

PCR-F-001
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SECTION C

This document covers shelf stable FIRST STRIKE™ bars packaged in a flexible pouch for use by the Department of Defense as a component of operational rations. The bar is designed to supplement nutritional intake required each day.

C-1 ITEM DESCRIPTION

PCR-F-001, FIRST STRIKE™ BARS, SHELF STABLE

Flavors.

Flavor I - Chocolate
Flavor II - Apple-Cinnamon
Flavor III - Cran-Raspberry
Flavor IV - Raspberry
Flavor V - Mocha

Styles.

Style A - Regular
Style B - Mini

Packages.

Package A - Meal, Cold Weather (MCW)
Package B - Food Packet, Long Range Patrol (LRP)
Package C - Meal, Ready-to-Eat (MRE)
Packages D to G - Not Applicable
Package H - Food Packet, Carbohydrate Supplement
Package J - First Strike Ration (FSR)
Package K - Unitized Group Ration - Express (UGR-E)

C-2 PRODUCT REQUIREMENTS

A. Product standard. A sample shall be subjected to first article (FA) or product demonstration model (PDM) inspection as applicable, in accordance with the tests and inspections of Section E of this Product Contract Requirements (PCR) document. The

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approved sample shall serve as the product standard. Should the contractor at any time plan to, or actually produce the product using different raw material or process methodologies from the approved Product Standard, which result in a product non comparable to the Product Standard, the contractor shall arrange for a new or alternate FA or PDM approval. In any event, all product produced must meet all requirements of this document including Product Standard comparability.

B. Shelf life. The packaged food shall meet the minimum shelf life requirement of 36 months at 80°F.

C. Appearance. The product shall be free from foreign materials.

(1) Flavor I. The bar shall have a medium to dark brown color with a smooth to slightly rough glossy exterior. The bar matrix shall be of a uniform medium to dark brown color with a dense and slightly porous structure that includes small intact pieces of lighter and darker crisped cereal grains.

(2) Flavor II. The bar shall have a light to medium tan color with a smooth to slightly rough glossy exterior. The bar matrix shall be of a uniform tan color with a dense and slightly porous structure that includes a mixture of small intact pieces of lighter and darker crisped cereal grains.

(3) Flavor III. The bar shall have a medium pink to red color with a smooth to slightly rough glossy exterior. The bar matrix shall be of a uniform medium pink to red color with a dense and slightly porous structure that includes small intact pieces of lighter colored crisped cereal grains.

(4) Flavor IV. The bar shall have a light to medium red color with a smooth to slightly rough glossy exterior. The bar matrix shall be of a uniform light to medium red color with a dense and slightly porous structure that includes a mixture of small intact pieces of lighter colored crisped cereal grains.

(5) Flavor V. The bar shall have a medium to dark brown color with a smooth to slightly rough glossy exterior. The bar matrix shall be of a uniform medium to dark brown color with a dense and slightly porous structure that includes a mixture of small intact pieces of lighter colored crisped cereal grains.

D. Odor and flavor. The bar shall be free from foreign odors and flavors.

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(1) Flavor I. The bar shall have a sweet baking chocolate odor and flavor. The bar shall exhibit a mild grain aftertaste.

(2) Flavor II. The bar shall have a sweet, apple and cinnamon odor and flavor. The bar shall exhibit a mild grain aftertaste.

(3) Flavor III. The bar shall have a sweet, cranberry and raspberry odor and flavor. The bar shall exhibit a mild grain after taste.

(4) Flavor IV. The bar shall have a sweet, raspberry odor and flavor. The bar shall exhibit a mild grain aftertaste.

(5) Flavor V. The bar shall have a sweet, chocolate and coffee odor and flavor. The bar shall exhibit a mild grain and slightly bitter aftertaste.

E. Texture. Each bar shall be chewy and slightly rough with crispy pieces of grain.

F. Dimensions.

(1) Style A. Style A dimensions shall be not greater than 5 1/4 inches long by 2 1/4 inches wide (133 mm long by 57 mm wide).

(2) Style B. Style B dimension shall be not greater than 3-1/2 inches long by 2-1/4 inches wide (89 mm long by 57 mm wide).

G. Net weight.

(1) Style A. For all flavors, the net weight of an individual bar shall be not less than 2.3 ounces (65 grams).

(2) Style B. For all flavors, the net weight of an individual bar shall be not less than 1.2 ounces (35 grams).

H. Palatability and overall appearance. The finished product shall be equal to or better than the approved product standard in palatability and overall appearance.

I. Analytical requirements.

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(1) Moisture content. For Flavors I, II and V the moisture content shall be not greater than 10.0 percent. For Flavors III and IV the moisture content shall be not greater than 12.0 percent.

(2) Vitamin and mineral content. The finished packaged product shall contain not less than the following amounts:

<u>All Flavors</u>	<u>Units</u>	<u>Per 100g</u>
Vitamin C (encapsulated)	mg	32.00
Vitamin E	mg	7.65
Thiamin	mg	0.5
Riboflavin	mg	0.52
Niacin	mg NE	5.8
Vitamin B6	mg	0.61
Folate	ug	153.00
Vitamin B12	ug	0.61
Vitamin D	ug	1.53
Vitamin K	ug	60.00
Zinc	mg	3.44

J. Product formulation and ingredients. The following formulas have been successfully made at U.S. Army Natick Soldier Center and a large commercial bar manufacturer. Ingredient suppliers and available specific ingredients may change (companies bought out, part numbers change, ingredients no longer supplied, etc.). Any changes in formulations and ingredients shall be approved by U.S. Army Natick Soldier Center.

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(1) Flavor I, Chocolate.

<u>Ingredients</u>	<u>Percent by weight</u>
Corn syrup (DE 42)	19.200
Fructose, glycerin, date, plum, prep, (40 percent Fructose) <u>1/</u>	14.000
Crisp rice, tiny, round <u>2/</u>	10.000
Nutty rice cereal <u>2/</u>	10.000
Crystalline fructose	9.000
Maltodextrin (DE 15)	8.600
Palm kernel oil	8.300
High roast African liquor (chocolate wafers) <u>3/</u>	7.200
Dextrose monohydrate powder	5.000
Cocoa powder, Red Dutch (10-12 percent fat)	3.000
Whey protein concentrate (nominal 80 percent protein)	2.700
Glycerin USP or food grade	1.900
Lecithin (dry powder)	0.500
Vanilla extract four fold (dry powder)	0.415
Vitamin premix <u>4/</u>	0.167
Ascorbyl palmitate	0.015
Mixed tocopherols (GT-1) <u>5/</u>	0.003

NOTE: The corn syrup and the maltodextrin percentages may be adjusted to ease processing and control end item texture. No other percentage adjustments shall be made.

1/ “Fructose, glycerin, date, plum, prep, (40 percent Fructose)” from Mariani Ingredient Prod, 500 Crocker Rd., Vacaville, CA 95688.

2/ “Nutty rice 13811” and “Crisp rice 200” from Pacific Grain Products Inc., P.O. Box 2060, Woodland, CA 95776.

3/ “H-365” from Wilbur Chocolate, Lititz, PA 17543.

4/ Vitamin premix shall include Vitamin C (encapsulated), Vitamin E, Thiamin (encapsulated), Riboflavin, Niacin, Vitamin B6 (encapsulated), Folate, Vitamin B12, Vitamin D, Vitamin K and Zinc and shall be made to ensure compliance with requirements as stated in C-2, I.(2).

5/ “Mixed Tocopherols GT-1” from Eastman Chemicals, Box 431, Kingsport TN 37660.

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(2) Flavor II, Apple-Cinnamon.

<u>Ingredients</u>	<u>Percent by weight</u>
Corn syrup (DE 42)	20.000
Nutty rice cereal <u>1/</u>	15.000
Fructose, glycerin, date, plum, prep, (40 percent Fructose) <u>2/</u>	14.600
Maltodextrin (DE 15)	10.000
Crystalline fructose	10.000
Palm kernel oil	8.070
Apple powder, low moisture 20 mesh <u>3/</u>	6.000
Nutty corn, <u>1/</u>	5.000
Whey protein concentrate (nominal 80 percent protein)	3.500
Rice bran concentrate <u>4/</u>	3.000
Glycerin USP or food grade	2.380
Canola oil	2.000
Lecithin (dry powder)	0.250
Vitamin premix <u>5/</u>	0.167
Ascorbyl palmitate	0.015
Apple pie spice <u>6/</u>	0.015
Mixed tocopherols (GT-1) <u>7/</u>	0.003

NOTE: The corn syrup and the maltodextrin percentages may be adjusted to ease processing and control end item texture. No other percentage adjustments shall be made.

1/ “Nutty rice 13811” and “Nutty corn #11121” from Pacific Grain Products Inc., P.O. Box 2060, Woodland, CA 95776.

2/ “Fructose, glycerin, date, plum, prep, (40 percent Fructose)” from Mariani Ingredient Prod, 500 Crocker Rd., Vacaville, CA 95688.

3/ “Apple powder 20 mesh unsulphured” from Tree Top, P.O. Box 24B, Selah, WA 98942.

4/ “Rice X Stabilized Rice Bran (Regular)” from Nutracea, Phoenix, AZ 85018.

5/ Vitamin premix shall include Vitamin C (encapsulated), Vitamin E, Thiamin (encapsulated), Riboflavin, Niacin, Vitamin B6 (encapsulated), Folate, Vitamin B12,

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Vitamin D, Vitamin K and Zinc and shall be made to ensure compliance with requirements as stated in C-2, I.(2).

6/ “827658-B” from Kalsec, 3713 West Main, Kalamazoo, MI 49005-0511.

7/ “Mixed Tocopherols GT-1” from Eastman Chemicals, Box 431, Kingsport TN 37660.

(3) Flavor III, Cran-Raspberry.

<u>Ingredients</u>	<u>Percent by weight</u>
Raspberry filling <u>1/</u>	20.000
Maltodextrin (DE 15)	16.761
Corn syrup (DE 42)	14.000
Dried cranberries (Craisins or equivalent) 1/8 inch <u>2/</u>	11.000
Crisp corn <u>3/</u>	9.000
Apple nuggets(raspberry colored and flavored 4 mesh #128) <u>4/</u>	8.000
Palm <u>kernel</u> oil	6.900
Whey protein concentrate (nominal 80 percent protein)	3.500
Apple powder, low moisture 20 mesh <u>5/</u>	3.000
Rice bran concentrate <u>6/</u>	3.000
Glycerin USP or food grade	2.500
Crystalline fructose	1.000
Raspberry natural/artificial flavor <u>7/</u>	0.900
Lecithin (dry powder)	0.250
Vitamin premix <u>8/</u>	0.167
Ascorbyl palmitate	0.015
Wild cherry red (95.4 percent Red #40; 0.06 percent Blue #1)	0.004
Mixed tocopherols (GT-1) <u>9/</u>	0.003

NOTE: The corn syrup and the maltodextrin percentages may be adjusted to ease processing and control end item texture. No other percentage adjustments shall be made.

1/ “Raspberry filling #1015 ” from Golden Select Foods Co., 5743 Smithway St. Building 305, City of Commerce, CA 90040.

2/ “Craisins” or equivalent 1/8 inch Diced or Double Diced” from Ocean Spray Cranberries, Ocean Spray Drive, Lakeville-Middleboro, MA 02349.

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3/ “Nutty corn #11121” from Pacific Grain Products Inc., P.O. Box 2060, Woodland, CA 95776.

4/ “Apple nuggets (raspberry colored and flavored 4 mesh #128)” from Tree Top, P.O. Box 24B, Selah, WA 98942.

5/ “Apple powder 20 mesh un sulphured” from Tree Top, P.O. Box 24B, Selah, WA 98942.

6/ “Rice X Stabilized Rice Bran (Regular)” from Nutracea, Phoenix, AZ 85018.

7/ “Raspberry natural/artificial flavor #26-93-0122” from Edgar A. Weber & Company, 549 Palwaukee Drive, Wheeling, IL 60090.

8/ Vitamin premix shall include Vitamin C (encapsulated), Vitamin E, Thiamin (encapsulated), Riboflavin, Niacin, Vitamin B6 (encapsulated), Folate, Vitamin B12, Vitamin D, Vitamin K and Zinc and shall be made to ensure compliance with requirements as stated in C-2, I.(2).

9/ “Mixed Tocopherols GT-1” from Eastman Chemicals, Box 431, Kingsport TN 37660.

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(4) Flavor IV, Raspberry.

<u>Ingredients</u>	<u>Percent by weight</u>
Raspberry filling <u>1/</u>	20.500
Corn syrup (DE 42)	20.000
Nutty rice cereal <u>2/</u>	15.433
Maltodextrin (DE 15)	13.000
Palm kernel oil	8.070
Crisp corn <u>2/</u>	5.658
Whey protein concentrate (nominal 80 percent protein)	3.500
Apple powder, low moisture	3.000
Rice bran concentrate <u>3/</u>	3.000
Glycerin USP or food grade	2.500
Canola oil	2.000
Crystalline fructose	2.000
Raspberry natural/artificial flavor <u>4/</u>	0.900
Lecithin (dry powder)	0.250
Vitamin premix <u>5/</u>	0.167
Ascorbyl palmitate	0.015
Wild cherry red (95.4 percent Red #40; 0.06 percent Blue #1)	0.004
Mixed tocopherols	0.003

NOTE: The corn syrup and the maltodextrin percentages may be adjusted to ease processing and control end item texture. No other percentage adjustments shall be made.

1/ “Raspberry filling #1015” from Golden Select Foods Co., 5743 Smithway St. Building 305, City of Commerce, CA 90040.

2/ “Nutty rice 13811” and “Nutty corn #11121” from Pacific Grain Products Inc., P.O. Box 2060, Woodland, CA 95776.

3/ “Rice X Stabilized Rice Bran (Regular)” from Nutracea, Phoenix, AZ 85018.

4/ “Raspberry flavor natural/artificial #26-93-0122” from Edgar A. Weber & Company, 549 Palwaukee Drive, Wheeling, IL 60090.

5/ Vitamin premix shall include Vitamin C (encapsulated), Vitamin E, Thiamin (encapsulated), Riboflavin, Niacin, Vitamin B6 (encapsulated), Folate, Vitamin B12,

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Vitamin D, Vitamin K and Zinc and shall be made to ensure compliance with requirements as stated in C-2, I.(2).

(5) Flavor V, Mocha.

<u>Ingredients</u>	<u>Percent by weight</u>
Corn syrup (DE 42)	17.707
Fructose, glycerin, date, plum, prep, (40 percent Fructose) <u>1/</u>	16.517
Crisp rice, tiny, round <u>2/</u>	10.000
Nutty rice cereal <u>2/</u>	10.000
Maltodextrin (DE 15)	9.176
Sugar (sucrose)	9.000
Palm kernel oil	7.300
High roast African liquor (chocolate wafers) <u>3/</u>	5.100
Spray Dried Cream Powder (72 percent butter fat) <u>4/</u>	5.000
Maltodextrin (DE 5)	4.000
Glycerin USP or food grade	1.900
Whey protein concentrate (nominal 80 percent protein)	1.500
Coffee, freeze dried instant crystals (caffeinated)	1.500
Vanilla extract four fold (dry powder)	0.415
Caffeine (powdered food grade) <u>5/</u>	0.280
Lecithin (dry powder)	0.250
Vitamin premix <u>6/</u>	0.167
Coffee flavor <u>7/</u>	0.150
Titanium dioxide- <u>8/</u>	0.020
Ascorbyl palmitate	0.015
Mixed tocopherols (GT-1) <u>9/</u>	0.003

NOTE: The corn syrup and the maltodextrin percentages may be adjusted to ease processing and control end item texture. No other percentage adjustments shall be made.

1/ “Fructose, glycerin, date, plum, preparation (40 percent Fructose)” from Mariani Ingredient Prod, 500 Crocker Rd., Vacaville, CA 95688

2/ “Nutty rice 13811” and “Crisp rice 200” from Pacific Grain Products Inc., P.O. Box 2060, Woodland, CA 95776.

3/ “H-365” from Wilbur Chocolate, Lititz, PA 17543.

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4/ “Spray Dried Cream Powder (72 percent Butterfat)”, from Kerry Ingredients, 100 E. Grand Ave., Beloit, WI 53511; Phone: 608-363-1200

5/ “Anhydrous Caffeine, USP” from Premium Ingredients, LTD., 11 Commerce Dr., Cranford, NJ 07016; Phone: 908-963-9393

6/ Vitamin premix shall include Vitamin C (encapsulated), Vitamin E, Thiamin (encapsulated), Riboflavin, Niacin, Vitamin B6 (encapsulated), Folate, Vitamin B12, Vitamin D, Vitamin K and Zinc and shall be made to ensure compliance with requirements as stated in C-2, I.(2).

7/ “Coffee Flavor DY18386 N&A” Quest International 5115 Sedge Boulevard, Hoffman Estates, IL 60192 Phone: 847-645-7000

8/ “Titanium Dioxide, USP” from Sensient Colors (formerly Warner-Jenkinson), 2515 N. Jefferson Ave, St. Louis, MO 63106; Phone: 314-889-7600

9/ “Mixed Tocopherols GT-1” from Eastman Chemicals, Box 431, Kingsport TN 37660.

K. Preparation and Processing (General for all Flavors.) The following preparation and processes were used at the U.S. Army Natick Soldier Center for processing the FIRST STRIKE™ Bars. Industrial preparation, processing and equipment may be used to produce product of same quality as produced at U.S. Army Natick Soldier Center.

(1) Liquid Mix. The liquid mix may be prepared as follows using a steam-jacketed kettle equipped with swept surface agitator.

a. Add corn syrup and glycerin; heat to 180°F (82°C).

b. Add fat, and where required chocolate liquor, lecithin, mixed tocopherols, ascorbyl palmitate; mix until fat and liquor is melted. Allow the product temperature to drop to 140°F (60°C).

c. Add date plum prep, or raspberry filling, colors, and flavors. Mix thoroughly 5-10 minutes or until visually mixed. Maintain at 140°F (60°C).

d. Maintain product under low agitation and a temperature not to exceed 140°F

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(60°C). Temperature may be lowered using cold water in kettle jacket if necessary to obtain suitable viscosity of final dough for extrusion.

e. The liquid mix is drawn according to dough batch size. The liquid mix may be held in kettle under low agitation up to 4 hours.

(2) Dough Mixing: The dough mixing may be prepared as follows using an 80 quart Hobart Mixer with standard paddle.

a. Add liquid mix and mix 30 seconds setting #3 (medium high speed: 183 RPM).

b. Add raspberry, colored and flavored apple pieces and mix one minute at setting #1.

c. Add cereal crisps and sweetened dried cranberries cut 1/8 inch diced or double diced. Mix one minute (setting of #1, low speed: 55 RPM) or until crisps are wetted.

d. Add vitamin premix. Mix one minute at setting of #1.

e. Add rest of dry ingredients and mix (setting #1) for 2 to 4 minutes or until mix appears homogeneous.

NOTE: Caution needs to be taken throughout mixing process to minimize breaking up of the crisps.

(3) Extrusion. The extrusion may be prepared as follows using a Hosokawa BEPEX GmhH Model F 97 265 – 266.

a. Product is extruded through nozzle and cut to produce a piece with nominal dimensions as stated in C-2, F.

b. Finished product is cooled enough for handling and packaging.

SECTION D

D-1 PACKAGING

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A. Packaging (Style A for Package A, B, C, J, and K). One bar or one commercially packaged bar shall be packed in a preformed or form fill seal barrier pouch as described below.

(1) Preformed pouches.

a. Pouch material. The preformed pouch shall be fabricated from 0.002 inch thick ionomer or polyethylene film laminated or extrusion coated to 0.00035 inch thick aluminum foil which is then laminated to 0.0005 inch thick polyester. The three plies shall be laminated with the polyester on the exterior of the pouch. Tolerances for thickness of plastic films shall be plus or minus 20 percent and tolerance for the foil layer shall be plus or minus 10 percent. The material shall show no evidence of delamination, degradation, or foreign odor when heat sealed or fabricated into pouches. The material shall be suitably formulated for food packaging and shall not impart an odor or flavor to the product. For package A (MCW), the complete exterior surface of the pouch shall be colored white overall with a color in the range of 37778 through 37886 of FED-STD-595, Colors Used in Government Procurement. For package B (LRP), package C (MRE) package J (FSR), and package K (UGR-E) the complete exterior surface of the pouch shall be uniformly colored in the range of 20219, 30219, 30227, 30279, 30313, 30324, or 30450 of FED-STD-595.

b. Pouch construction. For style A packages package, A, B and C the pouch shall be a flat style preformed pouch having inside dimensions of 2-7/8 inches wide by 7 inches long ($\pm 1/8$ inch in each dimension). For style B package J and K, the pouch shall be a flat style preformed pouch having inside dimensions of 2-3/4 inches wide by 5 inches long ($\pm 1/8$ inch in each dimension). The pouch shall be made by heat sealing three edges with 3/8 inch ($-1/8$ inch, $+3/16$ inch) wide seals. The side and bottom seals shall have an average seal strength of not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width when tested as specified in E-6, B(1)a. Alternatively, the filled and sealed pouch shall exhibit no rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch when tested for internal pressure resistance as specified in E-6,B(1)c. A tear notch shall be made in one or both side seals to facilitate opening. A 1/8 inch wide lip may be incorporated at the open end of the pouch.

c. Pouch filling and sealing. One bar or one commercially packaged bar shall be inserted into the pouch. The filled pouch shall be sealed. The closure seal width shall be a minimum of 1/8 inch. The closure seal shall be free of foldover wrinkles or entrapped matter that reduces the effective closure seal width to less than 1/16 inch. Seals shall be free of

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impression or design on the seal surface that would conceal or impair visual detection of seal defects. The average seal strength of the closure seal shall be not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width when tested as specified in E-6,B(1)b. Alternatively, the filled and sealed pouch shall exhibit no rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch when tested for internal pressure resistance as specified in E-6,B(1)c.

(2) Horizontal form-fill-seal pouches.

a. Pouch material. The horizontal form-fill-seal pouch shall consist of a formed tray-shaped body with a flat sheet, heat sealable cover or a tray-shaped body with a tray-shaped heat sealable cover. The tray-shaped body and the tray-shaped cover shall be fabricated from a 3-ply flexible laminate barrier material consisting of, from outside to inside, 0.0009 inch thick oriented polypropylene bonded to 0.0007 inch thick aluminum foil with 10 pounds per ream pigmented polyethylene or adhesive and bonding the opposite side of the aluminum foil to 0.003 inch thick ionomer or a blend of not less than 50 percent linear low density polyethylene and polyethylene. The linear low density polyethylene portion of the blend shall be the copolymer of ethylene and octene-1 having a melt index range of 0.8 to 1.2 g/10 minutes in accordance with ASTM D1238, Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer and a density range of 0.918 to 0.922 g/cc in accordance with ASTM D1505, Standard Test Method for Density of Plastics by Density-Gradient Technique. Alternatively, 0.0005 inch thick polyester may be used in place of the oriented polypropylene as the outer ply of the laminate. The flat sheet cover shall be made of the same 3-ply laminate as specified for the tray-shaped body except the aluminum foil thickness may be 0.00035 inch. Tolerances for thickness of plastic films shall be plus or minus 20 percent and tolerance for the foil layer shall be plus or minus 10 percent. The color requirements of the exterior (oriented polypropylene or polyester side) of the laminate shall be as specified in D-1,A(1)a. The material shall show no evidence of delamination, degradation, or foreign odor when heat sealed or fabricated into pouches. The material shall be suitably formulated for food packaging and shall not impart any odor or flavor to the product.

b. Pouch construction. The tray-shaped body and the tray-shaped cover shall be formed by drawing the flexible laminate material into an appropriately shaped cavity. The flat cover shall be in the form of a flat sheet of the barrier material taken from roll stock. One bar or one commercially packaged bar shall be placed into the tray-shaped body of the pouch. The filled pouch body shall be hermetically sealed. Pouch closure shall be effected by heat

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sealing together the cover and body along the entire pouch perimeter. The closure seal width shall be a minimum of 1/8 inch. The closure seal shall have an average seal strength of not less than 6 pounds per inch of width and no individual specimen shall have a seal strength of less than 5 pounds per inch of width when tested as specified in E-6,B(1)b. Alternatively, the filled and sealed pouch shall exhibit no rupture or seal separation greater than 1/16 inch or seal separation that reduces the effective closure seal width to less than 1/16 inch when tested for internal pressure resistance as specified in E-6,B(1)c. The maximum outside dimensions of the sealed pouch shall be 6 inches wide by 7 inches long. A tear notch shall be made in one or both side seals to facilitate opening. The sealed pouch shall not show any evidence of material degradation, aluminum stress cracking, delamination or foreign odor. Heat seals shall be free of entrapped matter that reduces the effective closure seal width to less than 1/16 inch. Seals shall be free of impression or design on the seal surface that would conceal or impair visual detection of seal defects.

B. Packaging (for Package H only). When specified as a component of Food Packet, Carbohydrate Supplement, one bar shall be packed in commercial packaging.

D-2 LABELING

A. Pouches (for Package A, B and C). Each pouch shall be clearly printed or stamped on one side, in a manner that does not damage the pouch, in accordance with the colors and design of the trademarked FIRST STRIKE™ bar label shown in Figure 1 (A-1 through A-5). All figures are located in the Appendix A to the document and show required graphics for all packages. Details for "Nutrition Facts" label and ingredients used shall be labeled in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations. (NOTE: The trademarked label design of the U.S. Army Natick Soldier Center is available on disk.) Alternatively, each pouch shall be labeled as shown in Figure 2 (A-6 through A-10) and the commercially packaged bar is overwrapped in the barrier pouch which shall be labeled with the following information:

- (1) Name and flavor of product (letters not less than 1/8 inch high)
- (2) Ingredients 2/
- (3) Date 1/
- (4) Net Weight 2/
- (5) Contractor's name and address

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(6) "Nutrition Facts" label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations 2/

1/ Each pouch shall have the date of pack noted by using a four digit code beginning with the final digit of the current year followed by the three digit Julian day code. For example, 24 November 2006 would be coded as 6328. The Julian day code shall represent the day the product was packaged into the pouch.

2/ Shall appear on the commercial package or the barrier pouch, as applicable.

B. Pouches (for Package H only). When specified as a component of Food Packet, Carbohydrate Supplement, each pouch shall be labeled as shown in Figure 2 (A-6 through A-10). All figures are located in the Appendix A to the document and show required graphics for all packages. Details for "Nutrition Facts" label and ingredients used shall be labeled in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations. (NOTE: The trademarked label design of the U.S. Army Natick Soldier Center is available on disk.)

C. Pouches (for Package J and K). When specified as a component of First Strike Ration, each pouch shall be labeled as specified in D-2,A and in accordance with colors and design of the trademarked FIRST STRIKE™ bar label shown in Figure 3 (A-11 through A 15). All figures are located in the Appendix A to the document and show required graphics for all packages. Details for "Nutrition Facts" label and ingredients used shall be labeled in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations. (NOTE: The trademarked label design of the U.S. Army Natick Soldier Center is available on disk.) Alternatively, each pouch shall be labeled as shown in Figure 4 (A-16 through A-20) and the commercially packaged bar is overwrapped in the barrier pouch which shall be labeled with the following information:

- (1) Name and flavor of product (letters not less than 1/8 inch high)
- (2) Ingredients 2/
- (3) Date 1/
- (4) Net Weight 2/
- (5) Contractor's name and address
- (6) "Nutrition Facts" label in accordance with the Nutrition Labeling and Education Act (NLEA) and all applicable FDA/USDA regulations 2/

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1/ Each pouch shall have the date of pack noted by using a four digit code beginning with the final digit of the current year followed by the three digit Julian day code. For example, 20 October 2006 would be coded as 6293. The Julian day code shall represent the day the product was packaged into the pouch.

2/ Shall appear on the commercial package or the barrier pouch, as applicable.

D-3 PACKING

A. Intermediate box. Twelve Style A FIRST STRIKE™ bars, three each of Raspberry, Chocolate, Cran-Raspberry and Apple-Cinnamon flavors, shall be packed in a intermediate paperboard box. The use of materials composed of the highest percentage of recovered materials practicable is encouraged by the Resource Conservation and Recovery Act of 1976. The approximate inside dimensions of the box is 7-1/8 inches in length, 6-5/8 inches in width, and 3 inches depth.

B. Packing for shipment to ration assembler. Not more than 40 pounds of pouched product shall be packed in a fiberboard shipping container constructed in accordance with style RSC-L, class domestic, variety SW, grade 200 of ASTM D 5118/D 5118M, Standard Practice for Fabrication of Fiberboard Shipping Boxes. Each container shall be securely closed in accordance with ASTM D 1974, Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes.

D-4 UNITIZATION

A. Unit loads. Unit loads shall be as specified in DSCP Form 3507, Loads, Unit: Preparation of Semiperishable Subsistence Items.

D-5 MARKING

A. Shipping containers and unit loads. Shipping containers and unit loads shall be marked in accordance with DSCP Form 3556, Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence.

SECTION E INSPECTION AND ACCEPTANCE

The following quality assurance criteria, utilizing ANSI/ASQ Z1.4, Sampling Procedures and Tables for Inspection by Attributes, are required. Unless otherwise specified, Single

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Sampling Plans indicated in ANSI/ASQ Z1.4 will be utilized. When required, the manufacturer shall provide the certificate(s) of conformance to the appropriate inspection activity. Certificate(s) of conformance not provided shall be cause for rejection of the lot.

A. Definitions.

(1) Critical defect. A critical defect is a defect that judgment and experience indicate would result in hazardous or unsafe conditions for individuals using, maintaining, or depending on the item; or a defect that judgment and experience indicate is likely to prevent the performance of the major end item, i.e., the consumption of the ration.

(2) Major defect. A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.

(3) Minor defect. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

B. Classification of inspections. The inspection requirements specified herein are classified as follows:

(1) Product standard inspection. The first article or product demonstration model shall be inspected in accordance with the provisions of this document and evaluated for overall appearance and palatability. Any failure to conform to the performance requirements or any appearance or palatability failure shall be cause for rejection of the lot. The approved first article shall be used as the product standard for periodic review evaluations. All food components that are inspected by the USDA shall be subject to periodic review sampling and evaluation. The USDA shall select sample units during production of contracts and submit them to the following address for evaluation:

US Army Research, Development and Engineering Command
Natick Soldier Center
AMSRD-NSC-CF-F
15 Kansas Street
Natick, MA 01760-5018

One lot shall be randomly selected during each calendar month of production. Six (6) sample units of each item produced shall be randomly selected from that one production lot. The six

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(6) sample units shall be shipped to Natick within five working days from the end of the production month and upon completion of all USDA inspection requirements. The sample units will be evaluated for the characteristics of appearance, odor, flavor, texture and overall quality.

(2) Conformance inspection. Conformance inspection shall include the product examination and the methods of inspection cited in this section.

E-5 QUALITY ASSURANCE PROVISIONS (PRODUCT)

A. Product examination. The finished product shall be examined for compliance with the performance requirements specified in Section C of this Product Contract Requirements document utilizing the double sampling plans indicated in ANSI/ASQ Z1.4. The lot size shall be expressed in pouches. The sample unit shall be the contents of one pouch. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 4.0 for minor defects. Defects and defect classifications are listed in table I.

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TABLE I. Product defects 1/ 2/

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>General</u>
101		Product not flavor or not style specified.
	201	Bar does not have a smooth to slightly rough glossy exterior.
	202	Bar matrix not a dense, slightly porous structure.
	203	Bar does not exhibit a mild grain aftertaste.
		<u>Flavor I, Chocolate</u>
	204	Bar not a medium to dark brown color.
	205	Bar matrix not a uniform medium to dark color.
	206	Bar matrix does not contain small intact pieces of lighter or darker crisped cereal grains.
102		Bar not a sweet baking chocolate odor or flavor.

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TABLE I. Product defects 1/ 2/ cont'd

Category		Defect
<u>Major</u>	<u>Minor</u>	
		<u>Flavor II, Apple-Cinnamon</u>
	207	Bar not a light to medium tan color.
	208	Bar matrix not a uniform tan color.
	209	Bar matrix does not contain small intact pieces of lighter or darker crisped cereal grains.
103		Bar not a sweet apple or cinnamon odor or flavor.
		<u>Flavor III, Cran-Raspberry</u>
	210	Bar not a medium pink to red color.
	211	Bar matrix not a uniform medium pink to red color.
	212	Bar matrix does not contain small intact pieces of lighter colored crisped cereal grains.
104		Bar not a sweet cranberry or raspberry odor or flavor.
		<u>Flavor IV, Raspberry</u>
	213	Bar not a light to medium red color.
	214	Bar matrix not a uniform light to medium red color.
	215	Bar matrix does not contain small intact pieces of lighter colored crisped cereal grains.
105		Bar not a sweet raspberry odor or flavor.

TABLE I. Product defects 1/ 2/ cont'd

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Category	Defect
<u>Major</u>	<u>Minor</u>
	<u>Flavor V, Mocha</u>
	216 Bar not a medium to dark brown color.
	217 Bar matrix not a uniform medium to dark brown color.
	218 Bar matrix does not contain small intact pieces of lighter colored crisped cereal grains.
106	Bar not a sweet chocolate or coffee odor or flavor.
	219 Bar does not exhibit a slightly bitter aftertaste.
	<u>Texture (general)</u>
	220 Bar not chewy or not slightly rough with crispy pieces of grain.
	<u>Dimensions</u>
	221 Dimensions not as specified.
	<u>Net weight</u>
	223 Style A net weight of an individual bar less than 2.3 ounces (65 grams).
	224 Style B net weight of an individual bar less than 1.2 ounces (35 grams).

1/ Presence of any foreign materials such as, but not limited to dirt, insect parts, hair, glass, wood, or metal, or any foreign odors or flavors such as, but not limited to burnt, scorched, rancid, sour, stale, musty or moldy shall be cause for rejection of the lot.

2/ Finished product not equal to or better than the approved product standard in palatability and overall appearance shall be cause for rejection of the lot.

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B. Methods of inspection.

(1) Shelf life. The contractor shall provide a Certificate of Conformance that the product has a 36 month shelf life when stored at 80°F. Government verification may include storage for 6 months at 100°F or 36 months at 80°F. Upon completion of either storage period, the product will be subjected to a sensory evaluation panel for appearance and palatability and must receive an overall score of 5 or higher based on a 9 point hedonic scale to be considered acceptable.

(2) Net weight. The net weight of the filled and sealed pouches shall be determined by weighing each sample unit on a suitable scale tared with a representative empty pouch. Results shall be reported to the nearest 0.1 ounce or to the nearest gram.

(3) Nutrient content. The contractor shall provide a Certificate of Conformance for the lot including the production formula and premix source formula. Product not conforming to the ingredients, including vitamin premix and percentages as specified in Section C of this Product Contract Requirements document shall be cause for rejection of the lot.

(4) Moisture content. The sample to be analyzed shall be a composite of eight filled and sealed pouches that have been selected at random from the lot. The composited sample shall be prepared and analyzed in accordance with method 945.43 of the Official Methods of Analysis of AOAC International. Test results shall be reported to the nearest 0.1 percent. Verification will be conducted through actual testing by a Government laboratory. Any result not conforming to the analytical requirements shall be cause for rejection of the lot.

E-6 QUALITY ASSURANCE PROVISIONS (PACKAGING AND PACKING MATERIALS)

A. Packaging.

(1) Pouch material certification. A Certificate of Compliance may be accepted as evidence that the characteristics listed below conform to the specified requirements.

Requirement

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<u>Requirement</u>	<u>Paragraph</u>	<u>Test procedure</u>
Thickness of films for laminated material	D-1,A,(1)a and D-1,A,(2)a	As specified in ASTM D 2103 <u>1/</u>
Aluminum foil thickness	D-1,A,(1)a and D-1,A,(2)a	As specified in ASTM B 479 <u>2/</u>
Laminated material identification and construction	D-1,A,(1)a and D-1,A,(2)a	Laboratory evaluation
Color of laminated material	D-1,A,(1)a and D-1,A,(2)a	Visual evaluation by FED-STD-595 <u>3/</u>

1/ ASTM D 2103 Standard Specification for Polyethylene Film and Sheeting

2/ ASTM B 479 Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil For Flexible Barrier, Food Contact, and Other Applications.

3/ FED-STD-595 Colors Used in Government Procurement.

(2) Unfilled preformed pouch certification. A Certification of Compliance may be accepted as evidence that unfilled pouches conform to the requirements specified in D-1,A(1)a and b. When deemed necessary by the USDA, testing of the unfilled preformed pouches for seal strength shall be as specified in E-6, B(1)a.

(3) Filled and sealed pouch examination. The filled and sealed pouches shall be examined for the defects listed in table II. The lot size shall be expressed in pouches. The sample unit shall be one pouch. The inspection level shall be I and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 0.65 for major defects and 2.5 for minor defects.

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TABLE II. Filled and sealed pouch defects 1/

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Tear or hole or open seal.
102		Seal width less than 1/16 inch. <u>2/</u>
103		Presence of delamination. <u>3/</u>
104		Unclean pouch. <u>4/</u>
105		Pouch has foreign odor.
106		Any impression or design on the heat seal surfaces which conceals or impairs visual detection of seal defects. <u>5/</u>
107		Not packaged as specified.
108		Presence of stress cracks in the aluminum foil. <u>6/ 7/</u>
	201	Label missing or incorrect or illegible.
	202	Tear notch or serrations missing or does not facilitate opening.
	203	Seal width less than 1/8 inch but greater than 1/16 inch.
	204	Presence of delamination. <u>3/</u>

1/ Any evidence of rodent or insect infestation shall be cause for rejection of the lot.

2/ The effective closure seal is defined as any uncontaminated, fusion bonded, continuous path, minimum 1/16 inch wide, from side seal to side seal that produces a hermetically sealed pouch.

3/ Delamination defect classification:

Major - Delamination of the outer ply in the pouch seal area that can be propagated to expose aluminum foil at the food product edge of the pouch after manual flexing of the

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delaminated area. To flex, the delaminated area shall be held between the thumb and forefinger of each hand with both thumbs and forefingers touching each other. The delaminated area shall then be rapidly flexed 10 times by rotating both hands in alternating clockwise- counterclockwise directions. Care shall be exercised when flexing delaminated areas near the tear notches to avoid tearing the pouch material. After flexing, the separated outer ply shall be grasped between thumb and forefinger and gently lifted toward the food product edge of the seal or if the separated area is too small to be held between thumb and forefinger, a number two stylus shall be inserted into the delaminated area and a gentle lifting force applied against the outer ply. If separation of the outer ply can be made to extend to the product edge of the seal with no discernible resistance to the gentle lifting, the delamination shall be classified as a major defect. Additionally, spot delamination of the outer ply in the body of the pouch that is able to be propagated beyond its initial borders is also a major defect. To determine if the laminated area is a defect, use the following procedure: Mark the outside edges of the delaminated area using a bold permanent marking pen. Open the pouch and remove the contents. Cut the pouch transversely not closer than 1/4 inch ($\pm 1/16$ inch) from the delaminated area. The pouch shall be flexed in the area in question using the procedure described above. Any propagation of the delaminated area, as evidenced by the delaminated area exceeding the limits of the outlined borders, shall be classified as a major defect.

Minor - Minor delamination of the outer ply in the pouch seal area is acceptable and shall not be classified as a minor defect unless it extends to within 1/16 inch of the food product edge of the seal. All other minor outer ply delamination in the pouch seal area or isolated spots of delamination in the body of the pouch that do not propagate when flexed as described above shall be classified as minor defects.

4/ Outer packaging shall be free from foreign matter which is unwholesome, has the potential to cause pouch damage (for example, glass, metal filings) or generally detracts from the clean appearance of the pouch. The following examples shall not be classified as defects for unclean:

- a. Foreign matter which presents no health hazard or potential pouch damage and which can be readily removed by gently shaking the package or by gently brushing the pouch with a clean dry cloth.
- b. Dried product which affects less than 1/8 of the total surface area of one pouch face (localized and aggregate).

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5/ If doubt exists as to whether or not the sealing equipment leaves an impression or design on the closure seal surface that could conceal or impair visual detection of seal defects, samples shall be furnished to the contracting officer for a determination as to acceptability.

6/ Applicable to form-fill-seal pouches only.

7/ The initial examination shall be a visual examination of the closed package. Any suspected visual evidence of stress cracks in the aluminum foil (streaks, breaks, or other disruptions in the laminated film) shall be verified by the following physical examination. To examine for stress cracks, the inside surface of both tray-shaped bodies shall be placed over a light source and the outside surface observed for the passage of light. Observation of light through the pouch material in the form of a curved or straight line greater than 2 mm in length shall be evidence of the presence of stress cracks. Observation of light through the pouch material in the form of a curved or straight line 2 mm in length or smaller or of a single pinpoint shall be considered a pinhole. Observation of ten or more pinholes per pouch shall be evidence of material degradation.

B. Methods of inspection.

(1) Seal testing. The pouch seals shall be tested for seal strength as required in a, b, or c, as applicable.

a. Unfilled preformed pouch seal testing. The seals of the unfilled preformed pouch shall be tested for seal strength in accordance with ASTM F 88, Standard Test Method for Seal Strength of Flexible Barrier Materials. The lot size shall be expressed in pouches. The sample unit shall be one unfilled pouch. The sample size shall be the number of pouches indicated by inspection level S-1. Three adjacent specimens shall be cut from each of the three sealed sides of each pouch in the sample. The average seal strength of any side shall be calculated by averaging the strength of the three specimens cut from that side. Any average seal strength of less than 6 pounds per inch of width or any test specimen with a seal strength of less than 5 pounds per inch of width shall be classified as a major defect and shall be cause rejection of the lot.

b. Pouch closure seal testing. The closure seals of the pouches shall be tested for seal strength in accordance with ASTM F 88. The lot size shall be expressed in pouches. The sample unit shall be one unfilled pouch. The sample size shall be the number of pouches indicated by inspection level S-1. For the closure seal on preformed pouches, three adjacent specimens shall be cut from the closure seal of each pouch in the sample. For form-fill-seal

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pouches, three adjacent specimens shall be cut from each side and each end of each pouch in the sample. The average seal strength of any side, end or closure shall be calculated by averaging the three specimens cut from that side, end or closure. Any average seal strength of less than 6 pounds per inch of width or any test specimen with a seal strength of less than 5 pounds per inch of width shall be classified as a major defect and shall be cause for rejection of the lot.

c. Internal pressure test. The internal pressure resistance shall be determined by pressurizing the pouches while they are restrained between two rigid plates. The sample size shall be the number of pouches indicated by inspection level S-1. If a three seal tester (one that pressurizes the pouch through an open end) is used, the closure seal shall be cut off for testing the side and bottom seals of the pouch. For testing the closure seal, the bottom seal shall be cut off. The pouches shall be emptied prior to testing. If a four-seal tester (designed to pressurize filled pouches by use of a hypodermic needle through the pouch wall) is used, all four seals can be tested simultaneously. The distance between rigid restraining plates on the four-seal tester shall be equal to the thickness of the product +1/16 inch. Pressure shall be applied at the approximate uniform rate of 1 pound per square inch gage (psig) per second until 14 psig pressure is reached. The 14 psig pressure shall be held constant for 30 seconds and then released. The pouches shall then be examined for separation or yield of the heat seals. Any rupture of the pouch or evidence of seal separation greater than 1/16 inch in the pouch manufacturer's seal shall be considered a test failure. Any seal separation that reduces the effective closure seal width to less than 1/16 inch (see table II, footnote 2/) shall be considered a test failure. Any test failure shall be classified as a major defect and shall be cause for rejection of the lot.

C. Packing.

(1) Shipping container and marking examination. The filled and sealed shipping containers shall be examined for the defects listed in table III below. The lot size shall be expressed in shipping containers. The sample unit shall be one shipping container fully packed. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0 for major defects and 10.0 for total defects.

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TABLE III. Shipping container and marking defects

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Marking missing or incorrect or illegible.
102		Inadequate workmanship. <u>1/</u>
	201	More than 40 pounds of product.

1/ Inadequate workmanship is defined as, but not limited to, incomplete closure of container flaps, loose strapping, inadequate stapling, improper taping, or bulged or distorted container.

SECTION J REFERENCE DOCUMENTS

DSCP FORMS

- DSCP Form 3507 Loads, Unit: Preparation of Semiperishable Subsistence Items
- DSCP Form 3556 Marking Instructions for Boxes, Sacks, and Unit Loads of Perishable and Semiperishable Subsistence

FEDERAL STANDARD

- FED-STD-595 Colors Used in Government Procurement

NON-GOVERNMENTAL STANDARDS

AMERICAN SOCIETY FOR QUALITY (ASQ)

- ANSI/ASQ Z1.4-2003 Sampling Procedures and Tables for Inspection by Attributes

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ASTM INTERNATIONAL

B 479-06	Standard Specification for Annealed Aluminum and Aluminum-Alloy Foil For Flexible Barrier, Food Contact, and Other Applications
D 1238-04c	Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
D 1505-03	Standard Test Method for Density of Plastics by Density-Gradient Technique
D 1974-03(2003)	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes
D 2103-05	Standard Specification for Polyethylene Film and Sheeting
D 5118/D 5118M-05a	Standard Practice for Fabrication of Fiberboard Shipping Boxes
F 88-06	Standard Test Method for Seal Strength of Flexible Barrier Materials

AOAC INTERNATIONAL

Official Methods of Analysis (OMA) of the AOAC International

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For DLA Troop Support Website Posting

RDNS-SEC-F

22 January 2015

TO: DLA Troop Support - Subsistence

SUBJECT: ES15-026 (DSCP-SS-15-00551); Follow up to ES13-050 (DSCP-SS-13-01005); Document change request to PCR-F-001 First Strike Bars, Shelf Stable, to replace palm kernel oil with palm oil

1. Reference: Memo from RDNS-CFF to DSCP-FTRE, dated 19 September 2013, SUBJECT: ES13-050 (DSCP-SS-13-01005); Document change request to PCR-F-001 First Strike Bars, Shelf Stable, to replace fractional partially hydrogenated cottonseed/soybean oil with palm kernel oil.
2. The vendor requests a change to the subject document to replace palm kernel oil with palm oil.
3. Natick concurs with the vendor's request to replace palm kernel oil with palm oil for all flavors and styles of First Strike Bars specified within PCR-F-001.
4. This change will not have a negative impact on the nutrition content of the menus.
5. Natick submits the following changes to subject document for all current, pending, and future procurements until the document is formally amended or revised:
 - a. Section C-2, J, (1 through 5), Ingredients; After "Palm" delete "kernel".
6. Attached is Change 08, PCR-F-001 First Strike Bars, Shelf Stable, dated 22 January 2015, with changes.