings in manpower and other resources, and brought the promise of more flexibility than the system in use at that time. The savings in manpower were viewed as an ideal way to cut cooks and add to the combat force structure of the Light Divisions under the Army of Excellence. The CFFS was approved by the Army Chief of Staff in December 1984, for implementation in all active divisions, both heavy and light.¹ The approved concept called for a field feeding standard of two hot meals (primarily T-Rations) and one Meal Ready to Eat (MRE) per day; which constituted what is called an operational ration.

Implementation in 1985, caused cook and subsistence supply force structure to be decremented in CONUS divisional units and installations before CFFS equipment and T-Rations were completely

developed, type classified, produced, and acquired. CFFS was being hastily fielded, which caused the following undesirable effects:

- a. Development of interim doctrine
- b. Premature reductions in cooks
- c. Elimination of popular A-Rations
- d. The field expedient use of on hand field mess gear
- e. A very limited T-Ration menu with virtually no breakfast menus and incomplete lunch/dinner menus
- f. Use of inadequately trained food service, subsistence, supply and staff personnel.²

TASK FORCE RECOMMENDATIONS

Because of the problems associated with CFFS, the Army Chief of Staff established The Army Food 2000 Task Force in December 1987. The Task Force had many objectives; however, its basic purpose was to evaluate and make recommendations on the Army's current and future operational field rations, specifically MREs and T-Rations.³

In order to preclude getting a strictly parochial view of the problem, many team members were selected from outside the food service community. Most notable among the more distinguished members were: General(Ret) Sennewald, LTG(Ret) McLaughlin and SMA(Ret) Morrell. See Appendix 1 for a complete listing.

Interviews were conducted across a wide spectrum of TO&E and TDA units in both CONUS and OCONUS. Appendix 2 lists installations and organizations visited.

While Army Food 2000 Task Force was busy evaluating the opera-

signal ration, the Director of Combat Developments, in conjunction with the Subsistence Department at Fort Lee, was conducting a separate study on the viability of IFFS. Their study highlighted doctrinal deficiencies in the system which were briefed to the Army Vice Chief of Staff on 13 May 1989. The following recommendations were approved and adopted under a modified concept called the Army Field Feeding System (AFFS):

- a. Introduce battalion level feeding with additional cook and equipment resources so battalions can feed themselves
- b. Allow commanders to feed two A-Rations meals per week
- c. Authorize the Kitchen, Company Level Field Feeding (KCLFF), in the heavy divisions, thus providing more potential for forward and remote unit feeding
- d. Employ an area feeding concept versus a designated feeding concept. 4

HISTORY OF THE TRAY RATION

With that brief background, let's shift to the heart of AFFS, the operational ration-- specifically the T-Ration. As stated in the introduction, the need to change the outmoded field feeding system generated a requirement for a pre-prepared, easy to use, hot ration for group feeding, which required less manpower, fuel, and water than the A and B Rations. In answer to this requirement, Natick Research, Development and Engineering Center developed the T-Ration. T-Rations are heat processed, shelf-stable products consisting of fully prepared food packaged in hermetically sealed, half-steam table

containers ready for heating and serving. The container serves as a package, a heating pan, and a serving tray. The logistical advantages of the T-Ration are significant, as shown below in table 1. 5

Table 1
Logistical Advantages Of T-Rations

<u>PARAMETER</u>	<u>T-RATION</u>	<u>B-RATION</u>
Menu Cycle	10 days	10 days
Preparation Time	45 minutes	2-4 hours**
Number Fed	Up to 200	100
Water Use*	30 gallons	75 gallons
Fuel Use	20% less	
Cooks Required	1 preparer	2 preparers
	1 clean up	1 clean up
Training	Easy	Substantial
Special Handling	Little	Significant

* Water use includes beverages (coffee, juices and kool-aid).

**The B Ration preparation is considered substantial because of the precautions required when preparing dehydrated food.

PROBLEM AREAS

While the T-Ration concept has been under development by Natick since the early 1970's, initial production and field testing actually began during FY 83-86. Early tests revealed that soldiers were satisfied with the quality of the ration; however, other factors

created problems with total acceptability of the ration. Most notable among these problems were:

- a. Insufficient breakfast menu items
- b. Insufficient A Ration enhancements such as fresh fruit, eggs and condiments
- c. Inability to keep the ration hot once it was heated and distributed to remote sites
- d. Handling and packaging problems caused by the size of the tray can and the bulk and weight of the total module
- e. Lack of confidence in the T-Ration system

Two noteworthy examples which created a great deal of bad publicity for the T-Ration came from Bright Star and Market Square exercises. During Bright Star, units were issued lasagna for several straight days. During the latest Market Square, barbecue beef was served for several days. While lack of menu selection was blamed, the real problem was at the ration breakdown points. In both exercises, other menu items were available, but ration breakdown personnel failed to move pallets, identify alternate menu selections and issue them to units.

SOLUTIONS

Much has been done to resolve these shortcomings, and more solutions are still being developed:

- a. Wider menu variety is currently being procured. See Appendix 3 for the FY 90 breakfast, lunch/dinner menu selections.
- b. Ethnic and fast foods such as hamburgers, hot dogs, pizzas,

and Chinese and Mexican entrees are being developed.

d. Fresh fruits and other enhancements are being issued with T-Rations.

e. Additional personnel and equipment approvals have been granted to permit the serving of two A Rations meals per week.

f. As an interim solution to the problem of keeping the rations hot, heated T-Ration cans are being put into currently fielded Mermite cans. This interim solution, while not optimal, will suffice until a new thermal carrier is produced. Latest information indicates that a new carrier is still in the design phase.

g. Downsizing of the current 36 soldier module to an 18 soldier module has been tested and proved to be more cost efficient, as well as lighter, easier to handle and store, and less wasteful. Field testing will begin in 2nd quarter FY 90.

h. Training at distribution points is being conducted to preclude repetitive meals from being issued to units.

One other significant problem surfaced much later in the initial fielding stage, and that was the inadequate shelf life of the ration. This problem remains the most significant obstacle to the successful completion of the T-Ration fielding.

ENDNOTES

1. Office of the Deputy Chief of Staff for Logistics, Army Food 2000 Task Force Report Phase I, p.4.

2. IBID., p.1.

3. IBID., Appendix A. pp A-1 through A-2.

4. Office of the Deputy Chief of Staff for Logistics, Army Food
2000 Task Force, Memorandum, p. 1.

5. Susan D. Gagne, Historical Information in the T Ration
Program, p. 2.

6. Office of the Deputy Chief of Staff for Logistics, Army Food
2000 Task Force Report Phase I, chapter 5, pp 13-18

CHAPTER 11

THE HEART OF THE PROBLEM

Problems surrounding the shelf life issue will now be addressed, bringing you up to date with the latest solutions being developed by Natick RD&E Center. Original design specifications called for the T-Ration to have a shelf life of three years when stored at 70 degrees F. Complaints from the field and independent tests by Natick revealed a shelf life much less than three years. In fact, Natick estimates indicated that the shelf life of the can was less than 24 months. Reports of gray spots on tray cans at depots, as well as a concern for the age of some of the T-Ration products being unitized for issue at these depots, led to the conduct of a special study by the Defense Personnel Support Center in 1989.¹

Defense Personnel Support Center (DPSC), Natick RD&E Center, and the Army Veterinary Service were represented on the study team. From a total of 12,004 cans inspected (representing 54 separate lots), 967 or 8% were found to contain either external or internal defects.² Preliminary conclusions and recommendations led to the Tray Can Improvement Program currently being implemented by Natick. See Appendix 4.

Under this program, Natick, in conjunction with Central State Cans (the sole source producer of cans), is conducting extensive research and development testing to develop a new can system that will provide a minimum three year shelf life. Phase I of the program tested 32 tray can coating variables using 15 different procedures. Initial testing pared the group down to six variables which will be used in

Phase II. Phase II is a large scale evaluation of the four best types of cans filled with six food products. All four can interiors will be coated with aluminum vinyl, which is considered to be the best material to prevent corrosion.³

Natick will be performing accelerated shelf life testing by storing selected products in 100 degree F., 80 degree F., and 40 degree F. temperatures, and examining them at two week intervals during the first six months of testing. From the seventh through thirty-sixth month of testing, cans will be examined monthly.⁴ The resolution of this continuing problem will stabilize production and storage efforts and aid in resolving the final problem: insufficient supply and demand to generate stockage levels for adequate peacetime and wartime consumption. The next chapter will deal with the various factors contributing to a lack of supply and demand.

ENDNOTES

1. Interview with Susan D. Gagne, Natick Research, Development and Engineering Center, Natick, MA, 11 December 1989.
2. Defense Personnel Support Center, Preliminary Findings of the DPSC Tray Pack Special Storage Study, p.7.
3. Interview with Susan D. Gagne, Natick Research, Development and Engineering Center, Natick, MA, 11 December 1989.
4. Susan D. Gagne, Status of the Tray Pack Can and Associated technology, p.1.

CHAPTER III

SUPPLY AND DEMAND

THE INDUSTRIAL BASE

Many factors contributing to inadequate supply and demand such as can/packaging problems, shelf life, and repetitive issues of items have created some bad publicity, and fostered a lack of confidence in the T-Ration. This chapter will be devoted to the supply side of the equation, better known as the industrial base.

When the T-Ration concept was developed, it promised to be a growth industry. It was envisioned that ever increasing demands would be put on the system to procure larger quantities as the Army Field Feeding System matured. Increased peacetime consumption coupled with war reserve stockage criteria would naturally result in greater vendor interest. Table 2 reflects how the Army's peacetime usage has not kept pace with stated requirements.¹

Table 2

Tray Pack Requirements (Pallets)

	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>	<u>FY 89</u>	<u>FY 90</u>	<u>FY91</u>
Army Requirements	16,912	27,934	42,000	53,000	45,000	45,000
Actual Usage	5,308	19,000	37,366	32,908	6K(1QTR)	

Note: Army requirements equal actual procurement

As can be seen in table 2, requirements have grown through FY 89; however, consumption has not kept pace and in fact began to decrease in FY 89. The Army is not consuming the quantities purchased and because of the shelf life problem cannot put the remainder into war reserve stockage. For these reasons, millions of dollars are being lost each year. Steps are being taken to keep losses to a minimum; for example, T-Rations which approach expiration dates are being sold to prisons. Yet even selling them at a reduced cost resulted in a loss of \$3.2 million in FY 89. Additionally, \$575K worth of rations were turned over to the Defense Property Disposal Office for destruction, bringing the total loss to the Army in FY 89 to \$3.8 million.³

In an effort to bring consumption in line with procurement, the Defense Logistics Agency (DLA) will be funding only 50% of Army requirements, thus forcing units to eat into previous year stocks.⁴ This action is supposed to eliminate waste and save money, but it may have an unfortunate side effect on the production base. Further procurement reductions in what was touted to be a growth industry may chase off the remaining vendors who are producing T-Rations. At present, there are only eight vendors producing a variety of menu items and this number changes frequently.

During the earlier developmental stages of the T-Ration program, the promise of increased demands brought some of the food industry giants into the competition. Companies like Pillsbury and Green Giant competed for the opportunity to enter the T-Ration market.⁵ However, previously articulated problems with the program have driven down demands, causing the name brand producers to drop out of the production base. These industry giants have been replaced by smaller,

lesser known or unknown "Mom and Pop" type producers.⁶ For varying reasons these producers are often unable to supply a particular product, leading to shortages of menu items. Installations and units which then order an out of stock menu item are given a due-out or a substitute item. To date commanders have been unsuccessful in feeding their soldiers a due-out. Use of substitute items often leads to repetitive menus being served over a period of time. Both situations are unacceptable and cause a lack of confidence in the T Ration system.

Two other supply side features that could potentially cause problems are the depot unitization program and can manufacturing.

At present, T-Ration modules are unitized at two Department of Defense (DOD) depots located in Tracy, California and Mechanicsburg, Pennsylvania, with approximately 70% of unitization being done in Mechanicsburg. During this process, the depot puts all the food and accessories that comprise a particular menu selection into what is called a module. There are 36 meals/module, and 12 modules are combined to form a pallet. (Note: These numbers are changing and will be discussed later.) Legislation has been passed that will turn the unitization process over to the National Industries for the Blind. This action could put the two depots out of the unitization business and put all of our unitization efforts into a single commercial enterprise.⁷ This could cause a great deal of flexibility to be lost in the system.

Another potential cause for concern is that there is only one source for manufacturing T-Ration cans. While there are several sources for the steel and can coatings, all the Army's eggs are in one

basket when it comes to can production. To date, relationships with the manufacturer, Central State Can Co. (CSCC), have been outstanding and are expected to continue. CSCC is aiding in the accelerated shelf life testing program and has been extremely responsive to the demands of the T-Ration program. The company is capable of producing up to ten million cans a year, while our requirements have barely tapped less than 30% of their maximum capacity. However, as the T- Ration program matures and the Army is able to employ the Army Field Feeding System as it was intended, this single source manufacturer will not be able to keep up with the demand. See Table 3.

Table 3
T-Ration Production Capability Versus
Mobilization Requirements

Requirements (D+1)	
Raw Cans	9.1M/month
Filled Cans	9.1M/month
Modules	1.3M/month
Current Industry Capability (cold base)	
Raw Cans	850K by 5th month
Filled Cans	3.4M by 4th month
Modules	158K by 2nd month

Table 3 reflects a cold industrial base, when in fact there is currently a warm base in existence. However, a review of current

production capabilities, 10M cans a year, shows that current warm base plus idle capacity is still insufficient to meet mobilization requirements. Therefore, additional peacetime consumption is essential if we are going to come close to meeting the Army's mobilization requirements. While increased peacetime consumption seems to be a simple solution, there are a host of limiting factors, many of which have already been discussed, that prohibit increased consumption.

Even if the production of raw cans were to be increased and renewed interest brought more vendors into the market, there would still remain some stumbling blocks to increasing consumption. Even if all the bad publicity surrounding the T-Ration were to suddenly disappear, the problem of generating enough demands based on usage might still remain.

Army Usage

Current Army field feeding policy mandates the feeding of operational rations (MREs and T-Rations) for all field training that incorporates overnight billeting. This policy applies to the Active Army as well as to the Reserve Components (annual training only). Food service support (transported meals or raw ingredients) for such training will not be provided from the garrison dining facility.⁸ This stated policy is not being followed by many active and reserve units. Most of the reasons for noncompliance have already been highlighted; however, two others, budget and operational tempo (OPTEMPO), remain to be addressed.

OPTEMPO may be looked at as a subset of budget since resources

actually establish the pace or CPTEMPO at which units can train. It's clear that the Army is entering some austere times and that each training dollar must be spent wisely. Large scale field exercises are giving way to Training Exercises Without Troops (TEWTs), and commanders at all levels are using innovative approaches to accomplish quality training without extended field time. These actions are causing decreased demands for T-Ration production. Cancellations or scaling down of REFORGER or Team Spirit exercises will also further decrease demands. Training and Doctrine Command (TRADOC) has tasked component schools to develop innovative ways to assist commanders in conducting training. The renewed interest in the Devices, Simulators and Simulations (DSS) Program holds the promise of allowing commanders to achieve quality training without leaving garrison. All of these actions threaten the T-Ration production base. In fact, the concern over insufficient T-Rations to support large scale exercises has led to the prioritization of T-Ration support to specific units.¹⁰

ENDNOTES

1. Interview with Joanne Tareila, Defense Personnel Support Center, Philadelphia, PA, 20 December 1989.
2. IBID.
3. IBID.
4. IBID.
5. Interview with Susan D. Gagne, Natick Research, Development and Engineering Center, Natick, MA, 11 December 1989.
6. IBID.

7. Interview with Joanne Tareila, Defense Personnel Support Center, Philadelphia, PA, 20 December 1989.

8. Defense Personnel Support Center, Operational Rations: Requirement and Production Capability Update, briefing slide

9. U. S. Department of the Army, Army Regulation 30-XX (draft), p.4.

10. HQDA Washington DC/DALO-TST, I Ration Availability For Exercises, p.2.

CHAPTER IV

CURRENT STATUS

There are a number of initiatives being actively pursued to ensure the success of the T-Ration program:

a. Research and Development Associates, a nonprofit organization that coordinates military requirements with industry capability, is attempting to generate T-Ration interest in commercial institutional feeding facilities, such as schools, day care centers, homes for the aged, etc.¹ If successful, creation of commercial applications will increase demands for T-Rations and add more vendors to the industrial base.

b. Testing is being conducted on down sizing the T-Ration from 36 meals/can to 18 meals/can. This will not only reduce waste by eliminating the need to send a 36 meal module to a remote site with only a few soldiers, but will also facilitate storage, handling, and distribution.²

c. Accelerated shelf life testing over the next several months will validate the best can coating to use in order to increase shelf life to a minimum of three years. Once this problem is resolved, DLA could increase its annual purchases to match unit requirements as well as to build war reserve stockages.

d. Menu items are being reduced from 14 to 10 in both the breakfast and lunch/dinner selections. This should facilitate keeping items in the inventory in higher quantities.³

ENDNOTES

1. David L. Dee, Research and Development Associates, Letter to Food Service Director, Kinder-Care, 12 September 1989.

2. Interview with Thomas Dorn, Major, Army Center For Excellence, Fort Lee, VA, 8 November 1989.

3. IBID.

Chapter V

Conclusions and Recommendations

CONCLUSIONS

The basic conclusions drawn from extensive readings and interviews are as follows:

- a. While informal conversations with many former battalion commanders currently assigned to the U.S. Army War College reveal that the T-Ration meal is an acceptable ration, its future is doubtful unless solutions to the can and consumption problems can be found.
- b. My research leads me to believe that the Army Field Feeding System is a well thought out and viable system.
- c. Numerous people and agencies are currently dedicated to solving the remaining T-Ration problems.

Recommendations

The following recommendations are offered to make the Army Field Feeding System, and more specifically the T-Ration, a viable program:

- a. Issue guidance to ensure that current AFFS policy, as articulated in messages and AR 30-XX (draft), is being followed by active and reserve units. Refer to page 15, under the heading of Army Usage, for a synopsis of current policy.

b. Force Active and reserve units to avail themselves of training opportunities which allow for exercising AFGS. Specifically, T-Rations must be periodically prepared while in garrison so as to rotate installation stocks, increase demand, expose soldiers to T-Rations and train food service personnel on the proper preparation and presentation of the ration.

c. Require commanders at all levels to schedule T-Ration preparation and consumption on their annual and quarterly training calendars to ensure that food service personnel are prepared to support their units' war time feeding requirements.

d. Provide continuous training to supply support activities which issue T-Rations to preclude repetitive menu items being issued to units. Toward this end, food service advisors at all levels must be actively involved in the requisitioning and receipt processing system to ensure units receive a variety of menu items.

e. Increase funding so that adequate supplies of T-Rations can be stocked at the Troop Issue Support Agencies (TISAs). This will preclude units from receiving due-outs or repetitive menu items when they begin placing heavier demands on the system.

f. Mandate the feeding of T-Rations during monthly Reserve and National Guard weekend drills.

g. Use T-Rations to feed large populations during emergency aid operations both in the United States and in foreign countries. States requesting emergency aid for natural disasters such as Hurricane Hugo or the San Francisco earthquake would be prime examples. T-Rations could also be distributed in conjunction with foreign aid assistance to underdeveloped nations or to those countries requesting natural

disaster aid such as Armenia (earthquake).

k. Intensify efforts at finding commercial applications for T-Rations. Numerous food service operations ongoing in institutions throughout the United States could possibly benefit from this system.

The basic requirement of developing a field feeding system employing state of the art technology that will sustain our soldiers on the modern battlefield has been met, albeit some refinements are still needed. The logistical efficiencies achieved allow for:

- a. 50% Reduction in food service personnel
- b. 50-80% reduction in food preparation time
- c. 40% reduction in water usage
- d. 20% fuel savings compared to A or B Rations.¹

The remaining problems of inadequate shelf life and adequate stockage levels are being addressed by many dedicated people in both DOD and DA food service agencies.

My research has convinced me that the problems can be resolved. With continued effort in the food service community, and senior leadership involvement, we can all feel confident that the Army Field Feeding System will sustain our soldiers during the next war.

ENDNOTES

1. Susan D. Gagne, Status of Tray Pack (T Rations) Program, p.1.

APPENDIX 1

Army Food Task Force 2000 membership

<u>Member</u>	<u>Organization</u>
Gen(Ret) Sennewald	Consultant
LTG(Ret) McLaughlin	Consultant
SMA(Ret) Morrell	Consultant
Mr (SES) Kowalczyk	DA, ODCSLOG
LTC Donna Wheeler	DA, ODCSLOG
LTC Pete Calame	DA, ODCSOPS
COL Martha Cronin	OTSG
COL David Schnakenberg	OTSG
COL Charles Lalli	TRADOC (QMS)
COL Joe Driskill	FORSCOM
COL Thomas Barrett	USAREUR
Mr Walter Welsh	DLA (DPSC)
COL David Dee	TSA
Mr Philip Brandler	AMC (NRDEC)

APPENDIX 2

Army Food Task Force 2000

Installations and Organizations Visited

Ft Lee, QMS

Ft Ord, 7th ID

Ft Belvoir, Engineer School

Ft Hood, 1st CAV Div

Ft Benning, 197th Bde/2nd Bde(10th ID)

Ft Bliss, SMA/3rd ACR

Europe, 8th ID/Grafenwoehr

Ft Campbell, 101st ABN Div

Ft Bragg, 18th ABN Corps/82nd ABN Div

APPENDIX 3

FY 90 TRAY RATION MENU

BREAKFAST

- | | |
|----------------------------------|--------------------------------|
| 1. Western Omelet | 6. Western Omelet |
| Potatoes w/Bacon Pieces | Pork Sausage Links |
| Peaches | Peaches |
| Oatmeal, Instant, Assorted | Blueberry Cake |
| Bread/Milk | Bread/Milk |
| Orange Juice | Orange Juice |
| Coffee/Cocoa | Coffee/Cocoa |
| 2. Omelet w/Sausage and Potatoes | 7. Omelet w/Sausage & Potatoes |
| Creamed Ground Beef | Ham Slices |
| Oatmeal, Instant Assorted | Fruit Cocktail |
| Blueberry Cake | Oatmeal, Instant, Assorted |
| Bread/Milk | Bread/Milk |
| Grape Juice | Orange Juice |
| Coffee/Cocoa | Coffee/Cocoa |
| 3. Bread Pudding, Maple Flavored | 8. Creamed Ground Beef |
| Maple Syrup | Potatoes w/Bacon Pieces |
| Ham Slices | Pears |
| Fruit Cocktail | Oatmeal, Instant, Assorted |
| Apple Coffee Cake | Bread/Milk |
| Bread/Milk/Coffee | Grape Juice |
| Orange Juice/Cocoa | Coffee/Cocoa |

4. Omelet w/Bacon Pieces

Pork Sausage Links

Peaches

Bread/Milk

Orange Juice

Coffee/Cocoa

9. Western Omelet

Ham Slices

Peaches

Bread/Milk

Orange Juice

Coffee/Cocoa

5. Omelet w/Bacon & Cheese

Corned Beef Hash

Pears

Oatmeal, Instant, Assorted

Bread/Milk

Orange Juice

Coffee/Cocoa

10. Eggs w/Ham

Pork Sausage Links

Oatmeal, Instant, Assorted

Apple Coffee Cake

Bread/Milk

Grape Juice

Coffee/Cocoa

LUNCH/DINNER

- | | |
|--|---|
| 1. Chicken Breast w/Gravy
Glazed Sweet Potatoes
Corn
Pound Cake
Bread/Milk/Coffee
Lemon Beverage
Coffee
Peanut Butter/Jelly | 6. Chicken Cacciatore
Potatoes w/Butter Sauce
Green Beans
Chocolate Pudding
Bread/Milk/Coffee
Lemon-lime Beverage
Coffee
Peanut Butter/Jelly |
| 2. Lasagna
Green Beans
Fruit Cocktail
Bread/Milk
Grape Beverage
Coffee
Cheese Spread | 7. Hamburger w/Roll
Beans w/Bacon Sauce
Fruit Cocktail
Milk/Coffee
Orange Beverage
Peanut Butter/Jelly
Caucasians/Relish/Mustard |
| 3. Beef Pot Roast
White Rice
Mixed Vegetables
Chocolate Cake
Bread/Milk/Coffee
Grape Beverage
Peanut Butter/Jelly | 8. Chili Con Carne
White Rice
Corn
Marble Cake
Bread/Milk/Coffee
Cherry Beverage
Peanut Butter/Jelly |

4. Barbecue Pork

Rolls

Macaroni & Cheese

Peas & Carrots

Applesauce

Spice Cake

Cherry Beverage

Milk/Coffee

9. Turkey Slices w/Gravy

Potatoes in Butter Sauce

Mixed Vegetables

Blueberry Dessert

Pound Cake

Bread/Milk

Lemon-Lime Beverage

Coffee

Peanut Butter/Jelly

5. Beef Strips w/Peppers

Potatoes w/Butter Sauce

Sliced Carrots

Marble Cake

Bread/Milk

Orange Beverage

Coffee

Peanut Butter/Jelly

10. Beef Tips w/Gravy

Rice

Peas & Carrots

Chocolate Pudding

Bread/Milk

Grape Beverage

Coffee

Peanut Butter/Jelly

APPENDIX 4

Preliminary Conclusions and Recommendations

1. Shelf life of the tray can for some items (stored at ambient temperatures at DDMP) is less than 36 months.

2. Tray can fails to meet original design criteria.

3. Current DPSC position not to unitize tray pack items more than 12 months old is liberal, given design criteria and preliminary inspection findings.

4. Gray spots and leakers resulting from gray spots are more likely to be caused by coating defects than by physical damage (ratio 4:1). Therefore; products produced after Tray Pack Task Force may be no better despite industry's improvements in GMP's.

5. Gray spot and leakers in current cans will likely haunt DPSC through May 1991 (new cans are unitized under field storage conditions).

6. Traceability of tray pack components is virtually nonexistent and what does exist is manpower intensive.

7. DLA/DPSC has an unknown number of modules with grossly defective tray pack items in them that may present health hazards and financial losses to our customers and cause significant customer dissatisfaction.

8. DPSC's Tray Pack Program lacks sound quality management and is fertile ground for implementation of the Total Quality Management Program.

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