

CONTRACT TECHNICAL REQUIREMENT
DATE: OCTOBER 15, 2001

INCH-POUND

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30 June 1991
SUPERSEDING
MIL-T-44237A
26 July 1988

MILITARY SPECIFICATION

TURKEY SLICES IN GRAVY, THERMOSTABILIZED, TRAY PACK

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers turkey slices in gravy, thermostabilized in tray pack cans or polymeric trays for use by the Department of Defense as a component of operational rations.

1.2 Classification. The packaging shall be of the following styles as specified (see 6.1):

- Style a – Tray Pack Can
- Style b – Polymeric Tray

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.1).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be used in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5018 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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SPECIFICATIONS

MILITARY

MIL-L-1497 - Labeling of Metal Cans for Subsistence Items

DSCP FORM 3507 - Loads, Unit: Preparation of Semiperishable Subsistence Items

MIL-C-44340 - Can, Tray Pack

MIL-PRF-32004 - Packaging of Food in Polymeric Trays

STANDARDS

MILITARY

MIL-STD-900 - Bacterial Standards for Starches, Flours, Cereals, Alimentary Pastes, Dry Milks, and Sugars Used in the Preparation of Thermostabilized Foods for the Armed Forces

(Copies of specifications, standards, and handbooks required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity).

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

National Primary Drinking Water Regulations

(Copies are available from the Office of Drinking Water, Environmental Protection Agency, WH550D, 401 M Street, S.W., Washington, DC 20460).

DEFENSE SUPPLY CENTER PHILADELPHIA (DSCP)

DSCP Form 3556 Marking Instructions for Shipping Cases, Snacks and Palletized/Containerized Loads of Perishable and Semiperishable Subsistence

DSCP FORM 3507, Loads Unit: Preparation of Semiperishable Subsistence Items
(Copies are available from the Commander, Defense Supply Center Philadelphia, ATTN: DSAC-HSL, 700 Robbins Avenue, Bldg 6, Philadelphia, Pa 19111-5092)

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U.S. DEPARTMENT OF AGRICULTURE (USDA)

Meat and Poultry Inspection Regulations (9 CFR Parts 301-399)

Food Safety and Inspection Services, Canning of Meat and Poultry Products (9 CFR Part 318)

(Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001).

U.S. Standards for Condition of Food Containers

(Copies are available from the Chairperson, Condition of Container Committee, Agricultural Marketing Service, U.S. Department of Agriculture, Room 2506, South Building, Washington, DC 20090-6456).

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS), U.S. FOOD AND
DRUG ADMINISTRATION (FDA)

Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder
(21 CFR Parts 1-199)

(Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001).

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.1).

AMERICAN ASSOCIATION OF CEREAL CHEMISTS (AACC)

Approved Methods of the American Association of Cereal Chemists

(Application for copies should be addressed to the American Association of Cereal Chemists, 3340 Pilot Knob Road, St. Paul, MN 55121).

AMERICAN DEHYDRATED ONION AND GARLIC ASSOCIATION (ADOGA)

Official Standards and Methods of the American Dehydrated Onion and Garlic Association for Dehydrated Onion and Garlic Products

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(Application for copies should be addressed to the American Dehydrated Onion and Garlic Association, One Maritime Plaza, San Francisco, CA 94111).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 3330 - Peel Adhesion of Pressure-Sensitive Tape

D 1974 – Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers

D 5118 – Fabrication of Fiberboard Shipping Boxes

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pa 19428-2959)

AOAC INTERNATIONAL

Official Methods of Analysis of the AOAC

(Application for copies should be addressed to the AOAC International, 2200 Wilson Boulevard, Suite 400-CD, Arlington, VA 2220-3301).

NATIONAL ACADEMY OF SCIENCES

Food Chemicals Codex

(Application for copies should be addressed to the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418).

AMERICAN SOCIETY FOR QUALITY CONTROL

ANSI/ASCQ Z1.4-1993 Sampling Procedures and tables for Inspection by Attributes

(Application for copies should be addressed to the ASQC, 611 East Wisconsin Avenue, Milwaukee, WI 53201-3005)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services).

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document,

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however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First Article. When specified (see 6.1), a sample shall be subjected to first article inspection (see 6.2) in accordance with 4.4.

3.2 Ingredients. All ingredients shall be clean, sound, wholesome, and free from foreign material, evidence of rodent or insect infestation, extraneous material, off-odors, off-flavors, and off-colors.

3.2.1 Turkey. Turkey shall be prepared from chilled or frozen ready-to-cook yearling turkeys or young turkeys or a combination of both classes which have been processed in accordance with USDA Poultry Inspection Regulations. All turkey shall be certified by a USDA Poultry Products grader for class and condition of the product and either the initial chilling date or initial freezing (in-storage) date.

3.2.1.1 Turkey, chilled. Raw bone-in or boneless turkey shall be received in the chilled state. The turkey shall not have been previously frozen. The chilled turkey shall be held for not more than 6 days at an internal temperature of 28⁰ to 40⁰F following initial chilling and prior to preparation and further processing (see 3.3).

3.2.1.2 Turkey, frozen. Raw bone-in or boneless turkey shall be received in the frozen state. The turkey shall be held for not more than 120 days at an internal temperature of 0⁰F or below following initial freezing and prior to preparation and further processing (see 3.3).

3.2.1.3 Turkey, cooked, frozen. Turkey logs shall be formulated and prepared in accordance with 3.3.1 and 3.3.1.1. Cooked turkey, in either log or slice form, shall be packaged in food safe packaging material and shall be frozen to an internal temperature of 0° F or below within 72 hours. Packaged, frozen, cooked turkey shall have been held at 0 F or below for a period not to exceed 120 days prior to tray pack filling. Frozen, cooked turkey, in either log or slice form shipped between plants shall be accompanied by the turkey log/slice producers certificate of conformance certifying the initial freezing (in-storage) date and compliance with the above stated requirements.

3.2.2 Water. Water used for ice making, formulation, rehydration, washing, and processing shall conform to the National Interim Primary Drinking Water Regulations.

3.2.3 Salt. Salt shall be non-iodized, white, refined sodium chloride with or without anti-caking agents and shall comply with purity standards for sodium chloride of the Food Chemicals Codex.

3.2.4 Sodium tripolyphosphate. Sodium tripolyphosphate shall comply with the Food Chemicals Codex.

3.2.5 Pepper, white, ground. Ground white pepper shall be derived from the dried mature berries of Piper nigrum L. from which the outer covering or the outer and inner covering have been removed. The ground pepper shall have a characteristic, penetrating odor, a hot, biting, pungent flavor and a light color. The ground white pepper shall contain not less than 1.0 ml of volatile oil per 100 grams of ground white pepper and be of such size that not less than 95 percent shall pass through a U.S. Standard No. 40 sieve.

3.2.6 Garlic powder. Garlic powder shall be Fancy Grade of the Official Standards and Methods of the American Dehydrated Onion and Garlic Association (ADOGA) for Dehydrated Onion and Garlic Products.

3.2.7 Broth/stock, chicken, canned, frozen or dehydrated. The canned (thermostabilized), frozen or dehydrated chicken broth/stock shall be produced from USDA inspected chicken in accordance with USDA Poultry Products Inspection Regulations. The chicken broth/stock shall be free from extraneous material and cracklings. The chicken broth/stock shall be concentrated to a soluble solids level sufficient to comply with the solids requirement in the product in which it is to be used. The broth/stock shall have a characteristic mild-chicken broth/stock odor and flavor and may contain flavor enhancers approved by FDA. The canned and the dehydrated chicken broth/stock shall be of the latest date of pack. The frozen chicken broth/stock shall have been held at 0⁰F or below for not more than 75 days from date of freezing.

3.2.8 Starch, modified, high opacity. High opacity starch shall be white, odorless, finely pulverized, modified maize food starch for use in thermostabilized foods. The modified starch shall demonstrate initial viscosity development in the temperature range of 140⁰F to 170⁰F and be fully hydrated at common retort temperatures. The modified starch shall resist breakdown at low pH and under shear stress. A cooked starch slurry shall be bland with essentially no cereal or starch taste.

3.2.9 Onion powder. Onion powder shall be Fancy Grade of the Official Standards and Methods of the American Dehydrated Onion and Garlic Association (ADOGA) for Dehydrated Onion and Garlic Products.

3.2.10 Lecithin. Lecithin shall comply with the Food Chemicals Codex.

3.2.11 Oil, vegetable. Vegetable oil shall possess a clean, bland flavor and shall have a minimum stability of 25 hours (A.O.M.), a free fatty acid value not to exceed 0.05 percent, a moisture/volatile matter content not to exceed 0.06 percent and pass a cold test of 5.5 hours (minimum).

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3.2.12 Celery seed, ground. Ground celery seed shall be derived from the seed of Apium graveolens L. and shall be light to rich-brown in color, and shall possess a characteristic celery odor and flavor with a warm, slightly bitter aftertaste. The ground celery seed shall contain not less than 2.0 ml of volatile oil per 100 grams and shall be of such size that not less than 95 percent, by weight, shall pass through a U.S. Standard No. 35 sieve.

3.2.13 Sage, ground. Ground sage shall be the dried leaves of Salvia officinalis L. The ground sage shall be green to grayish-green in color; shall possess a strong, fragrant, aromatic odor, and a slightly bitter taste. The ground sage shall contain not less than 1.5 ml of volatile oil per 100 grams of ground sage and be of such size that not less than 95 percent shall pass through a U.S. Standard No. 20 sieve.

3.2.14 Turmeric, ground. Ground turmeric shall be prepared from Curcuma longa L. and shall possess a deep yellow to orange-yellow color with a peppery, aromatic odor. The ground turmeric shall contain not less than 3.5 ml of volatile oil per 100 grams of ground turmeric and shall be of such size that not less than 95 percent shall pass through a U.S. Standard No. 40 sieve.

3.2.15 Marjoram, sweet, ground. Ground sweet marjoram shall be derived from the dried leaves of Marjorana hortensis M. The ground marjoram shall be light green to light gray-green in color and possess an aromatic, slightly sharp flavor. The ground marjoram shall contain not less than 0.6 ml of volatile oil per 100 grams of ground marjoram and be of such size that not less than 95 shall pass through a U.S. Standard No. 30 sieve.

3.2.16 Flavoring, thyme. Soluble thyme flavoring shall be prepared from extracts of dried leaves of Thymus vulgaris L. by blending and dispersing a minimum of 4.0 percent of total extractives of thyme on a soluble, dry, edible carrier.

3.2.17 Preblended spice and seasoning mixture. Preblended spices and seasonings may be used. The spices and seasonings in the mixture shall comply with the individual requirements specified in this document. The containers used for the spice and seasoning blend shall be labeled with each ingredient and the percentage of each ingredient in the blend. The ingredients shall be in the same proportions as specified in the ingredient formula.

3.2.18 Broth/stock, turkey, canned, frozen or dehydrated. The canned (thermostabilized), frozen or dehydrated turkey broth/stock shall be produced from USDA inspected turkey in accordance with USDA Poultry Products Inspection Regulations. The turkey broth/stock shall be free from extraneous material and cracklings. The turkey broth/stock shall be concentrated to a soluble solids level sufficient to comply with the solids requirement in the product in which it is to be used. The broth/stock shall have a characteristic mild-turkey broth/stock odor and flavor and may contain flavor enhancers approved by FDA. The canned and the dehydrated turkey broth/stock shall be of the latest date of pack. The frozen turkey broth/stock shall have been held at 0°F or

below for not more than 75 days from date of freezing (see 6.7).

3.3 Preparation and processing. Processing shall be on a continuous basis.

3.3.1 Turkey preparation. Turkey shall be made boneless and skinless. The wing tips, giblets, neck, feet, and viscera shall be excluded. The boned meat shall be free of pin feathers, skin, blood clots, bruises, blemishes, ligaments, tendons, coarse connective tissue, and cartilage, and bone greater than 0.3 inch in any dimension. The boneless meat shall be comprised by weight of at least 50 percent white meat. Cooked turkey slices shall be prepared in accordance with 3.3.1.1.

3.3.1.1 Turkey log preparation and processing. The turkey logs shall be prepared and processed as follows:

<u>Ingredient</u>	<u>Percent by Weight</u>
Turkey meat	96.50
Ice or ice water	2.19
Salt	1.00
Sodium tripolyphosphate	0.25
Pepper, white, ground	0.04
Garlic powder	0.02

a. Fresh-chilled turkey meat processed on the day of boning shall be coarse ground within 24 hours following boning. If fresh-chilled (not previously frozen) turkey meat is transported between plants, it shall be maintained at an internal temperature of 28°F to 40°F and coarse ground within six days following boning. Frozen turkey meat shall be maintained at an internal temperature of 0°F or lower until further processing and be coarse ground within 120 days after boning. The meat shall be mechanically coarse ground once through a grinder plate having kidney-shaped openings measuring 2 inches or more in the shortest dimension and a 2-blade knife that yields chunked pieces.

b. The coarse ground (chunked) turkey meat shall be mechanically mixed with the spices and other ingredients. The mixing shall continue until the mixture exhibits a sticky (tacky) consistency. Time from grinding to mixing shall not exceed 4 hours. The ground turkey meat shall be maintained at an internal temperature of 28°F to 40°F during this time period.

c. The mixed turkey meat shall immediately be tightly stuffed into casings of a type and size to accommodate the cooking method and the finished product meat dimension requirements. Alternatively, the mixed meat may be formed in stainless steel molds. The formed turkey logs shall be in the cooking process within 4 hours after forming. (This period of time may be

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extended up to 24 hours, provided the turkey meat logs are maintained at an internal temperature of 28° to 40°F).

d. The turkey logs shall be cooked in a cook house (smoke house without smoke) or by other commercially acceptable cook methods to provide a product meeting the finished product drained weight and other requirements. Water cooking is permitted only for the meat logs in casings provided they are cooked in water until the internal temperature of the log reaches 150° to 152°F.

e. Immediately after completion of the cooking process, the cooked turkey logs shall be placed in an ice water bath, or cooled by other commercially acceptable rapid cooling methods. During cooling, the internal temperature of the turkey log shall not remain between 130°F and 80°F for more than 1.5 hours or between 80°F and 40°F for more than 5 hours.

f. The turkey logs shall be sliced in a manner to ensure compliance with finished product requirements. Each slice shall be approximately the shape and size shown in figure 1 or 2. The sliced meat shall be held not longer than 4 hours in the temperature range of 28°F to 40°F until preparation of the finished product or, if stored in frozen form, until packaged and vacuum-sealed (see 3.2.1.3). Slices prepared from previously frozen logs, shall not be frozen.

3.3.2 Gravy preparation. Gravy shall be formulated and prepared as follows:

<u>Ingredients</u>	<u>Percent by weight</u>
Turkey or chicken broth/stock <u>1/</u>	92.98
Starch, modified, high opacity <u>2/</u>	5.50
Onion powder	0.80
Lecithin	0.25
Oil, vegetable	0.20
Salt <u>3/</u>	0.10
Pepper, white, ground	0.05
Celery seed, ground	0.04
Garlic powder	0.03
Sage, ground	0.02
Turmeric, ground	0.01
Marjoram, ground	0.01
Flavoring, thyme	0.01

1/ The turkey or chicken broth/stock with different soluble solids content shall be adjusted to the 3.0 to 3.5 percent solids.

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2/ The total amount of starch in the formula shall be adjusted, as necessary, to ensure compliance with the finished product viscosity requirements (see 3.6).

3/ The total amount of salt in the gravy formula shall be adjusted as necessary to produce a product that complies with the finished product salt requirement (see 3.6).

NOTE: The following gravy preparation procedures were used in the development of this product. Alternative procedures may be used provided all finished product requirements are met. (When alternative procedures are used, the time and temperature requirements specified for the prepared gravy are still applicable).

The gravy shall be prepared as follows:

- a. A slurry shall be made with the starch and part of the turkey or chicken broth/stock.
- b. The balance of ingredients shall be heated to a boil in a steam jacketed kettle with continuous and vigorous mixing to assure the spices are uniformly dispersed.
- c. The steam supply to the kettle shall be shut off and the slurry added and uniformly mixed to form the gravy.
- d. The volume of the gravy shall be adjusted with water to compensate for evaporation loss during heating and holding.
- e. The gravy shall be maintained in the temperature range of 150°F to 180°F and filled into tray pack cans or polymeric trays within 4 hours after preparation.

3.4 Tray pack can or polymeric tray filling and sealing. Each tray pack can (see 5.1.1) or polymeric tray (see 5.1.2) shall be filled with turkey slices and gravy such as to conform to the finished product requirements and to the following requirements.

- a. For style a, not less than 54 turkey slices shall be shingled in two rows, lengthwise, in the tray pack can, and then the gravy shall be added. For style b, not less than 36 turkey slices shall be shingled in two rows, lengthwise, in polymeric tray, and then the gravy shall be added.
- b. The turkey slices at the time of filling shall be in the temperature range of 28° to 40°F.
- c. The gravy at the time of filling shall be in the temperature range of 150° to 180°F.
- d. For style a, immediately after filling, each can shall be sealed in accordance with the can manufactures guidelines/requirements and 21 CFR, Part 113, Subpart D, or CFR 9, Part 318,

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Subpart G, as applicable (see 4.5.5), and under a vacuum established by a processing authority and specified in the scheduled process so as to ensure compliance with finished product requirement (see 3.6v). For style b, immediately after filling, each polymeric tray shall be hermetically sealed so as to ensure compliance with the requirements specified in MIL-PRF-32004 (see 4.5.5.1).

e. The filled and sealed tray pack cans or polymeric tray shall be in the retort process within 2 hours after sealing.

3.5 Tray pack thermoprocessing (style a only). The filled and sealed tray pack cans shall be thermostabilized by retorting until a sterilization value (F_0) of not less than 6.0 has been achieved.

3.5.1 Polymeric tray processing (style b only). The filled and sealed polymeric trays shall be processed until commercially sterile (see 4.5.3.5).

3.6 Finished product requirements: Unless otherwise specified, finished product for style a and style b shall comply with the following requirements:

a. There shall be no foreign material, such as, but not limited to, dirt, insect parts, hair, wood, glass or metal.

b. There shall be no foreign odor or flavor, such as, but not limited to burnt, scorched, stale, sour, rancid, or moldy.

c. There shall be no color foreign to the product.

d. No individual can or polymeric tray shall contain a bone piece measuring more than 0.3 inch in any dimension.

e. The total weight of skin, cartilage, coarse connective tissue, section of tendons or ligaments, and discolored meat, collectively, in any individual can or polymeric tray shall be not greater than 1.0 ounce.

f. There shall be no feathers or feather parts.

g. For style a, the average net weight shall be not less than 106 ounces. For style b, the average net weight shall not be less than 92 ounces.

h. For style a, no individual can shall contain less than 104 ounces. For style b, no individual polymeric tray shall weigh less than 90 ounces.

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i. For style a, no individual can shall contain less than 54 intact turkey slices. For style b, no individual polymeric tray shall contain less than 36 intact turkey slices.

j. Turkey slices shall approximate the size and shape shown in figure 1 or 2.

k. No individual can shall have slices with a void area or air pocket that measure more than 1/2 by 1/2 inch.

l. For style a, the average drained weight of the intact slices shall be not less than 63.0 ounces. For style b, the average drain weight of the slices shall not be less than 54.0 ounces.

m. For style a, the drained weight of the 54 turkey slices in any individual can shall be not less than 61.0 ounces. For style b, the drained weight of the 36 turkey slices in any individual polymeric tray shall be not less than 52.0 ounces.

n. Texture of the chicken shall not be dry, rubbery or mushy.

o. The turkey slices shall not contain ground, flaked, or otherwise comminuted product.

p. The gravy shall be light tan to dark tan in color.

q. The gravy shall not be lumpy.

r. The average fat content shall be not greater than 10.0 percent and no individual can or polymeric tray shall have a fat content greater than 12.0 percent.

s. The salt content of any individual tray pack can or polymeric tray shall be not less than 0.5 percent nor greater than 1.2 percent.

t. The product shall show no evidence of excessive heating (materially darkened or scorched).

u. The viscosity of the gravy shall be not less than 6.0 cm per 10 seconds nor greater than 22.0 cm per 10 seconds when determined by a Bostwick Consistometer.

v. For style a only, filled, sealed, and retorted cans must show evidence of proper vacuum as determined by concavity of the can lid (see 4.5.6).

w. For style b only, the packaged food shall meet the minimum shelf life requirement of 18 months at 80⁰ F or 36 months at 80⁰ F (see 4.5.3.6).

x. For style b only, the filled, sealed, and processed polymeric tray shall show evidence of

proper residual gas volume and internal pressure (see 4.5.6.1).

3.6.1 Palatability. The finished product shall be equal to or better than the preproduction sample (6.1) in palatability and overall appearance.

3.7 Plant qualification. The turkey component and the finished product shall originate and be produced, processed, and stored in plants regularly operating under Meat and Poultry Inspection Regulations of the U.S. Department of Agriculture.

3.8 Federal Food, Drug, and Cosmetic Act. All deliveries shall conform in every respect to the provisions of the Federal Food, Drug, and Cosmetic Act and regulations promulgated thereunder.

4. QUALITY ASSURANCE PROVISIONS

4.1 Contractor's responsibility. Inspection and acceptance by the USDA shall not relieve the contractor of obligation and responsibility to deliver a product complying with all the requirements of this specification. The contractor shall assure product compliance prior to submitting the product to the USDA for any inspection.

4.2 Inspection and certification. Product acceptability shall be determined by the USDA. The USDA will determine the degree of inspection and supervision necessary to ensure compliance with the requirements of this specification.

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

- a. First article inspection (see 4.4)
- b. Quality conformance inspection (see 4.5)

4.4 First article inspection. When a first article is required (see 6.1), it shall be inspected in accordance with the quality assurance provisions of this specification and evaluated for overall appearance and palatability. Any failure to conform to the quality assurance provisions of this specification or any appearance or palatability failure shall be cause for rejection of the first article.

4.5 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with ANSI/ASQC Z1.4-1993.

4.5.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

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4.5.1.1 Ingredient and component examination. Conformance of ingredients and components to identity, condition, and other requirements specified in 3.2 shall be certified by the ingredient supplier or ingredient manufacturer, and compliance shall be verified by examination of pertinent labels, markings, U.S. Grade Certificates, certificates of analyses, or other such valid documents acceptable to the inspection agency. If necessary, each ingredient shall be examined organoleptically or inspected according to generally recognized test methods, such as the standard methods described in the Official Methods of Analysis of the Association of Official Analytical Chemists and in the Approved Methods of the American Association of Cereal Chemists, to determine conformance to the requirements. Any nonconformance to an identity, condition, or other requirement shall be cause for rejection of the ingredient or component lot or of any involved product.

4.5.2 In-process examination. In-process examination shall be performed to determine conformance to the preparation, processing, can interior coating, filling, sealing, and packing requirements. Any nonconformance revealed by actual examination or by review of records of time, temperature, and formulation or of other valid documents shall be cause for rejection of the involved product.

4.5.3 Tray pack or polymeric tray inspection. The USDA reserves the right to separate the inspection lot into smaller inspection lots.

4.5.3.1 Net weight inspection. Randomly select 30 filled and sealed tray pack cans or 30 filled and sealed polymeric trays from the inspection lot and weigh separately. Subtract the average tare weight (determined by randomly selecting and weighing 30 of the empty tray pack cans and lids or 30 polymeric trays and lids used in preparing the product and dividing the total weight by 30) from the weight of each tray pack or polymeric tray in the sample. The results shall be reported to the nearest 1 ounce. For style a, if the average net weight is less than 106 ounces or if the net weight of any individual can is less than 104 ounces, the lot shall be rejected. For style b, if the average net weight is less than 92 ounces or if the net weight of any individual polymeric tray is less than 90 ounces, the lot shall be rejected.

4.5.3.2 Double sampling plan for product inspection. The finished product shall be examined for the defects listed in table I utilizing the double sampling plans indicated in ANSI/ASQC Z1.4-1993. The lot size shall be expressed in tray pack cans or polymeric trays. The sample unit shall be one filled and sealed tray pack can or one filled and sealed polymeric tray. The inspection level shall be S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 4.0 for major defects and 6.5 for minor defects. The sample cans or polymeric trays shall be heated in accordance with the heating instructions on the label.

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TABLE I. Product defects 1/ 2/

Category	Defect
<u>Major</u>	
<u>Minor</u>	
101	Presence of bone piece measuring more than 0.3 inch or more in any dimension.
102	Presence of feathers or feather parts.
103 tendons can or	Total weight of skin, cartilage, coarse connective tissue, section of or ligaments, and discolored meat, collectively, in any individual polymeric tray is greater than 1.0 ounce.
104 style	For style a, less than 54 intact turkey slices in any individual can. For b, less than 36 intact turkey slices in any individual polymeric tray.
105	For style a, drained weight of 54 intact turkey slices in a can is less than 61.0 ounces. For style b, drained weight of 36 turkey slices in a polymeric tray is less than 52.0 ounces. <u>3/</u> <u>4/</u>
106	Slices not approximating the size and shape shown in figure 1 or 2. <u>5/</u>
107	Texture of the slice is dry, rubbery, or mushy.
108	Gravy not light tan to dark tan.
109	Gravy is lumpy.
110	Product shows evidence of excessive heating (materially darkened or scorched).
112	More than five slices have a void area or air pocket measuring more than 1/2 inch by 1/2 inch.
202	Five or less slices having a void area or air pocket measuring more than 1/2 inch by 1/2 inch.
203	Slice contains finely ground, flaked, or otherwise comminuted product.
204	Slices not arranged in a shingled manner

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1/ The presence of any foreign material (for example, glass, dirt, insect parts, hair, wood, metal), foreign odor or flavor (for example, burnt, scorched, moldy, rancid, sour, stale), or foreign color shall be cause for rejection of the lot.

2/ Product not equal to or better than the approved preproduction sample (see 6.1) in palatability and overall appearance shall be cause for rejection of the lot (see 3.6.1).

3/ To determine drained weight, the free liquid in the can or polymeric tray shall be poured off, strained through a U.S. Standard No. 8 sieve, and reserved for viscosity determinations. The remaining contents shall be poured into a flat-bottom container. A minimum of three times the tray pack can's or polymeric tray's volume of 180° to 190°F water shall be added to the container so as to cover the contents. The contents and water shall be agitated so as to liquefy rendered fat without breaking the turkey slices. The contents shall then be poured into a U.S. Standard 1/4 inch sieve in a manner that will distribute the product over the sieve without breaking the turkey slices. Sieve area shall be such that the distributed product does not completely cover all the openings of the sieve. The sieve shall be tilted at such an angle so as to ensure complete drainage of all liquid from the product. The product shall be allowed to drain for 2 minutes before determining the drained weight by subtracting the sieve tare weight from the gross weight. For style a, fifty-four intact turkey slices shall be weighed to determine the drained weight. For style b, thirty-six turkey slices shall be weighed to determine the drained weight. The drained weight shall be reported to the nearest 0.1 ounce.

4/ For style a, the lot shall be rejected if the sample average drained weight is less than 63.0 ounces. For style b, the lot shall be rejected if the sample average drained weight is less than 54.0 ounces.

5/ Turkey slices, approximating the shape of figure 2, that have broken corners shall not be considered as intact.

4.5.3.3 Fat and salt content testing. Three filled and sealed tray pack cans or polymeric trays shall be selected at random from the lot. The product shall be tested for fat content in accordance with the Official Methods of Analysis of AOAC, method 960.39, 976.21, or 985.15, and for salt in accordance with the Official Methods of Analysis of AOAC, method 935.47, except that preparation of the samples shall be as follows: The unopened trays or polymeric trays shall be warmed in a water bath to melt fat adhering to the inside of the cans or polymeric trays. The cans or polymeric trays shall be opened and the entire contents of each can or polymeric tray shall be separately blended in a Waring Blender or equivalent. The test results shall be reported to the nearest 0.1 percent. Any result failing to conform to the requirements in 3.6 shall be classified as a major defect and shall be cause for rejection of the lot.

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4.5.3.4 Viscosity testing. The strained free liquid collected from each of the cans or polymeric trays in the first sample of cans or polymeric trays selected for drained weight inspection (see 4.5.3.2 and footnote 4/ to Table I) shall be individually tested for viscosity as follows (see 6.4).

Instrument: Bostwick Consistometer

Catalog Number: 23270-004
VWR Scientific Company
P.O. Box 7900
San Francisco, CA 94120

or

Catalog Number: 15-347-50
Fisher Scientific
585 Alpha Drive
Pittsburgh, PA 15238

Method:

- a. Level the instrument.
- b. Bring gravy to $100^{\circ}\text{F} \pm 1^{\circ}\text{F}$ in a water bath in a covered container.
- c. Stir gravy thoroughly before filling the Bostwick cavity.
- d. Scrape gravy evenly across upper edge of cavity.
- e. Release gravy and time gravy flow to the nearest 1 second and distance traveled to the nearest 0.1 cm.

If the Bostwick viscosity value of the gravy from any can or polymeric tray in the sample fails to conform to the requirements specified in 3.6, it shall be classified as a major defect and the lot shall be rejected.

4.5.3.5 Commercial sterility. The sample size shall be one filled, sealed, and thermoprocessed tray pack can or polymeric tray selected from each process batch in the lot. Incubate the sample cans or trays at $95^{\circ}\text{F} \pm 5^{\circ}\text{F}$ for 10 days, unless otherwise specified by the inspection agency. Any evidence of swelling or microbial activity following incubation shall be cause for rejection of the lot.

4.5.3.6 Shelf life (style b only).

4.5.3.6.1 Shelf life (18 months). Compliance with requirements shall be determined by incubation for 18 months at 80°F . Following the incubation period, the contractor shall perform an organoleptic test comparing the incubated samples to the control product. An acceptable product would receive a score of 5 or higher based on a hedonic scale. Contractor shall provide a certificate of conformance.

4.5.3.6.2 Shelf life (36 months). Compliance with requirements shall be determined by incubation for 1 month at 120°F or 6 months at 100°F or 36 months at 80°F . Following the incubation period, the contractor shall perform an organoleptic test comparing the incubated

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samples to the control product. An acceptable product would receive a score of 5 or higher based on a hedonic scale. Contractor shall provide a certificate of conformance.

4.5.4 Can condition examination (style a only). Examination of filled and sealed tray pack cans shall be in accordance with the U.S. Standards for Condition of Food Containers, except that inspection for labeling shall be in accordance with 4.5.4.1. In addition, scratches, scuffs, or abrasions that occur on the outside coating as a result of the filling, sealing, and thermoprocessing of the tray cans shall not be scored as a defect.

4.5.4.1 Can label examination (style a only). Labels shall be examined for defects in accordance with MIL-L-1497 (see 5.4) except, for self-adhering labels, the following additional defects shall apply:

Major: Label torn or scratched so as to obliterate any of the markings.

Minor: Air bubbles under label.

Label not properly adhered to can, for example, label raised or peeled back from edges or corners.

4.5.4.2 Label adhesive examination. (style a only). When self-adhering labels are used, the adhesive shall be tested in accordance with ASTM D 3330.

4.5.4.3 Polymeric tray condition examination (style b only). Examination of filled and sealed polymeric trays shall be in accordance with table II of MIL-PRF-32004.

4.5.4.3.1 Polymeric tray label examination (style b only). Labels shall be examined in accordance with Quality Assurance Provisions and Packaging Requirements for MIL-PRF-32004.

4.5.5 Can closure examination (style a only). Can closures shall be examined visually and by teardowns in accordance with the can manufacturer's guidelines/requirements and 21 CFR, Part 113, Subpart D, or 9 CFR, Part 318, Subpart G, as applicable. Any nonconformance based on observation of can seam teardowns or on record of can seam teardowns shall be classified as a major defect and shall be cause for rejection of any involved product.

4.5.5.1 Polymeric tray closure examination (style b only). Polymeric tray closure shall be examined in accordance with table II of MIL-PRF-32004.

4.5.6 Vacuum examination (style a only). Cans shall be allowed to cool to $75^{\circ} \pm 5^{\circ}\text{F}$, held for at least 24 hours after sealing, and then examined for vacuum retention. To examine, lay a straight edge in the center of the lid along the length of the tray pack. Both ends of the straight edge shall touch the lid at the inside edge of the double seam. There shall be a visible gap between the

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straight edge and the lid for the entire distance of the label panel. Using a shorter straight edge, the same procedure shall be used across the width, in the center of the tray pack can. One measurement shall be made when examining a ribbed lid; lay the straight edge between the two center ribs along the length of the can. The inspection lot shall include only tray packs produced in a single shift on a single sealing machine. The sample size shall be 50 cans. Any nonconformance shall be classified as a major defect and shall be cause for rejection of the lot.

4.5.6.1 Polymeric tray testing (style b only). Polymeric trays shall be tested for conformance to residual gas volume and internal pressure requirements in accordance with MIL-PRF-32004.

4.5.7 Shipping container examination (style a and b). The filled and sealed shipping containers shall be examined for the defects listed 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.

Major: National stock number, item description, contract number, or date
of pack markings missing, incorrect, or illegible
Reinforced with other than nonmetallic strapping or tape
For style a only, dimensions of pads not as specified
For style a only, interior packing with fiberboard liner or pads not as specified
For style b only, protective sleeve missing.

Minor: Other required markings missing, incorrect, or illegible
Arrangement or number of cans or polymeric trays not as specified

4.5.8 Unit load inspection (style a only). Inspection of unit loads shall be in accordance with the quality assurance provisions of DSCP FORM 3507.

4.5.8.1 Unit load inspection (style b only). The unit loads shall be examined in accordance with the Quality Assurance Provisions and Packaging Requirements for MIL-PRF-32004.

5. PACKAGING

5.1 Preservation. The product shall be preserved in accordance with Level A.

5.1.1 Level A preservation (style a only). One hundred and six ounces of food product shall be filled into a tray pack can conforming to MIL-C-44340 and sealed and thermoprocessed as specified in 3.4 and 3.5.

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5.1.2 Level A (style b only). Ninety-two ounces of food product shall be filled into a polymeric tray conforming to MIL-PRF-32004 and sealed and processed as specified in 3.4 and 3.5.1.

5.2 Packing (style a only). The product shall be packed in accordance with Level A, B, or C as specified (see 6.1).

5.2.1 Level A packing. Four cans of product, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard box, constructed and closed in accordance with style RSC-L or HSC-L with an HSC full depth cover, grade V2s of ASTM D 5118. The cans shall be packed flat, four in depth within the box, with the first two cans placed with the lids together and the next two cans with the lids together. The inside of each box shall be provided with a box liner and five fiber-board pads fabricated of grade V3c fiberboard. The height of the box liner shall be equal to the full inside depth of the box (+0 inch, -1/8 inch). Flute direction of the box liner shall be vertical. The pads shall be placed between the cans and on the top and bottom of the stacked cans. The pad dimensions shall be not less than 1/8 inch of the full length and width dimensions of the box. Each box shall be reinforced with nonmetallic strapping or pressure-sensitive adhesion filament-reinforced tape in accordance with ASTM D 1974. Shipping containers shall be arranged in unit loads in accordance with DSCP FORM 3507 for the type and class of load specified (see 6.1) except that the unit load shall consist of 48 boxes with 12 boxes per course and four courses per load with all courses having the same pattern. Boxes may be stacked by interlocking and reversing each tier, or by columnar stacking with paperboard or fiberboard sheets placed between each tier. When unit loads are strapped, strapping shall be limited to nonmetallic strapping, except for type II, class F loads.

5.2.2 Level B packing. Four cans of product, preserved as specified in 5.1, shall be packed as specified in 5.2.1, except the box shall be constructed of grade V3c, V3s, or V4s fiberboard.

5.2.3 Level C packing. Four cans of product, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard box, constructed and closed in accordance with style RSC-L, class domestic, grade 275 of ASTM D 5118. The cans shall be packed flat, four in depth within the box, with the first two cans placed with the lids together and the next two cans with the lids together. The inside of each box shall be provided with a box liner and five fiberboard pads. The height of the box liner shall be equal to the full inside depth of the box (+0 inch, -1/8 inch). Flute direction of the box liner shall be vertical. The pads shall be placed between the cans and on the top and bottom of the stacked cans. The pad dimensions shall be not less than 1/8 inch of the full length and width dimensions of the box and shall be fabricated of class domestic, grade 175 fiberboard.

5.2.4 Polymeric tray packing for shipment to ration assembler (style b only). Packing for shipment to ration assembler shall be in accordance with the Quality Assurance Provisions and Packaging Requirements for MIL-PRF-32004.

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5.3 Unit loading (style a only). When specified (see 6.1), the product, packed as specified in 5.2.2 or 5.2.3, shall be arranged in unit loads in accordance with DSCP FORM 3507 for the type and class of load specified, except that the unit load shall consist of 48 boxes with 12 boxes per course and four courses per load with all courses having the same pattern. Boxes may be stacked by interlocking and reversing each tier, or by columnar stacking with paperboard or fiberboard sheets placed between each tier. When unit loads are strapped, the strapping shall be limited to nonmetallic strapping, except for type II, class F loads.

5.3.1 Unit loading (style b only). Unit loads shall be in accordance with the Quality Assurance Provisions and Packaging Requirements for MIL-PRF-32004.

5.4 Labeling (style a only). Each tray pack can shall be labeled in accordance with MIL-L-1497 and with the following:

- Official establishment number (for example, EST 38) or a three-digit letter code identifying the establishment
- Lot number 1/
- Product shift number 1/
- Retort identification number 1/
- Retort cook number 1/

1/ The lot number shall be expressed as a four-digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, December 6, 1993 would be coded as 3340). The Julian code shall represent the day the product was packaged and processed. Sub-lotting (when used) shall be represented by an alpha character immediately following the four-digit Julian code. Following the four-digit Julian code and the alpha character (when used), the other required code information shall be printed in the sequence as listed above. In addition, the name of the product shall be marked, stamping is permitted, on one 1001 by 200 side of the can. The labeling shall be legible when examined in accordance with 4.5.4 after preparation of product in accordance with heating instructions. Paper labels are not permitted. Cans shall show the following statements:

TO HEAT IN WATER: Submerge unopened can in boiling water. Simmer gently 40 to 45 minutes. Avoid overheating (can shows evidence of bulging).

CAUTION: Use care when opening as pressure may have been generated within the can.

TO HEAT IN OVEN: Either punch several holes in lid of can or open can in usual manner leaving the loose lid in place. Place in a 350°F oven 35 to 40 minutes.

WARNING: Do not place unopened can in oven. This may cause the can to burst.

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YIELD: Serves 18 portions of 3 slices each.

As an alternate labeling method, a preprinted, self-adhering, 0.002-inch thick, clear polyester label printed with indelible black ink may be used. Self-adhering labels shall be applied after retorting. Pressure-sensitive adhesive shall require no preparation prior to application. Labels shall tack quickly and adhere without curling or breaking. The adhesive shall have a minimum adhesion of 60 ounces per inch width when examined as specified in 4.5.4.2. When self-adhering labels are used, the tray pack cans shall be labeled with the Julian code and a product code prior to retorting.

5.4.1 Labeling (style b only).

5.4.1.1 Tray. Each polymeric tray shall be labeled in accordance with the Quality Assurance Provisions and Packaging Requirements for MIL-PRF-32004.

A. Polymeric tray body. One side of each polymeric tray shall be clearly printed or stamped, in a manner that does not damage the tray, with permanent ink of any contrasting color, which is free of carcinogenic elements. To avoid erroneous marking of trays, the product name, lot number and filling equipment number shall be applied prior to processing. All other tray marking may be applied before or after processing. If these markings are applied along the tray body side (see figure 1 of MIL-PRF-32004), or if applied along the tray body end, are not readily legible in low light conditions, a small, easily legible label detailing product name and number of portions shall be applied along one tray body end, but not over any existing tray markings. 1/

Tray body markings shall include:

- (1) **Product name.** Commonly used abbreviations may be used when authorized by the inspection agency.
- (2) **Tray code includes: 2/**
 - Lot Number
 - Filling equipment identification number
 - Retort identification number
 - Retort cook number

1/ As an alternate method, tray body markings may be clearly printed or stamped onto the polymeric tray lid prior to processing, in a manner that does not damage the lid, with permanent ink of any contrasting color, which is free of carcinogenic elements, provided that the required markings are applied onto the tray body after processing.

2/ Shall be code marked as follows: The lot number shall be expressed as a four digit Julian code. The first digit shall indicate the year of production and the next three digits shall indicate the day of the year (Example, 22 March 2000 would be coded as 0082). The Julian

code shall represent the day the product was packaged into the tray and processed. Sublotting (when used) shall be represented by an alpha character immediately following the four digit Julian code. Following the four digit Julian code and the alpha character (when used), the other required code information shall be printed in the sequence as listed above.

B. Polymeric tray lid. The lid shall be clearly printed or stamped, in a manner that does not cause damage. Permanent ink of any contrasting color, which is free of carcinogenic elements, shall be used. As an alternate labeling method, a pre-printed self-adhering 0.002 inch thick clear polyester label printed with indelible contrasting color ink may be used.

(1) Lid labeling shall include:

Product name

Ingredients

Net weight

Name and address of packer

Official establishment number (for example, EST 38) or a three letter code identifying the establishment

(2) Lid labeling shall also show the following statements:

TO HEAT IN WATER: Submerge unopened tray in boiling water. Simmer gently 40-45 minutes. Avoid overheating (tray shows evidence of bulging).

WARNING: Do not heat tray in oven.

TO TRANSPORT AFTER HEATING: Insert tray back into protective sleeve to protect during transport. If sleeve is unavailable, stack trays lid-to-lid with fiberboard pads in between.

CAUTION: Use care when opening as pressure may have been generated within the tray.

TO OPEN: Using a clean knife, cut the lidding around the inside perimeter of the tray seals.

SUGGESTION: Cut lid along 3 sides and fold over uncut portion. Fold back to keep unused portions protected.

YIELD: Serves 18 portions of 2 slices each.

5.5 Marking (style a only).

5.5.1 Shipping containers. In addition to any special marking required by the contract or purchase order, shipping containers shall be marked in accordance with DSCP Form 3556.

5.5.2 Unit loads. Unit loads shall be marked in accordance with DSCP Form 3556. In addition, the following precautionary marking in capital letters larger than other markings shall be included:

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5.6 Marking (style b only). Marking of shipping containers and unit loads shall be in accordance with the Quality Assurance Provisions and Packaging Requirements for MIL-PRF-32004.

CAUTION: DO NOT STACK PALLETS IN TRANSIT OR MORE THAN TWO HIGH IN STORAGE, UNLESS PALLET RACKS ARE USED.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory).

6.1 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- c. When a first article is required (see 3.1, 4.4, and 6.2).
- d. Provisions for approved preproduction samples (see 3.6.1 and 6.2).
- e. Level of packing required (see 5.2).
- f. Type and class of unit load when unit loading is required (see 5.2.1 and 5.3).
- g. Style required (see 1.2).

6.2 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209-4. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.3 Appropriate level of pack. Based on conditions known or expected to be encountered during shipment, handling, and storage of the specific item being procured, the procuring activity should select the appropriate level of pack in accordance with the criteria established in AR 700-15/NAVSUPINST 4030.28/AFR 71-6/MC 4030.33A/DLAR 4145.7.

6.4 Alternate viscosity testing method. The contracting officer may authorize an alternative contractor recommended method of viscosity testing if the alternative method is approved by the U.S. Army Natick Research, Development and Engineering Center.

6.5 Subject term (key word) listing.

Canned foods
Combat field feeding
Operational rations
Shelf stable

6.6 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

6.7 Broth/stock, turkey, canned, frozen or dehydrated. It has been found that frozen Turkey Broth (16%) and Dried Turkey Stock produced by Hormel Foods Corp., Lebanon, NJ, meets the requirements of 3.2.18 and performs satisfactorily in this product.

Custodians:

Army - GL
Navy - SA
Air Force - 50

Preparing activity:

Army - GL
(Project 8940-0721)

Review activities:

Army - MD, QM
Navy - MC
DP - SS

1. 5-18-99 Changes made to addresses and DSCP FORM 3507.