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30 April 2026

From: Chief Engineer, Naval Facilities Engineering Systems Command

Subj: INTERIM TECHNICAL GUIDANCE - ALIGNING TO INDUSTRY STANDARDS FOR CLASS A2L REFRIGERANTS

Ref: (a) Unified Facilities Criteria (UFC) 3-401-01, Mechanical Engineering, Change 1
(b) UFC 4-721-01, Permanent Party Unaccompanied Housing, Change 1
(c) UFC 1-200-01, DoD Building Code, Change 4
(d) International Mechanical Code® (IMC), 2024 Edition
(e) American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 15-2024, Safety Standard for Refrigeration Systems
(f) ASHRAE Standard 34-2024, Designation and Safety Classification of Refrigerants
(g) National Defense Authorization Act (NDAA) FY24, Public Law 118-31, Section 2831
(h) NDAA FY22, Public Law 117-81, Section 2842
(i) Federal Register, Vol. 90, No. 114, Monday, June 16, 2025, Page 25249
(j) MCICOM Letter, Commander, Marine Corps Installations Command to Commander, Naval Facilities Engineering Systems Command, Subj: U.S. Marine Corps Design and Code Standards, dated 13 Apr 2026

Encl: (1) UFC Language Revisions for Class A2L Refrigerants

1. Purpose. To align Department of the Navy and Marine Corps facility criteria with current industry standards and building codes by removing UFC restrictions on the use of Class A2L refrigerants in Heating, Ventilation, and Air Conditioning (HVAC) systems as described in this Interim Technical Guidance (ITG). This ITG addresses commercial equipment and refrigerant availability constraints and enables adoption of industry-standard commercial systems.

2. Applicability. This ITG is effective until superseded or cancelled and applies to all new construction and existing Navy and Marine Corps facilities, including renovation, repair, and equipment replacement projects, for all facility types, project phases, and funding sources. Effective immediately, this ITG supersedes references (a), paragraph 2-5.2, and (b), paragraph 3-12, and similar restrictive language in other UFCs that restrict Class A2L refrigerants in occupied spaces beyond the requirements of adopted building codes, including as specified in references (c) through (f).

3. Background. Current UFC language in references (a), paragraph 2-5.2, and (b), paragraph 3-12, restricts the use of Class A2L refrigerants in occupied spaces by requiring refrigerant-containing components, such as piping and heat exchangers, to be located in unoccupied mechanical rooms or exterior locations. These provisions are not aligned with current building code requirements and industry standards. The HVAC industry has transitioned to A2L refrigerants (e.g. R-454B, R-32, and R-454A) as standard alternatives to R-410A. Modern A2L refrigerant systems are widely available as UL-listed commercial products

meeting current building codes and industry standards. Current UFC restrictions necessitate the use of non-A2L alternatives. These alternatives often entail higher life cycle costs and limited maintenance support, particularly for Variable Refrigerant Flow (VRF) and modern packaged HVAC systems, significantly constraining design flexibility. This ITG removes these restrictions while maintaining safety through compliance with adopted building codes and industry standards.

4. Discussion.

a. Refrigerant Safety and Code Compliance. Class A2L refrigerants per reference (f) are classified as lower toxicity (A) and lower flammability (2L – mildly flammable with limited burning velocity). A2L refrigerants include R-454B and R-32, among others, which maintain comparable or superior performance to traditional refrigerants such as R-410A. References (d) and (e) establish the applicable safety requirements for A2L refrigerants.

b. Equipment Availability and Industry Standards. VRF systems and packaged and split systems utilize A2L refrigerants. These systems incorporate advancements in technology including factory-integrated safety controls, improved leak detection, and enhanced ventilation features that address the underlying safety concerns driving current UFC language restricting use of A2L refrigerants. Commercially available, UL-listed A2L equipment provides proven, code-compliant solutions with improved efficiency and standardized maintenance support.

c. Legal and Statutory Considerations. Reference (g), Section 2831, establishes uniform design standards for covered military unaccompanied housing. The statutory no-waiver provision in § 2831(c)(2) applies exclusively to minimum floor area requirements under 10 U.S.C. § 2856(b)(1). Removal of A2L refrigerant restrictions does not violate this provision and does not affect minimum floor area requirements. Reference (h) requires Federal Register publication for changes affecting VRF systems, which was completed by reference (i). Removing A2L restrictions aligns with previously published UFC guidance and the NDAA intent to prevent undue restrictions on specific technologies without prior public review.

d. Design and Safety Requirements. HVAC systems using Class A2L refrigerants shall comply with references (d) and (e), including refrigerant charge limits, refrigerant detection and mechanical ventilation (where applicable), equipment and installation provisions, and system labeling. HVAC equipment, including packaged systems using Class A2L refrigerants, shall be listed and labeled in accordance with applicable UL standards and installed in accordance with the listing and manufacturer's instructions. Packaged HVAC equipment is typically factory-assembled, tested, and listed as a complete system with integrated safety controls for refrigerant detection, mitigation, and ignition source management, as required by applicable standards. Designers shall follow standard code compliance processes and document compliance in design submittals. Required safety systems shall be commissioned and tested prior to system acceptance.

5. Action. All Naval Facilities Engineering System Commands will implement the requirements of Enclosure (1) for HVAC systems as follows:

a. Planning and Preliminary Design. Do not exclude HVAC systems using Class A2L refrigerants from consideration when developing planning and preliminary design

deliverables including project scope, basis of design documents, and cost estimates.

b. Design Phase.

i. After Design Start and prior to Design Release: Immediately incorporate Enclosure (1) language revisions into project design criteria and specifications.

ii. Between Design Release and Contract Award: Evaluate the impacts and make a determination regarding issuance of a pre-award amendment to incorporate Enclosure (1) language revisions, considering equipment availability, cost, schedule, energy efficiency, and life cycle costs.

c. Construction Phase. After contract award, contractor-proposed substitutions to Class A2L refrigerant systems are authorized subject to standard substitution approval processes. Substitutions must demonstrate equivalent or superior performance, compliance with references (d) and (e), and inclusion of all code-required safety systems.

d. Specifications and Standard Designs. Update UFGS specifications, standard facility designs, and design-build request for proposal packages to reflect Enclosure (1) language revisions. Remove or revise language that excludes or restricts Class A2L refrigerants beyond adopted code requirements.

e. Marine Corps Standard Designs. Implement the standard barracks design identified in reference (j), enclosure (2), for all Marine Corps unaccompanied housing new construction and repair by replacement projects. This standard design is based on Packaged Terminal Air Conditioner (PTAC) systems with Class A2L refrigerants with all code-required safety systems.

f. Existing Facilities and Equipment Replacement. For FSRM projects and equipment replacement in existing facilities, HVAC systems using Class A2L refrigerants are permitted when code compliant, including compliance with references (d) and (e). Evaluate existing spaces for accommodation of required safety systems as described herein.

g. Design Staff Training. Mechanical Engineering Technical Discipline Leads (TDL), in coordination with PDC4 Design Directors, shall implement targeted training on A2L refrigerants and associated design considerations, including refrigerant charge minimization, leak reduction strategies, system selection, and applicable code requirements. Training shall be provided to the design community of practice to support consistent implementation of this ITG.

6. Point of Contact. For clarification or additional information related to A2L refrigerant systems, please contact the Mechanical Engineering (TDL), Mr. Stephen Ericson, P.E. at (757) 322-4242 or Stephen.C.Ericson3.civ@us.navy.mil.

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S. KEITH HAMILTON, P.E.
Chief Engineer and Assistant Commander for
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ENCLOSURE (1)

UFC LANGUAGE REVISIONS FOR CLASS A2L REFRIGERANTS

UFC 3-401-01 MECHANICAL ENGINEERING

Current Language (Delete):

~~2-5.2 \1\ Flammability Classification Restriction. /1/~~
~~\1\ Comply with ASHRAE Standard 15. Distribution and use of ASHRAE Standard 34 flammability classified refrigerants of 2L and higher refrigerants is limited to non-occupied machine or mechanical rooms, complying with ASHRAE Standard 15, or to the exterior of the building.~~
~~Such refrigerants are also permitted in non-occupied rooms (example: telecommunication rooms) with the following features:~~

- ~~building exterior access only~~
- ~~perimeter walls continuous from exterior wall to exterior wall or adjacent interior partition, or combination thereof~~
- ~~perimeter walls continuous from finished floor to roof deck or floor deck above~~
- ~~perimeter walls continuous through all concealed spaces including those above ceiling~~
- ~~no openings or transfer paths to adjacent occupied spaces /1/~~

New Paragraph (Effective Immediately):

[X-X] REFRIGERANT CLASSIFICATION AND SELECTION. All refrigerant classifications per ASHRAE Standard 34, including Class A1, A2L, and other approved classifications, are permitted when HVAC systems comply with the International Mechanical Code and ASHRAE Standard 15. HVAC systems using Class A2L refrigerants shall comply with applicable UFC criteria, including UFC 3-410-01, and ASHRAE Standard 15 requirements for refrigerant detection and mechanical ventilation (where required), charge limit compliance, and other safeguards required by adopted codes.

UFC 4-721-01 PERMANENT PARTY UNACCOMPANIED HOUSING

Current Language (Delete):

~~3-12 HEATING, VENTILATION, AND AIR CONDITIONING (HVAC). HVAC systems using Class A2L (flammable) refrigerants must keep all refrigerant lines and containment vessels (i.e. heat exchangers) exterior to the occupied spaces.~~