

INFORMATION PAPER

SUBJECT: Pouched Bread for Ration Systems

PURPOSE: To provide high quality Shelf Stable Bread for use in Operational Rations.

FACTS:

- A bread product in the form of a miniloaf or roll, packed for individual use in a flexible pouch, has been developed for inclusion in the Meal, Ready-to-Eat (MRE). Its development has been pursued as part of the efforts to improve the MRE. Its application can be extended to support other ration systems and to reduce dependence on field bakeries.
- This highly desirable meal complement has been stabilized by water activity control to assure its quality and safety, and it has been specially formulated to resist quality changes upon long term storage, even at high temperatures. The combination of approved bread stabilizers used have proven to be effective in preventing microbial growth and in minimizing staling. Additional quality protection is afforded by low oxygen tension in the pouch achieved using a simple oxygen scavenger packet. Accelerated storage of samples at 140°F, greater than one year at 100°F and thirty six months at conventional storage conditions has demonstrated stability.
- The processing procedure has been designed to ensure producibility. A production rate capability of 100,000 units per eight hour shift has been demonstrated by contractors. Following initial fermentation, the dough is deposited, refermented, and oven baked in molds to form the thin loaf shape. The cooled, baked breads are sealed in pouches together with a small oxygen scavenger packet. The oxygen scavenger brings about an almost oxygen free environment for storage. Initial cost has been estimated at \$0.38 per unit, but costs are expected to decline with large scale, continuous production.
- Product development is complete. Satisfactory stability for thirty six months has been demonstrated as of 2Q91. Specifications for the pouched bread have been written and have been coordinated. A large scale commercial production test was successfully completed 4Q89. Final field testing was accomplished during FY90. A bulk pack procurement for MRE supplementation began during FY90 and the requirement had been increased to more than 120 million in support of ODS, and was extremely well liked by military personnel in the Kuwait theater of operations. In addition, prototype wheat bran pouched bread has been developed and is undergoing stability evaluation. Potential improvements in the basic bread formula and the development of other items based on the pouched bread technology will be evaluated on an ongoing basis.

Daniel Berkowitz/DSN256-4502/Approved By:

PHILIP BRANDLER, Acting Director
Food Engineering Directorate

FACT SHEET

SUBJECT: Meal, Ready-to-Eat, Individual (MRE)

PURPOSE: To update the MRE Improvement Program.

FACTS:

- The MRE was type classified as the standard operational ration to replace the Meal, Combat Individual (MCI) in 1975.
- First procurement 1980-81. Menus remained unchanged for 5 years (encl 1).
- Field tests from 1983 identified need for improvement; only about two-thirds of food contained in the MRE was being consumed.
- Initial changes were made in the 1986 and 1987 procurement. Changes included increasing 7 of 12 original entrees from 5 to 8 ounces, addition of cold beverage powder mixes (4 flavors) to each menu and hot pepper sauce to three menus (encls 2 and 3).
- Extensive field test conducted during 1986 comparing fully improved prototype versus older versions of the MRE. Based on field data, General Officer IPR approved procurement of fully improved MRE (MRE VIII) starting in 1988 (encl 4).
- Field evaluations of improved MRE continue to confirm the high level of troop acceptance.
- Menu changes for FY90 (MRE X) procurements (Encl 5) included:
 - Addition of fourth type of commercial candy (Tootsie Roll) to MRE.
 - Inclusion of freeze-dried commercial coffee in lieu of spray-dried specification coffee.
 - Inclusion of brown seven inch spoon in lieu of white five inch spoon.
- During recently concluded Operation Desert Shield/Storm (ODS), approximately 8.5M cases of MREs were shipped to Saudi Arabia to support Army requirements.
- Items provided in bulk pack during ODS for separate issue with MREs were:
 - Flameless ration heater (FRH) for heating MRE entrees.
 - MRE pouch bread.
 - Heat stable chocolate bars.

- O Menu changes planned for FY92 procurements (Encl 6) include:
 - oo Addition of hot pepper sauce to eight more menus for a total of twelve menus.
 - oo Addition of commercial candies to four more menus for a total of eight menus. Heat stable chocolate bar included as a fifth type of candy.
 - oo Addition of one more wet pack fruit in lieu of freeze-dried fruit.
- O Current MRE research and development includes thirty traditional/popular foods, either developed by Natick or repackaged popular commercial snack foods, that have potential as MRE menu components.
- O Completed successful field test (April 91) at Fort Leonard Wood, MO of five new prototype MRE menus and seven modified MRE menus consisting of over 26 new components to include entrees, desserts, snacks and milkshakes (Encl 7).
- O Field test of 6 new prototype MRE menus and 6 modified MRE menus conducted June/July 1991 with 25th ID.
- O MRE Joint Service Working Group established to provide recommendations on including new MRE menus/components to replace lesser acceptable fielded items.
- O MRE Working Group's recommendations to be provided to DOD Food and Nutrition Research and Engineering Board for decisions on inclusion of new MRE components/menus.

Raymond Mansur/DSN256-5198/Approved by: _____

PHILIP BRANDLER, Acting Director
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MENUS AND COMPONENTS OF MRE - MRE 1 THROUGH MRE V

MENU 1	MENU 2	MENU 3	MENU 4	MENU 5	MENU 6	MENU 7	MENU 8	MENU 9	MENU 10	MENU 11	MENU 12	MENU 12B
Pork Pattie FD 1.2oz	Hm & Chx Loaf, TS 5oz	Beef Pattie FD 1.2oz	Beef Slices, TS 5oz	Beef Stew, TS 5oz	Frank Furters, TS 4oz	Diced Turkey, TS 5oz	Diced Beef, TS 5oz	Chicken ala king TS 5oz	Meat Balls TS 5oz	Ham Slice, TS 4.3oz	Ground Beef, TS 5oz	Chicken Loaf, TS 5oz
Apple Sauce TS	Fruit, FD	Beans, TS 5oz	Fruit FD	Fruit FD	Beans TS 5 oz	Potato Pattie, FD	Beans TS 5 oz	Potato Pattie FD	Potato Pattie FD	Fruit, FD	Fruit, FD	Fruit FD
Cookie, Pineappl Choc Cvd Nut Cke	Brownie, Choc Cvd	Cookie, Choc Cvd	Cherry Nut Cke	Jelly	Jelly	Maple Nut Cke	Brownie, Choc Cvd	Fruit Cake	Chocolat Nut. Cke	Orange Nut Cke	Cookie, Choc Cvd	Cookie Choc Cv
Cheese Spread	Peanut Butter	Cheese Spread	Peanut Butter	Peanut Butter	Jelly	Jelly	Cheese Spread	Cheese Spread	Jelly	Cheese Spread	Peanut Butter	Peanut Butter
Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers
Cocoa												
Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon
Acc Pkt D	Acc Pkt A	Acc Pkt B	Acc Pkt C	Acc Pkt A	Acc Pkt E	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt C	Acc Pkt C
<u>Accessory Packet A</u>	<u>Accessory Packet B</u>	<u>Accessory Packet C</u>	<u>Accessory Packet D</u>	<u>Accessory Packet E</u>	<u>Accessory Packet F</u>	<u>Candy</u>						
Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue Candy Soup/Gravy	Coffee Cream Sub Sugar Salt Gum Matches Tissue Candy	Coffee Cream Sub Sugar Salt Gum Matches Tissue Candy	Coffee Cream Sub Sugar Salt Gum Matches Tissue Catsup	Coffee Cream Sub Sugar Salt Gum Matches Tissue Candy	Van Caramels Choc Toffee Bar Choc Rudge Bar Van Rudge Bar Starch Jelly					FD-Freeze Dried TS-Thermostabilized	

MENUS AND COMPONENTS OF MRE - MRE VI

MENU 1	MENU 2	MENU 3	MENU 4	MENU 5	MENU 6	MENU 7	MENU 8	MENU 9	MENU 10	MENU 11	MENU 12
Pork Pattie FD 1.2oz	Hm & Chx Loaf, TS 5 oz	Beef Pattie FD 1.2oz	Beef Slices, TS 5oz	Beef Stew, TS 8oz	Frank Furters, TS 4oz	Diced Turkey, TS 5oz	Diced Beef, TS 5oz	Chicken ala king TS 8oz	Meat Balls TS 8oz	Ham Slice, TS 4.3oz	Ground Beef, TS 8oz
Apple Sauce TS	Fruit, FD	Beans, TS 5oz	Fruit FD	Fruit FD	Beans TS 5 oz	Fruit FD	Fruit FD	Fruit, FD	Fruit, FD	Fruit, FD	Fruit, FD
Cookie, Choc Cvd	Beans TS 5oz	Brownie, Choc Cvd	Cookie, Choc Cvd	Cherry Nut Cke	Maple Nut Cke	Brownie, Choc Cvd	Fruit Cake	Cookie Choc Cvd	Orange Nut Cke	Cookie, Choc Cvd	
Cheese Spread	Peanut Butter	Cheese Spread	Peanut Butter	Cheese Spread	Jelly	Jelly	Jelly	Cheese Spread	Peanut Butter	Cheese Spread	Peanut Butter
Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers
Cocoa					Cocoa	Cocoa	Cocoa	Cocoa		Cocoa	
Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand	Pouch Stand
Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon
Acc Pkt D	Acc Pkt A	Acc Pkt B	Acc Pkt C	Acc Pkt A	Acc Pkt E	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt C

Accessory Packet A	Accessory Packet B	Accessory Packet C	Accessory Packet D	Accessory Packet E	Accessory Packet F	Candy
Coffee	Coffee	Coffee	Coffee	Coffee	Coffee	Van Caramels
Cream Sub	Cream Sub	Cream Sub	Cream Sub	Cream Sub	Cream Sub	Choc Toffee Bar
Sugar	Sugar	Sugar	Sugar	Sugar	Sugar	Choc Fudge Bar
Salt	Salt	Salt	Salt	Salt	Salt	Van Fudge Bar
Gum	Gum	Gum	Gum	Gum	Gum	Starch Jelly
Matches	Matches	Matches	Matches	Matches	Matches	
Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	
	Candy	Candy	Candy	Candy	Candy	
	Soup/Gravy					

FD - Freeze Dried
 TS - Thermostabilized

MENUS AND COMPONENTS OF MRE - MRE VII

MENU 1	MENU 2	MENU 3	MENU 4	MENU 5	MENU 6	MENU 7	MENU 8	MENU 9	MENU 10	MENU 11	MENU 12
Pork Pattie FD 1.2oz	Ham & Chx Loaf, TS 5 oz	Beef Pattie FD 1.2oz	Beef Slices, TS 8oz	Beef Stew, TS 8oz	Frank Furters, TS 4oz	Diced Turkey, TS 8oz	Diced Beef, TS 8oz	Chicken ala king TS 8oz	Meat Balls TS 8oz	Ham Slice, TS 4.3oz	Ground Beef, TS 8oz
Apple Sauce TS	Fruit, FD	Beans, TS 5oz	Fruit FD	Fruit FD	Beans TS 5 oz	Fruit FD	Fruit FD	Fruit FD	Fruit FD	Fruit, FD	Fruit, FD
Cookie, Choc Cvd	Beans TS 5oz	Brownie, Choc Cvd	Cookie, Choc Cvd	Cherry Nut Cke		Maple Nut Cke	Brownie, Choc Cvd	Fruit Cake	Cookie Choc Cvd	Orange Nut cke	Cookie, Choc Cv
Cheese Spread	Peanut Butter	Cheese Spread	Peanut Butter	Cheese Spread	Jelly	Jelly	Jelly	Cheese Spread	Peanut Butter	Cheese Spread	Peanut Butter
Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Crackers	Cracker
Hot Pper Sauce		Hot Pper Sauce			Hot Pper Sauce		Hot Pper Sauce				
Cocoa					Cocoa	Cocoa	Cocoa	Cocoa		Cocoa	
Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base
Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon
Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pkt	Acc Pk
D	C	B	A	A	E	A	A	A	A	A	A
<u>Accessory Packet A</u>	<u>Accessory Packet B</u>	<u>Accessory Packet C</u>	<u>Accessory Packet D</u>	<u>Accessory Packet E</u>							<u>Candy</u>
Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Coffee Cream Sub Sugar Salt Gum Matches Tissue	Van Caramels Choc Toffee Bar Choc Fudge Bar Van Fudge Bar Starch Jelly
											FD-Freeze Dried TM - ThermoStabilized

MENUS AND COMPONENTS OF IMPROVED MRE - MRE VIII

Menu	Menu 1	Menu 2	Menu 3	Menu 4	Menu 5	Menu 6	Menu 7	Menu 8	Menu 9	Menu 10	Menu 11	Menu 12
	Pork w/Rice TS-8 oz	Corned BF Hsh TS-8 oz	Chicken Stew TS-8 oz	Omelet w/Hm TS-6 oz	Spagh w/ Meat Scc TS-8 oz	Chicken ala King TS-8 oz	Beef Stew TS-8 oz	Ham Slice TS-4.3	Meatballs In Tom Sauce TS-8 oz	Tuna w/ Noodles TS-8 oz	Chicken w/Rice TS-8 oz	Esc Pot w/Ham TS-8 oz
	Apple Sauce TS	Fruit FD	Fruit FD	Potatoe Au Grat TS-5 oz		Fruit FD		Potato Au Grat, TS-5 oz	Fruit FD		Fruit FD	Apple Sauce TS
		Oatmeal Cookie Bar		Oatmeal Cookie Bar	Maple Nut Cake		Cherry Nut Cake	Brownie Choc Cvd	Cookie Choc Cvd	Choc Nut Cake	Cookie, Choc Cvc	Brownie Choc Cvc
	Jelly	Jelly	Peanut Butter	Cheese Spread	Cheese Spread	Peanut Butter	Peanut Butter	Jelly	Peanut Butter	Cheese Spread	Cheese Spread	Jelly
	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker
	Candy		Candy			Candy					Candy	
	Cocoa	Cocoa	Cocoa	Cocoa		Cocoa		Cocoa				Cocoa
	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base
	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon
	Acc Pkt B	Acc Pkt A	Acc Pkt B	Acc Pkt A	Acc Pkt B	Acc Pkt A	Acc Pkt B	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A

Accessory Packet A: Coffee, Cream Sub, Sugar, Salt, Gum, Matches, Tissue Towellette
 Accessory Packet B: Coffee, Cream Sub, Sugar, Salt, Gum, Matches, Tissue, Towellette, Hot Pepper Sauce
 Candy: M&M's, Charms, Vanilla Carmels

FD - Freeze Dried
 TS - Thermostabilized

MENUS AND COMPONENTS OF IMPROVED MRE - MRE X

	MENU 1	MENU 2	MENU 3	MENU 4	MENU 5	MENU 6	MENU 7	MENU 8	MENU 9	MENU 10	MENU 11	MENU 12
	Pork w/Rice TS-8 oz	Corned BF Hsh TS-8 oz	Chicken Stew TS-8 oz	Omlet w/Hm TS-6 oz	Spagh w/ Meat sce TS-8 oz	Chicken ala King TS-8 oz	Beef Stew TS-8 oz	Ham Slice TS-4.3	Meatballs In Tom Sauce TS-8 oz	Tuna w/ Noodles TS-8 oz	Chicken w/Rice TS-8 oz	Esc Pot w/Ham TS-8 oz
Apple Sauce TS	Fruit FD	Fruit FD	Potatoe Au Grat TS-5 oz	Maple Nut Cake	Cherry Nut Cake	Potato Au Grat, TS-5 oz	Brownie Choc Cvd	Cookie Choc Cvd	Choc Nut Cake	Cookie, Choc Cvc	Brownie Choc Cvd	
Jelly	Jelly	Peanut Butter	Cheese Spread	Cheese Spread	Peanut Butter	Peanut Butter	Jelly	Peanut Butter	Cheese Spread	Cheese Spread	Jelly	
Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker
Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa	Cocoa
Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base
Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon
Acc Pkt C	Acc Pkt B	Acc Pkt C	Acc Pkt B	Acc Pkt B	Acc Pkt B	Acc Pkt C	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt B	Acc Pkt C	Acc Pkt A

Accessory Packet A: Coffee, Cream Sub, Sugar, Salt, Gum, Matches, Tissue Towellette
 Accessory Packet B: Coffee, Cream Sub, Sugar, Salt, Gum, Matches, Tissue, Towellette, Hot Pepper Sauce
 Accessory Packet C: Coffee, Cream Sub, Sugar, Salt, Gum, Matches, Tissue, Towellette, Candy
 Candy: M&M's, Charms, Vanilla Carmels, Tootsie Rolls

FD - Freeze Dried
 TS - Thermostabilized

MENUS AND COMPONENTS OF IMPROVED MRE - MRE XII

MENU 1	MENU 2	MENU 3	MENU 4	MENU 5	MENU 6	MENU 7	MENU 8	MENU 9	MENU 10	MENU 11	MENU 12
Pork w/Rice TS-8 oz	Corned BF Fish TS-8 oz	Chicken Stew TS-8 oz	Omelet w/Hm TS-6 oz	Spagh w/ Meat Sce TS-8 oz	Chicken ala King TS-8 oz	Beef Stew TS-8 oz	Ham Slice TS-4.3	Meatballs In Tom Sauce TS-8 oz	Tuna w/ Noodles TS-8 oz	Chicken w/Rice TS-8 oz	Esc Pot w/Ham TS-8 oz
Apple Sauce TS	Fruit FD	Fruit TS	Potatoe Au Grat TS-5 oz		Fruit FD		Potato Au Grat, TS-5 oz	Fruit FD		Apple Sauce TS	
	Oatmeal Cookie Bar		Oatmeal Cookie Bar	Maple Nut Cake		Cherry Nut Cake	Brownie Choc Cvd	Cookie Choc Cvd	Choc Nut Cake	Cookie, Choc Cvc	Brownie Choc Cvd
Jelly	Jelly	Peanut Butter	Cheese Spread	Cheese Spread	Peanut Butter	Peanut Butter	Jelly	Peanut Butter	Cheese Spread	Cheese Spread	Jelly
Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker	Cracker
Cocoa	Cocoa	Cocoa	Cocoa	Candy*	Candy*	Cocoa	Cocoa	Candy*	Candy*	Candy*	Cocoa
Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base	Bev Base
Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce	Hot Sce
Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon	Spoon
Acc Pkt B	Acc Pkt B	Acc Pkt B	Acc Pkt B	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A	Acc Pkt A

Accessory Packet A: Coffee, Cream Sub, Sugar, Salt, Gum, Matches, Tissue Towellette
 Accessory Packet B: Coffee, Cream Sub, Sugar, Salt, Gum, Matches, Tissue, Towellette, Candy (Vanilla Caramels
 Tootsie Rolls, Heat Stable Choc Bar)

FD - Freeze Dried
 TS - Thermostabilized
 * - Charms, Heat Stable M&M's

SEP TEST MENUS-FT L. WO

as of:

03-May-91

MENU 1

BBQ pork and rice
Cheese curls
Pears (wet pack) *
Vanilla shake
MRE candy-caramels
Tabasco sauce
Accessory packet
Spoon

MENU 2

Beef with mushroom gravy
Pouch bread (wheat)
Corn chips
Almond chew bar
Chocolate cov'd cookie
Beverage base
Accessory packet
Spoon

MENU 3

Chicken stew
Pouch bread (wheat)
Tavern nuts
Tropical fruit chew bar
MRE candy-charms
Beverage base
Accessory packet
Spoon

MENU 4

Pork chow mein
Chow mein noodles
Vanilla pound cake
M&Ms
Tabasco sauce
Apple cider mix (RCW) *
Accessory packet
Spoon

MENU 5

Spaghetti with meat sauce
Crackers
Cheese spread
Orange pound cake
Beverage base
Tabasco sauce
Accessory packet
Spoon

MENU 6

Smoky franks
Pouch bread (white)
Potato sticks
Orange coconut chew bar
Chocolate shake
Condiments
Accessory packet
Spoon

MENU 7

Creamed chipped beef
Pouch bread (white)
Jelly
Peanut butter
Oatmeal hermit chew bar
Orange beverage (RCW) *
Accessory packet
Spoon

MENU 8

Ham slice
Potatoes au gratin
Crackers
Jelly
Pineapple pound cake
Beverage base
Accessory packet
Spoon

new SEP items

* Other non-MRE items

MENU 9

Cheese pizza
Onion rings
Peaches (FRDH)
Lemon pound cake
Strawberry shake
Tabasco sauce
Accessory packet
Spoon

MENU 10

Tuna and noodles
Crackers
Cheese spread
Chocolate pound cake
Beverage base
Accessory packet
Spoon

MENU 11

Chicken and rice
Crackers
Cheese spread
Peaches (wet pack) *
Chocolate cov'd cookie
MRE candy-M&Ms
Beverage base
Accessory packet
Spoon

MENU 12

Ham and potatoes
Pretzel sticks
Pineapple pound cake
Vanilla shake
Accessory packet
Spoon

SUBJECT: Flameless Ration Heater (FRH) for the Meal, Ready-to-Eat (MRE)

PURPOSE: Update information about the FRH program

FACTS:

- O A solution to the persistent "cold ration problem," the FRH is a low cost, water activated exothermic chemical heating pad that will be packaged with the MRE to ensure that the soldier receives a hot meal.
- O Characteristics of the new heater:
 - oo A 40/60 mixture of active magnesium-iron powder and inert plastic powders, molded into a stable 4.5 x 3.5 x 0.12 inch pad, weighing 1 ounce, and packaged in a bag sized to hold the MRE entree.
 - oo The MRE entree is heated by placing it in the bag with the pad and 2 ounces of water. The bag is slid inside the MRE's carton and can be carried in the soldier's BDU pocket during the heating process.
 - oo The heating process takes about 12 minutes to raise the temperature of an 8 ounce entree 100^oF, e.g., from 40^oF to 140^oF.
- O Current status:
 - oo Following successful testing, the FRH was adopted (for issue in bulk) in May 90; the TDP (MIL-R-44398) was transitioned to Defense Personnel Support Center (DPSC); NSN 8970-01-250-9153 was assigned; and it was added to the Federal Supply Catalog for Subsistence.
 - oo Under the Soldier Enhancement Program (SEP), Natick awarded contracts for 5 million FRH, at \$ 0.45 to \$ 0.52 each, with deliveries from Sep 90 to Jul 91. Approximately 4 million FRH were shipped to Saudi Arabia in support of ODS.
 - oo On 15 Feb 91 DPSC awarded two Indefinite Quantity Contracts for 51 million FRH, at \$0.49 each, with deliveries from Apr 91 to Feb 92.
 - oo A User Assessment of the SEP purchased FRH was presented at a Joint Services MRE Forum on 25 Sep 91. The Services voted to add the FRH to the MRE starting at MRE XIII, which will be assembled in 1993.

Mr. Don Pickard/DSN 256-5036/Approved By:

PHILIP BRANDLER, Acting Director
Food Engineering Directorate