

W-H-640  
April 10, 1967  
SUPERSEDING  
See section 6

FEDERAL SPECIFICATION

HOTPLATES, GAS AND ELECTRIC,  
COFFEE-MAKER

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers gas and electric hotplate stoves or ranges used in conjunction with vacuum type coffee-makers.

1.2 Classification. Coffee-maker hotplates covered by this specification shall be of the following classes, types, styles, and sizes, as specified (see 6.2).

Class 1--Gas heated.

Type A--For shore use.

Style I--Single deck.

Size A--Two-burner.

Size B--Three-burner.

Style II--Double deck.

Size C--Four-burner.

Class 2--Electrically heated.

Type A--For shore use.

Style I--Single deck.

Size A--Two-burner.

Size B--Three-burner.

Style II--Double deck.

Size C--Four-burner.

Type B--For shipboard use.

Style I--Single deck.

Size A--Two-burner.

2. APPLICABLE DOCUMENTS

2.1 Specifications and standards. The following specifications and standards, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Specification:

PPP-3-636--Box, Fiberboard

Federal Standards:

Fed. Std. No. 66--Steel: Chemical Composition and Hardenability.

Fed. Std. No. 123--Marking for Domestic Shipment (Civilian Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the

Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Washington, D.C., Atlanta, Chicago, Kansas City, Mo., Ft. Worth, Denver, San Francisco, Los Angeles, and Auburn, Wash.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

Military Standards:

MIL-STD-105--Sampling Procedures and Tables for Inspection by Attributes.

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MIL-STD-129--Marking for Shipment and Storage.

MIL-STD-130--Identification Marking of U.S. Military Property.

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

National Sanitation Foundation (NSF) Standards:

No. 4--Gas Commercial Cooking and Warming Equipment.

No. 4--Electric Commercial Cooking and Warming Equipment.

Seal of Approval Listing of Food Service Equipment.

(Application for copies should be addressed to the National Sanitation Foundation, School of Public Health, University of Michigan, Ann Arbor, Mich., 48103.)

American Standards Association (ASA), Inc. Standard:

Z21.31--Approval Requirements for Gas Counter Appliances.

(Application for copies should be addressed to the American Standards Association, Inc., 10 E. 40th St., New York, N. Y., 10016.)

American Gas Association (AGA) Directory:

Directory of Approved Appliances and Listed Accessories.

(Application for copies should be addressed to the American Gas Association Inc., 1032 E. 62nd St., Cleveland, Ohio, 44122.)

Underwriters' Laboratories (UL), Inc. Publication:

UL-197--Commercial Electric Cooking Appliances.

Electrical Appliances and Utilization Equipment List.

(Application for copies should be addressed to the Underwriters' Laboratories, Inc., Walt Whitman Rd., Melville, L. I., N. Y., 11749; or 2550 Dundee Rd., Box 247, Northbrook, IL, 60062; or 1655 Scott Blvd., Santa Clara, Calif., 95050; or 207 E. Ohio St, Chicago, IL, 60611.)

National Electrical Manufacturers Association (NEMA) Publication:

DA5-1958--Electric Housewares; Hot Plates and Disc Stoves.

(Application for copies should be addressed to the National Electrical Manufacturers Association, 155 E. 44th St, New York 17, N. Y.)

Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

### 3. REQUIREMENTS

3.1 Preproduction sample. When specified (see 6.2), before production is commenced, a sample coffee-maker hotplate shall be submitted or made available to the contracting officer or his authorized representative for approval in accordance with 4.2. Approval of the preproduction sample authorizes commencement of production, but does not relieve the contractor of the responsibility for compliance with all applicable provisions of this specification. The preproduction sample shall be manufactured in the same facilities to be used for the manufacture of the production items.

3.2 Standard product. Coffee-maker hot-plates furnished under this specification shall be the manufacturer's standard commercial product, except as modified herein.

3.3 Materials. Materials used shall conform to applicable referenced documents and requirements to the extent specified herein. Materials used, but not specified, shall be of the quality normally used for the purpose in commercial practice.

3.3.1 Corrosion-resisting steel. Corrosion-resisting steel shall conform to Fed. Std. No. 66, AISI No. 302, 304, or 430.

3.4 Design and construction. Coffee-maker hotplates shall be of the counter type design, gas or electrically heated, as specified, and shall comply with applicable standards and requirements as specified herein. The hotplates shall be mounted on legs, feet, or other basic durable structures. Exterior bodies shall be fabricated of corrosion-resisting steel specified in 3.3.1. All accessories and fittings required for proper operation of the hotplates shall be included and, to the maximum extent possible, shall be assembled prior to shipment.

3.4.1 Shipboard use. Hotplates for shipboard use shall be class 2, type B, size A only. Tapped holes in the feet, lugs with clearance holes, or other means shall be provided for fastening the hotplate securely in place on a shelf or tabletop. Plastic parts shall not be used for securing the mounting bolts unless metal inserts are provided. Bowl brackets shall be provided which are capable of holding applicable bowls in place when the stand is inclined 15 deg. from the vertical in any direction and the upper bowl is filled with liquid to the normal operating level. Provisions shall be made for grounding all exposed noncurrent-carrying metal parts through the mounting bolts to the ship's structure.

3.4.2 Standards compliances. (See 4.3.1.4.)

3.4.2.1 Coffee-maker hotplates shall conform to NSF Standard No. 4.

3.4.2.2 Gas heated. Gas heated coffeemaker hotplates shall conform to ASA Standard Z21.31 (as coffee brewers).

3.4.2.3 Electrically heated. Electrically heated coffee-maker hotplates shall conform to UL Standard No. 197.

3.4.3 Dimensions.

3.4.3.1 Style I, size A. Style I, size A hotplates shall be not more than 16 inches long, 11 inches wide, and 6 inches high, exclusive of bowl brackets when required.

3.4.3.2 Style I, size B. Style I, size B hotplates shall be not more than 26 inches long, 11 inches wide, and 6 inches high.

3.4.3.3 Style II, size C. Style II, size C hotplates shall be not more than 16 inches long, 20 inches wide, and 13-1/2 inches high.

3.4.4 Class 1--gas heated. The fuel system, including burners, shall be designed to efficiently burn natural, mixed, or liquified petroleum gas. Each burner shall have a minimum input of 6,000 B.t.u. per hour on a mixed gas basis. Burner gas valves and pilot gas valves shall be of the fixed-orifice type with interchangeable orifice hoods. Each hotplate shall be provided with orifice hoods drilled for the three types of gas specified above, and the manufacturer shall provide instructions for the conversion from any one type of gas to the other two. The orifice hoods shall be color coded as follows:

- (1) Natural gas--Unpainted brass.
- (2) Mixed gas--Red.
- (3) Liquified petroleum gas--Black.

The body of the hotplate shall be designed to conceal the manifolds. The burners shall be recessed and a cup type holder shall be provided to hold the coffee brewer above the flame. Burners shall be standard with the manufacturer.

3.4.4.1 Regulator, pressure. Each hotplate shall be equipped with an adjustable gas appliance regulator.

3.4.5 Class 2--electrically heated. Electrically heated hotplates shall be equipped with heating units, switches, wiring, and connections for suitable operation on specific voltages.

3.4.5.1 Heating units and cups. Electric heating units shall be of the solid-plate or tubular type design. Heating units shall be rated between 535 and 585 watts at high heat and between 82 and 125 watts at low heat. Element cups shall surround the heating elements and shall be fabricated of cold-rolled steel, brass, or corrosion-resisting

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steel. Cold-rolled steel cups shall have a copper, nickel, and chromium plating; and, the brass cups shall have a nickel and chromium plating.

3.4.5.2 Switches. Each heating unit shall be controlled by a make and break indicating type switch which shall have a current and voltage rating not less than the maximum load intended to be controlled. Switches shall have "high", "warm", or "low", and "off" positions. At the option of the contractor, additional heating positions may be supplied.

3.4.5.3 Wiring and connections. Wiring and connections between parts shall be concealed and enclosed or adequately protected from spillage.

3.4.5.3.1 Type A, style I. Each type A, style I hotplate shall be equipped with a type HSJ rubber flexible heater cord, referenced in UL Standard No. 197, not less than 3-1/2 feet long with cord grip, molded plastic, or rubber cap on the free end.

3.4.5.3.2 Type A, style II. Each type A, style II hotplate shall be equipped with suitable terminal arrangements to handle the power requirements.

3.4.5.3.3 Type B, style I, size A. Each type B, style I, size A hotplate shall be designed to provide for entrance of the power cable at the rear. A cable clamp shall be provided on the hotplate for securing cables having an outside diameter of 1/4 to 5/8 inch.

3.4.5.4 Voltage. Unless otherwise specified (see 6.2), class 2, type A hotplates shall be suitable for operation on 115/230 or 120/208 volts alternating current; (Army requirements are: up to 1650 watts: 120 volts, 60 cycles, single phase a.c. above 1650 watts: 208 volts, 60 cycles, three phase a.c.) and class 2, type B hotplates shall be suitable for operation on 115 volts, either alternating or direct current.

### 3.5 Performance requirements.

3.5.1 Overall operation. The finished hotplates shall exhibit no operational deficiencies when tested as specified in 4.4.1.1 or 4.4.2.1 (as applicable).

3.5.2 Life test. Electrically operated hotplates shall have an operational life of not less than 1,000 hours at any heat when tested as specified in 4.4.2.2.

3.5.3 Leakage current. Leakage current between each terminal and noncurrent carrying metal part of electrically operated hotplates shall not exceed one milliampere when tested as specified in 4.4.2.3.

### 3.6 Spare parts.

3.6.1 Type A hotplates. Unless otherwise specified (see 6.2), no spare parts shall be furnished with type A hotplates.

3.6.2 Type B hotplates. One complete heating unit and one switch shall be furnished with each type B hotplate.

3.7 Instruction manual. Unless otherwise specified (see 6.2), a manual containing complete operating, maintenance, and installation instructions shall be furnished with each end item. The instruction manual shall also include a complete list of all replacement parts showing contractor's part number, manufacturer's part number name, and quantity required. When

electrically operated, instructions shall include a schematic wiring diagram.

3.8 Substitutability of parts (military). For military procurements, all stoves of the same class, type, style, and size or all individual components furnished under one contract shall be identical.

3.9 Repair and maintenance. Provisions shall be made to allow for ready adjustment, service, and replacement of electrical and gas components and operational accessories without disturbing or disassembling any major component or equipment.

3.10 Finish. Corrosion-resisting steel surfaces shall have a No. 4 finish or better. All other surfaces shall be finished in accordance with the manufacturer's standard practice.

3.11 Marking for identification. Each hotplate shall be marked in accordance with MIL-STD-130.

3.12 Workmanship. The finished item shall be clean, well made, and free from defects which may affect appearance or serviceability. All surfaces shall be smooth. Welds shall be free from pits, slag, or other imperfections and shall be ground smooth and finished equal to adjacent surfaces. There shall be no sharp edges, projections, corners, or burrs which may cause personal injury.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Inspection of components and materials. In accordance with 4.1, the supplier is responsible for insuring that components and materials used were manufactured, examined, and tested in accordance with this specification and referenced subsidiary specifications to the extent specified.

4.2 Preproduction sample inspection. When a preproduction sample is required, it shall be examined for the defects listed in table I and for conformance with dimensional requirements.

4.3 Inspection for end item lot acceptance. Sampling for inspection and lot acceptance shall be determined in accordance with MIL-STD-105 unless otherwise specified herein.

4.3.1 End item inspection. The sample unit for this inspection shall be one completely assembled and finished coffee-maker hotplate. The inspection lot shall be all the hotplates of one size, style, type, and class offered for delivery at one time. For sampling purposes, the lot size shall be expressed as the number of hotplates in the inspection lot.

4.3.1.1 Visual examination. Each sample unit shall be examined for defects set forth in table I. Inspection level II shall apply. The acceptable quality level (AQL) shall be 2.5 for major defects and 6.5 for total defects, expressed in defects per hundred units.

TABLE I. Classification of defects for visual examination

Examine	Defect	Major	Minor
Finish	Any component not finished as specified		X
	Area of rust or corrosion		X
	Any component surface not clean		X
Design construction			

and workmanship:

General

Any component not of specified design	X
Component missing	X
Burrs, sharp edges, sharp corners or projections which may cause injury	X
Component or part fractured, split, malformed, or otherwise defective	X
Not mounted, as specified	X
Not furnished with specified fittings	X
Functioning component inoperative or will not function as intended	X

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TABLE I. Classification of defects for visual examination (cont'd.)

Examine	Defect	Major	Minor	
Design construction and workmanship: General (cont'd)	Spare parts not furnished or incorrect (as applicable)	X		
	Instruction manual missing or incomplete	X		
	Respective component or parts not identical (military procurement)	X		
	Welds not smooth or not fused, with burn holes, cracks, pits or fractures	X		
	Threaded components not drawn tight		X	
Gas hot plates	Gas regulator not of proper design or defective	X		
	Gas valves not type specified	X		
	Orifice hoods not furnished as specified.	X		
	Instructions for conversion of gas types not furnished or inadequate	X		
	Orifice hoods not color coded, as specified		X	
	Manifold not concealed, burners not recessed, or cups not furnished to hold burner above flame.	X		
Electric hot plates	Hotplate not suitable for operation on specified voltage	X		
	Heating units not as specified	X		
	Cups not as specified	X		
	Switch not type specified or does not have the required positions	X		
	Wiring and connections not concealed, enclosed, or adequately protected from spillage	X		
	Heater cord not furnished, or not type or size specified (as applicable)	X		
	Terminal not furnished or terminal arrangement not as specified (as applicable)	X		
	Wiring cut, abraided, or not properly joined	X		
	Proper means for bolting stand to table top not provided for class 2, type B, size A hotplates	X		
	Bowl brackets not provided or inadequate for intended use for class 2, type B, size A hotplates	X		
	Proper provisions not made for grounding all exposed noncurrent carrying parts for class 2, type B, size A hotplates	X		
	Identification marking	Missing, incomplete, not legible, or not as specified		X

4.3.1.2 Dimensional examination. Examination shall be made of the end item for compliance with specified dimensions. Any dimension not within specified tolerances shall constitute a defect. The inspection level shall be S-2 and the AQL shall be 4.0 expressed in defects per hundred units.

4.3.1.3 End item testing. Sample units shall be tested in accordance with 4.4.1 or 4.4.2, as applicable. Inspection level S-1 shall apply. Failure to pass any test specified shall be cause for rejection of the lot.

4.3.1.4 Standards compliance. Prior to approval of the preproduction sample, if one is submitted, or prior to the approval of the first shipment the supplier shall submit satisfactory evidence to the contracting officer or his authorized representative that the hotplates he proposes to furnish under this specification meet the requirements of 3.4.2. Applicable evidence will be as follows:

4.3.1.4.1 NSF. NSF seal of approval, listing in NSF Seal of Approval Listing of NSF Testing Laboratory, or a certified test report from a nationally recognized independent testing laboratory acceptable to the medical department of the procuring activity indicating compliance with NSF Standard No. 4, as applicable.

4.3.1.4.2 AGA. Photostatic copy of the AGA Certificate of Approval, a listing in the AGA Directory of Approved Appliances and Listed Accessories, or a certified test report from a nationally recognized testing laboratory acceptable to the Government indicating compliance with ASA Z21.31, as applicable.

4.3.1.4.3 UL. UL label, a copy of the UL Listing Card, inclusion in the current UL Electrical Appliance and Electrical Equipment List, or a certified test report from a nationally recognized testing laboratory acceptable to the Government indicating compliance with UL 197, as applicable.

4.3.2 Examination of preparation for delivery. An examination shall be made to determine that packaging, packing, and marking as required by section 5 are complied with. Defects shall be scored as specified in table II. The sample unit shall be one shipping container fully packed, selected just prior to the closing operation. Closed shipping containers shall be examined for closure defects. The lot size shall be the number of containers in the inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 expressed in defects per hundred units.

#### 4.4 Tests.

##### 4.4.1 Class 1--gas heated hotplates.

4.4.1.1 Overall operation. Sample units selected in accordance with 4.3.1.3 shall be tested as follows for compliance with 3.5.1. For each orifice hood, connect the adjustable gas regulator and hotplate in series with the specified gas to be used for the orifice hood. Check whether the gas burner orifices are correct for the type of gas to be used and that the burners are tight. Ignite the burners and operate at full capacity. Operate all controls and valves to determine proper functioning. Test the entire gas system for leaks by using a soapy-water solution. Any gas leak or operational deficiency shall be considered noncompliance.

TABLE II. Preparation for delivery defects

Examine	Defect
Markings (exterior and interior container)	Omitted, incorrect, illegible; of improper size, location, sequence, or method of application.
Materials	Any nonconforming component; component missing, damaged, or otherwise defective affecting serviceability.
Workmanship	Inadequate application of components such as, incomplete closure of container flaps, loose strapping, inadequate stapling, bulging or distortion of containers; sealing inadequate, improper, or missing.
Contents	Content per container is more or less than required.

#### 4.4.2 Class 2--electrically heated hotplates.

4.4.2.1 Overall operation. Sample units selected in accordance with 4.3.1.3 shall be tested for compliance with 3.5.1 by connecting each unit to the rated power source and operating the switches and controls through all heat positions. Any operational deficiency shall be considered noncompliance.

4.4.2.2 Life test. Sample units selected in accordance with 4.3.1.3 shall be tested as follows for compliance with 3.5.2. All heating elements of each sample unit shall be operated intermittently at rated voltage with a cycle of 20 minutes on and 10 minutes off. The cycle shall start at high setting and progress through each heat range (high, warm, low, etc.), as applicable. An operational life of less than 1,000 hours of any heating unit at any heat range shall be considered noncompliance.

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4.4.2.3 Leakage current test. Sample units selected in accordance with 4.3.1.3 shall be tested as specified in the NEMA Standard No. DA5-1958 for compliance with 3.5.3. Any leakage current greater than one milliampere shall be considered noncompliance.

## 5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A or C, as specified (see 6.2 and 6.4).

5.1.1 Level A. Each coffee-maker hotplate shall be packaged in a snug-fitting fiberboard box conforming to style RSC, type CF, class-domestic, grade-200 of PPP-B-636. Inner packaging, such as cushioning, wrapping, buffer pads or cell spacers, shall be provided to protect each hotplate component. The design, number, and placement of the inner packaging shall eliminate movement of the item, provided clearance for projecting parts from inner walls of the box, and prevent damage to the item from shock or vibration while in transit. Closure shall be as specified in the appendix of the box specification.

5.1.2 Level C. Each coffee-maker hotplate shall be packaged to afford adequate protection against corrosion, deterioration, and physical damage during shipment from the supply source to the first receiving activity. The supplier may use his commercial practice when it meets these requirements.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Level A. Coffee-maker hotplates of one size, style, type, and class, packaged as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, class-weather-resistant, grade V3c or V3s of PPP-B-636. Each shipping container shall be closed, waterproofed, and strapped or banded in accordance with the appendix of the container specification. The weight of the contents shall not exceed 65 pounds.

5.2.2 Level B. Coffee-maker hotplates of one size, style, type, and class, packaged as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, type CF, class-domestic of PPP-B-636. Container closure shall be in accordance with the appendix of the container specification. The weight of the contents shall not exceed 65 pounds.

5.2.3 Level C. Coffee-maker hotplates packaged as specified in 5.1, shall be packed in such a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. Containers shall be in accordance with rules or regulations of carriers applicable to the mode of transportation.

## 5.3 Marking.

5.3.1 Civil agencies. In addition to any special markings required by the contract or order, interior packages and shipping containers shall be marked in accordance with Fed. Std. No. 123.

5.3.2 Military agencies. In addition to any special markings required by the contract or order, interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

## 6. NOTES

6.1 Intended use. Hotplates covered by this specification are intended for use as the heat source with vacuum type coffee-maker sets.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Class, type, style, and size to be furnished (see 1.2).
- (c) If a preproduction sample is required (see 3.1).

- (d) Electrical characteristics, if other than specified (see 3.4.5.4).
- (e) If spare parts are to be furnished with type A hotplates (see 3.6.1).
- (f) If instruction manual is not required (see 3.7).
- (g) When 3.8 is applicable.
- (h) Applicable levels of packaging and packing (see 5.1 and 5.2).

6.3 Supersession data. This specification supersedes GG-C-531b in part. The classification specified herein (see 1.2) corresponds to the classification in GG-C-531b for coffee-maker ranges and stoves only, except that six and eight burner stoves and automatic coffee-makers have been deleted.

6.4 For civil agency procurements. When level B packaging is required for civil agency procurements, the requirement in 5.1.1, level A packaging shall apply.

MILITARY CUSTODIANS:

Army--GL  
Navy--SA  
Air Force--67

INTERESTED ACTIVITIES:

Review:

Army--GL, MD  
Navy--SA, SH, YD, MC  
Air Force--67

User:

Army--MO  
Navy--SA, MS, CG  
Air Force --

Preparing activity:

Navy--SA

CIVIL AGENCY INTERESTS:

C. I. A.  
Commerce Dep't. (Maritime)  
Veterans Administration  
G. S. A.  
Dep't. of H. E. W.

Review/user information is current as of the date of this document. For future coordination of changes to this document, draft circulation should be based on the information in the current Federal Supply Classification Listing of DOD Standardization Document.

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Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 10 cents each.

VALIDATION

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NOTICE 1  
1 SEPTEMBER 1987

FEDERAL SPECIFICATION

HOTPLATES, GAS AND ELECTRIC, COFFEE-MAKER

Federal Specification W-H-640 dated 10 April 1967 has been reviewed and determined to be current.

Custodian

Preparing Activity:  
Army - GL

Army - GL  
Navy - SA  
Air Force - 67

Review activities:

CIVIL AGENCY INTERESTS:

Army - GL, MD  
Navy - SA, SH, YD, MC  
Air Force - 67

C.I.A.  
Commerce Dep't. (Maritime)  
Veterans Administration  
G.S.A.

User:

Army - MO  
Navy - SA, MS, CC

AMSC: N/A

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