INCH-POUND
MIL-DTL-32235/3A
30 March 2021
SUPERSEDING
MIL-DTL-32235/3
15 September 2010

DETAIL SPECIFICATION SHEET

UNITIZED GROUP RATION-EXPRESS (UGR-E) HEATER MODULE: BOIL-IN-BAG (BIB) MODULE

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

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-32235.

REQUIREMENTS

I. Boil-In-Bag (BIB) module.

The BIB module shall consist of a fiberboard box containing one BIB of dry or dehydrated food packaged in a barrier pouch, one pouch of potable water for rehydrating the food, one heater packaged in a barrier pouch, one activation fluid unit, and one serving tray in a polyethylene bag. Note that the terms bag and pouch are used interchangeably.

A. Heater.

The BIB heater shall be constructed of materials that, when activated by a fluid, shall initiate and propagate an exothermic reaction suitable for use with food. This reaction shall generate adequate heat to completely cook the food when applicable, or heat the food to a safe serving temperature. No toxic gas, liquid or solid by-products are desirable. If toxic by-products are produced, they shall be of the least severity and smallest amount possible while allowing for adequate heating and ensuring operator and consumer safety. When low hydrogen generating heater is used, it shall generate less than 30 liters of hydrogen in 60 minutes. The heater material shall be evenly distributed and completely sealed within the scrim matrix of the heater to minimize the release of materials, and facilitate direct in-place activation of the heater materials. The heating rate shall be optimized to minimize the time required to heat the food, yet not cause excessive foaming or uncontrolled release of reaction by-products. The BIB heater and barrier material shall not melt, deform or degrade during heating.

The heater is activated by the addition of a fluid that shall fully activate the heater material. The non-woven porous polymeric scrim shall be sealed and sized to accommodate proper fit and function of the heater module. Each heater (heater elements in a matrix) shall be correctly and legibly labeled in accordance with MIL-DTL-32235.

One heater shall be packaged in a barrier pouch constructed from laminated material, with one lamina a minimum of 0.00035 inch thick aluminum foil. The barrier pouch shall be heat sealed on all four edges. A tear nick, notch or serrations shall be provided to facilitate opening of the filled and sealed barrier pouch. The barrier pouch shall have maximum outer dimensions of 11 by 15 inches. Each barrier pouch with heater shall be correctly and legibly labeled in accordance with MIL-DTL-32235. In addition, the following statement shall be labeled on the barrier pouch and all boxes, as applicable:

FLAMELESS HEATER – DO NOT CONSUME

NOTE: Any hazard markings required for Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (USEPA) and U.S. Department of Transportation (USDOT) compliance are to be labeled on the barrier pouch and all boxes, as applicable.

B. Activation fluid unit.

The activation fluid unit consisting of a pouch containing the activation fluid shall be made of material equivalent to Class 1 of MIL-PRF-131. Alternate activation fluid unit materials and design shall be permitted with approval from Combat Capabilities Development Command (DEVCOM) Soldier Center. The pouch shall be designed with a center or side spout and shall have maximum outer dimensions of 9-1/2 by 14 inches. The pouch shall be filled with 1.5 percent saline (water and sodium chloride) solution, or as specified by the heater manufacturer with approval from Combat Capabilities Development Command (DEVCOM) Soldier Center. The volume of fluid in the pouch, when combined with the heater, shall be adequate to initiate and propagate the exothermic reaction.

The pouch shall be heat sealed on all edges. A tear nick, notch or serrations shall be provided in the spout area to facilitate opening of the filled and sealed pouch. 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. 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.

Each activation fluid unit shall be correctly and legibly labeled in accordance with MIL-DTL-32235. In addition, the following statement shall be labeled on the pouch:

ACTIVATION FLUID - DO NOT CONSUME

NOTE: Any hazard markings required for Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (USEPA) and U.S. Department of Transportation (USDOT) compliance are to be labeled on the activation fluid unit and all boxes, as applicable.

C. Boil-In-Bag (BIB).

The BIB of food shall meet the requirements of the applicable food document. Note that the requirements for eggs in a BIB are cited in PCR-E-017, Egg Mix, Reduced Cholesterol, Pasteurized, Uncooked, Dehydrated, Packaged in a Boil-In-Bag (BIB).

D. Rehydration water pouch.

Water shall conform to all requirements of A-A-20332. The water shall be sterilized by either class 1 (thermoprocessed), class 2 (ozone), class 3 (ultraviolet light), or class 4 (hot fill) treatment.

The pouch containing the rehydration water shall be made of material equivalent to Class 1 of MIL-PRF-131. The pouch shall have maximum outer dimensions of 11 by 14 inches. The minimum volume of rehydration water in the pouch shall be 1.5 liters (51 fluid ounces). The pouch shall be fitted with a cap with a 3/4 inch opening and a tamper evident closure. The pouch shall not leak.

The pouch shall be heat sealed on all edges. 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. 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.

Each pouch shall be correctly and legibly labeled. The label shall contain the following information:

(1) Name
(2) Contents
(3) Net volume
(4) Date of pack 1/
(5) Contractor's name and address

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, 14 February 2030 would be coded as 0045. The Julian day code shall represent the day the water was packaged.

E. Serving tray.

The serving tray shall be constructed from food grade (direct food contact), water resistant paperboard. All inside surfaces and edges shall be coated. The serving tray shall be capable of containing the food product during the preparation, cooking and serving of the food. There shall be no product transfer in or out of serving tray. The dimensions shall be a maximum of 14-1/2 by 10 by 2 inches. The serving tray shall be placed in a polyethylene bag with dimensions of approximately 24 by 16 inches and the bag sealed. The polyethylene bag shall be labeled with:

SERVING TRAY
DO NOT DISPOSE
REMOVE BAG BEFORE USING

F. Fiberboard box.

The fiberboard box shall be constructed from C flute corrugated fiberboard. The inside of the box shall be coated with a food grade (direct food contact), water resistant coating.

The design of the box shall be a flip top box with a locking mechanism. The outside dimensions shall be a maximum of 15-1/2 by 11 by 2-3/4 inches. The fiberboard box shall maintain its shape and integrity while containing the activated, heated, and cooked or serving temperature of BIB food for a minimum of 90 minutes after the heating reaction is initiated.

G. Assembly of BIB module.

The BIB module shall consist of one fiberboard box containing one BIB of food, one pouch of rehydration water, one activation fluid unit, one packaged heater, one serving tray in a polyethylene bag, and instruction sheets. All components shall be compatible and shall fit in the module box. Each heater module shall be correctly and legibly labeled in accordance with MIL-DTL-32235.

EXAMINATION

A. BIB heater module examination. The finished product shall be examined for conformance with the requirements specified in MIL-DTL-32235 and this specification sheet. The BIB heater module shall be examined for the defects listed in Table I.

TABLE I. BIB heater module defects 1/ 2/ 3/

Category		Defect
Major	Minor	
101		Heater module not a BIB heater module.
102		Heater does not contain materials that will initiate and propagate an exothermic reaction.
103		Heater causes excessive foaming or uncontrolled release of reaction by-products.
104		Heater not correct size or not correct capacity.
105		Heater module does not generate adequate heat to completely cook the food when applicable, or heat the food to a safe serving temperature. 4/
	201	Tear nick or notch or serrations on heater barrier pouch missing or does not facilitate opening.
106		Heater not packaged in a barrier pouch.
	202	Tear nick or notch or serrations on activator fluid pouch missing or does not facilitate opening.
107		Rehydration water pouch leaks.
108		Serving tray not correct dimensions or not correct design.
109		Serving tray not in polyethylene bag.
	203	Fiberboard module box not correct dimensions or not correct design.
	204	Fitment on pouch of rehydration water not compatible with BIB.
	205	Components not compatible or do not fit in fiberboard module box.
	206	Fiberboard box does not maintain its shape and integrity while containing the activated, heated, and cooked or serving temperature of BIB food for a minimum of 90 minutes after the heating reaction is initiated.
	207	Low hydrogen generating heater generates more than 30 liters of hydrogen in 60 minutes.

1/ Requirements that rehydration water meets A-A-20332 shall be verified by Certificate of Conformance (CoC).

2/ Serving tray construction from fiberboard with a food grade water resistant coating shall be verified by CoC.

3/ The low hydrogen generating heater shall be verified by CoC.

4/ BIB Eggs must be cooked to an internal temperature of 145˚F (63˚C) for fifteen seconds. Polymeric food trays must be reheated to an internal temperature of at least 135˚F (57˚C).

PART IDENTIFIERS AND SOURCES OF SUPPLY

1. Heater. The heater is available from:

Luxfer Magtech Incorporated
2940 Highland Avenue
Cincinnati, OH 45212
(800) 503-4483

2. Heater barrier pouch. The barrier pouch material is available from:

Winter-Wolff International
131 Jericho Turnpike
Jericho, NY 11753
(516) 997-3300

3. Activation fluid unit. The activator pouch is identified as Part # UGR-E-AFU-GEN II The material equivalent to Class 1 of MIL-PRF 131 for the construction of the activation fluid unit pouch is available from:

Cadillac Products Packaging Company
5800 Crooks Road
Suite 200
Troy, Michigan 48098-2830
(800) 837-0055

The filled and sealed activation fluid units are available from:

Heritage Packaging
625 Fishers Run
Victor, NY 14564
(585) 742-3310

4. Thermocoupled BIBs. Filled thermocoupled BIBs or instructions on how to construct them are available from:

Combat Capabilities Development Command (DEVCOM) Soldier Center
FCDD-SCD-SCR
10 General Greene Avenue
Natick, MA 01760-5000
(508) 206-3410

5. Instruction sheets. The following operation instruction sheets are attached:

FIGURE 1. UGR-E BIB Operating Instructions, for Heater with Hydrogen Generating Warning

FIGURE 2. UGR-E BIB Operating Instructions, for Heater with Low Hydrogen Generating Warning

FIGURE 3. Instructions for UGR-E Eggs, for Heater with Hydrogen Generating Warning

FIGURE 4. Instructions for UGR-E Eggs, for Heater with Low Hydrogen Generating Warning

Instruction sheets in color are available electronically from:

Combat Capabilities Development Command (DEVCOM) Soldier Center
FCDD-SCD-SCR
10 General Greene Avenue
Natick, MA 01760-5000
(508) 206-3410

REFERENCES

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-32235	-	Unitized Group Ration – Express (UGR-E) Heater Module, General Specification for
MIL-PRF-131	-	Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat-Sealable
A-A-20332	-	Water, Emergency, Drinking

(Copies of these documents are available online at https://quicksearch.dla.mil.)

PCR-E-017 - Egg Mix, Pasteurized, Uncooked, Dehydrated, Packaged in a Boil-In-Bag (BIB)

(Copies of this document are available from Combat Capabilities Development Command (DEVCOM) Soldier Center, FCDD-SCD-SCR, 10 General Greene Avenue, Natick, MA 01760-5000.)

GOVERNMENT PUBLICATIONS

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration (29 CFR Part 1910, Subpart H)

(Copies of this document are available online at http://www.osha.gov or U.S. Department of Labor Occupational Safety & Health Administration, 200 Constitution Avenue, N.W., Room Number N3626, Washington, D.C. 20210.

U.S. DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration (49 CFR Parts 171-180)

(Copies of this document are available online at https://www.fmcsa.dot.gov or Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.)

U.S. ENVIRONMENTAL PROTECTION AGENCY

Resource Conservation and Recovery Act (40 CFR, Parts 239-282)

(Copies of this document are available online at http://www.epa.gov or from the Superintendent of Documents, ATTN: New Orders, P.O. Box 371954, Pittsburgh, PA 15250-7954.)

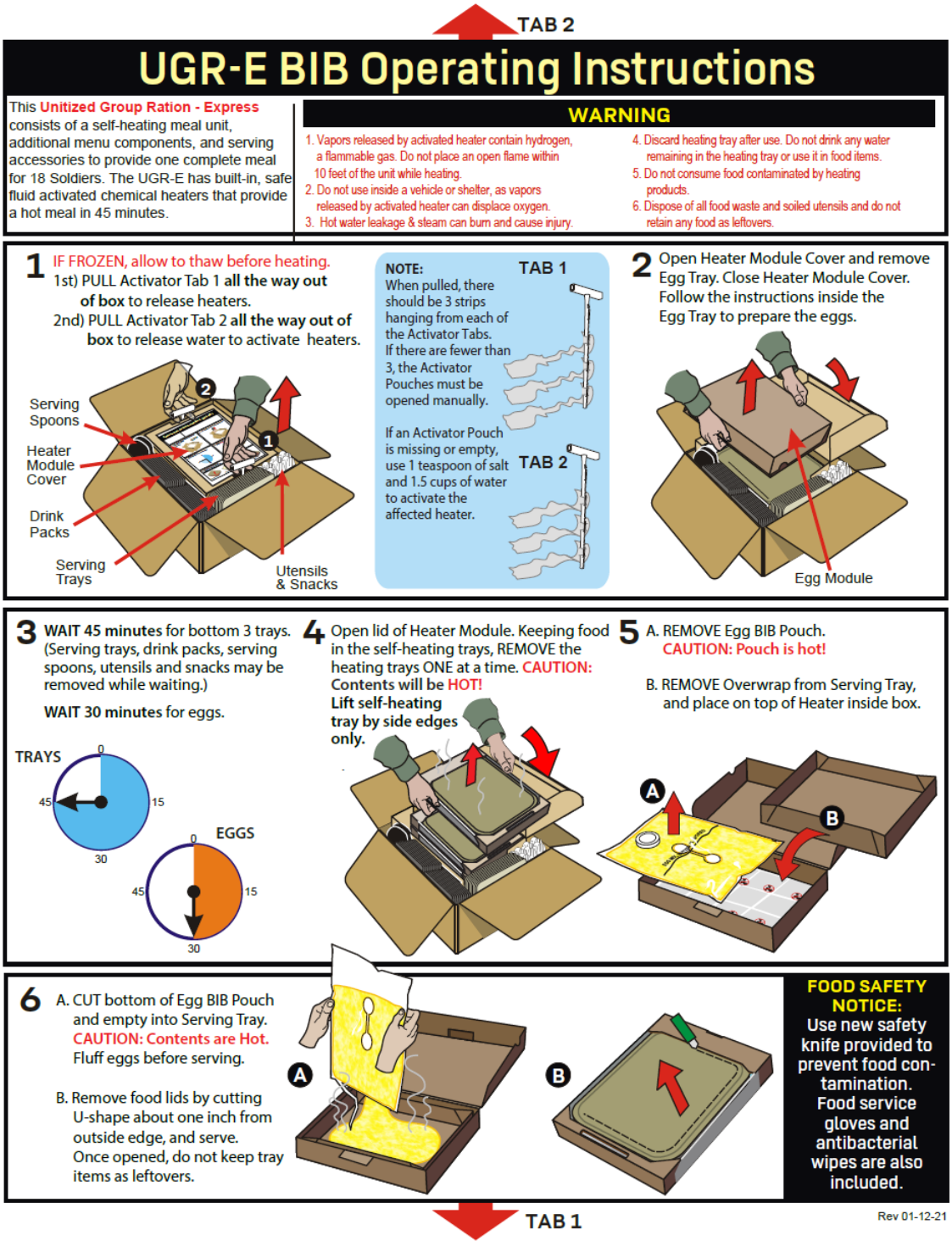

FIGURE 1. UGR-E BIB Operating Instructions, for Heater with Hydrogen Generating Warning

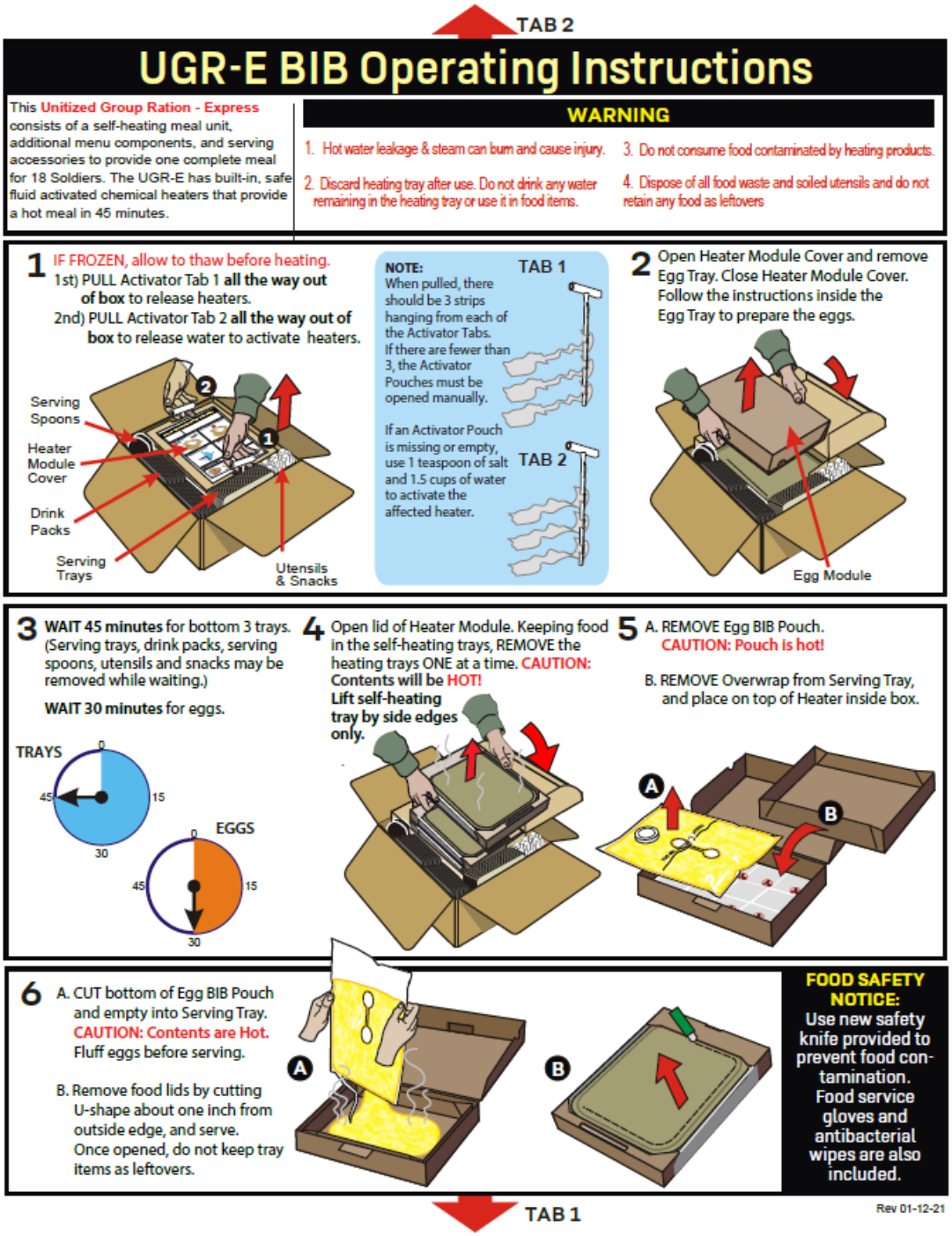

FIGURE 2. UGR-E BIB Operating Instructions, for Heater with Low Hydrogen Generating Warning

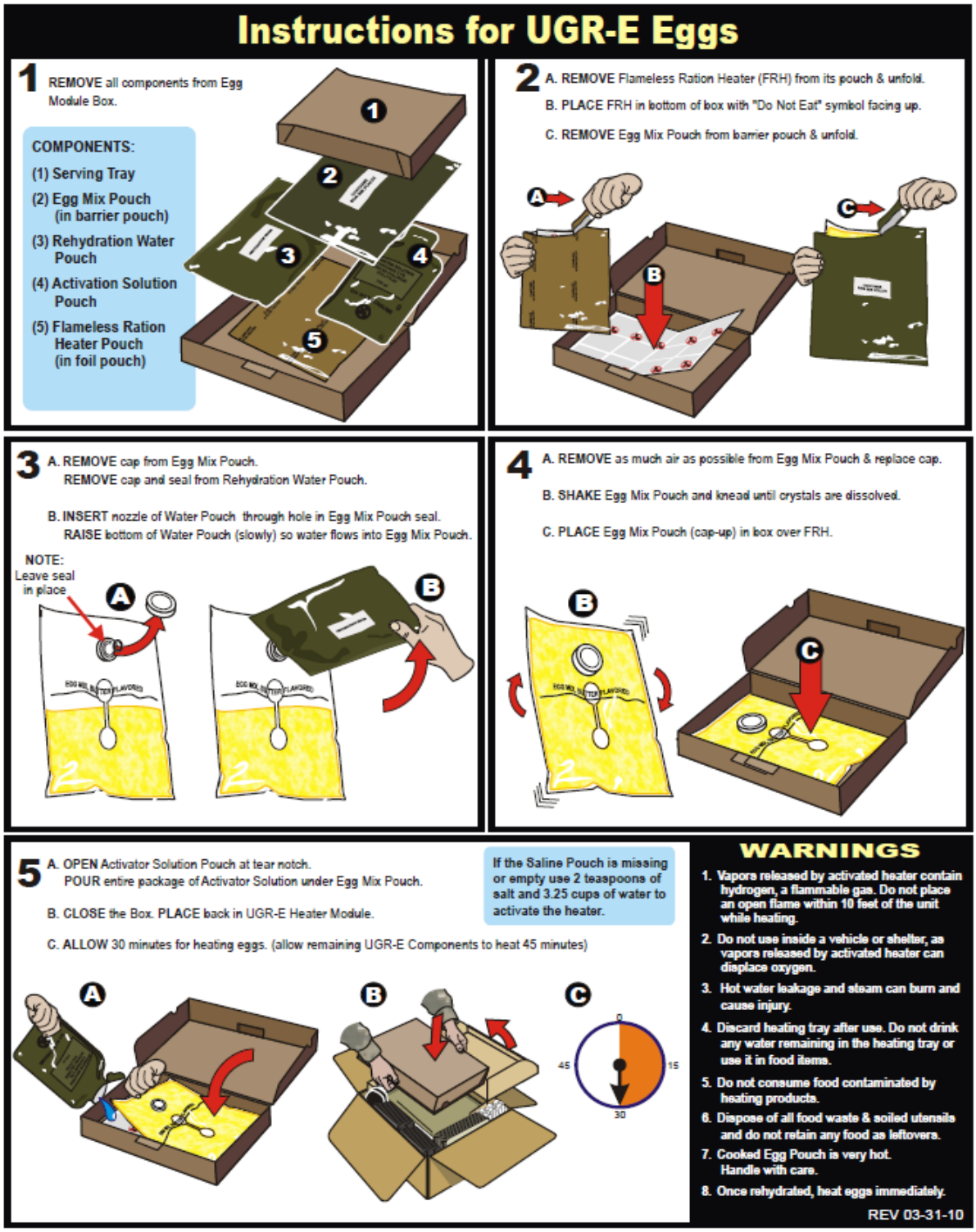

FIGURE 3. Instructions for UGR-E Eggs, for Heater with Hydrogen Generating Warning

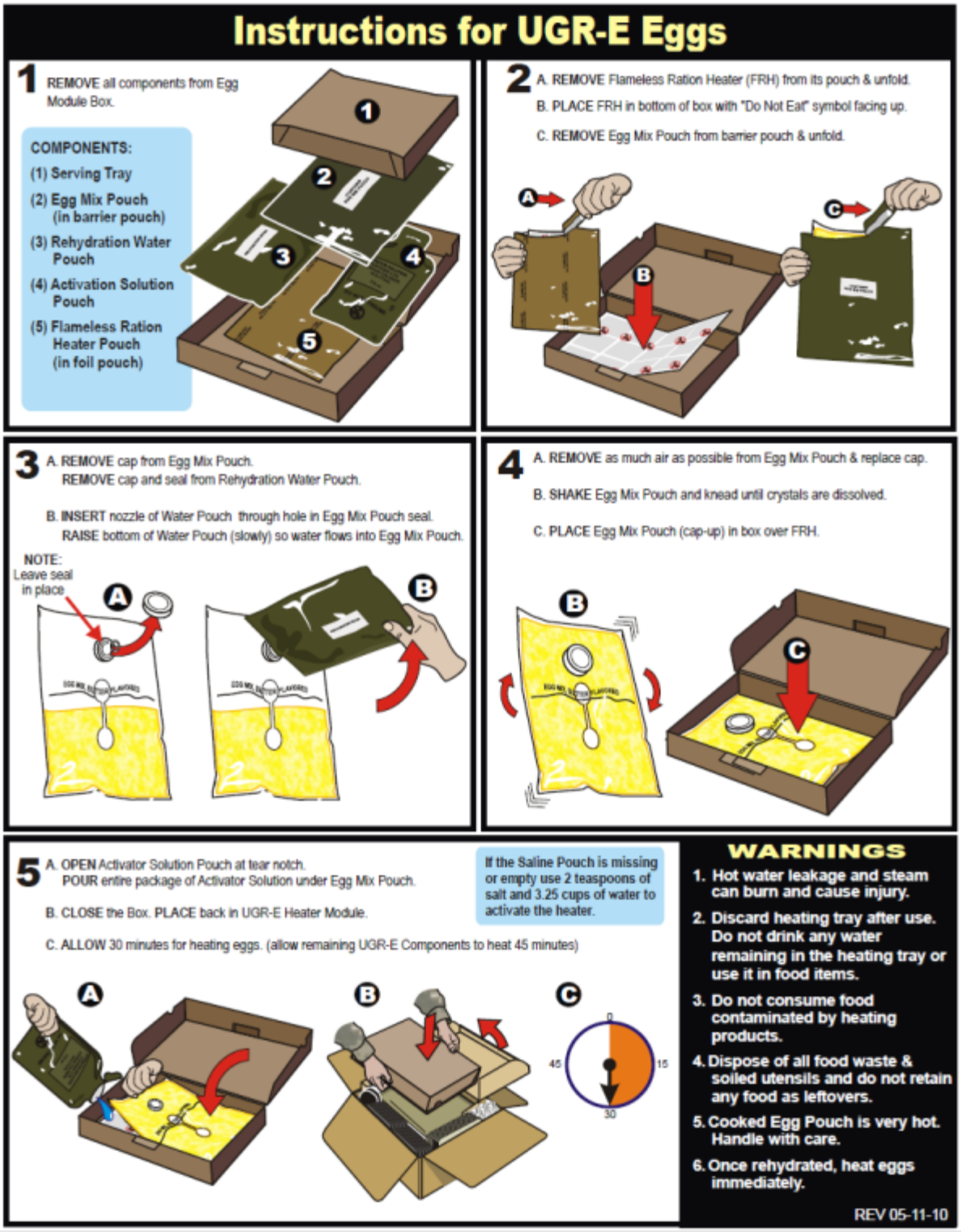

FIGURE 4. Instructions for UGR-E Eggs, for Heater with Low Hydrogen Generating Warning

Custodians:
Army – GL
Navy – SA
Air Force – 35

Preparing activity:
Army – GL
(Project 8970-2021-005)

Review Activities:
Army – MD, QM
Navy – MC
DLA – SS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at https://assist.dla.mil.