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[6450-01-P]

DEPARTMENT OF ENERGY

[Case Number 2020-014; EERE-2020-BT-WAV-0028]

Energy Conservation Program: Decision and Order Granting a Waiver to KeepRite Refrigeration from the Department of Energy Walk-in Coolers and Walk-in Freezers Test Procedure

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notification of decision and order.

SUMMARY: The U.S. Department of Energy ("DOE") gives notification of a Decision and Order (Case Number 2020-014) that grants to KeepRite Refrigeration ("KeepRite") a waiver from specified portions of the DOE test procedure for determining the energy efficiency of specified carbon dioxide ("CO2") direct expansion unit coolers. Under the Decision and Order, KeepRite is required to test and rate the specified basic models of its CO2 direct expansion unit coolers in accordance with the alternate test procedure set forth in the Decision and Order.

DATES: The Decision and Order is effective on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. The Decision and Order will terminate upon the compliance date of any future amendment to the test procedure for walk-in refrigeration systems located at title 10 of the Code of Federal Regulations ("CFR"), part 431, subpart R, appendix C that addresses the issues presented in this waiver. At such time, KeepRite must use the relevant test procedure for these CO2 direct expansion unit coolers for any testing to demonstrate compliance with the applicable standards, and any other representations of energy use.

FOR FURTHER INFORMATION CONTACT:

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Mr. Michael Kido, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC-33, Forrestal Building, 1000 Independence Avenue SW., Washington, DC 20585-0103. Telephone: (202) 586-8145. Email: *Michael.Kido@hq.doe.gov*.

SUPPLEMENTARY INFORMATION:

In accordance with §431.401(f)(2) of title 10 of the Code of Federal Regulations (10 CFR 431.401(f)(2)), DOE gives notification of the issuance of its Decision and Order as set forth below. The Decision and Order grants KeepRite a waiver from the applicable test procedure at 10 CFR part 431, subpart R, appendix C for specified basic models of CO2 direct expansion unit coolers, and provides that KeepRite must test and rate such CO2 direct expansion unit coolers using the alternate test procedure specified in the Decision and Order. KeepRite's representations concerning the energy efficiency of the specified basic models must be based on testing according to the provisions and restrictions in the alternate test procedure set forth in the Decision and Order, and the representations must fairly disclose the test results. Distributors, retailers, and private labelers are held to the same requirements when making representations regarding the energy efficiency of this equipment. (42 U.S.C. 6314(d))

Manufacturers not currently distributing such products/equipment in commerce in the United States that employ a technology or characteristic that results in the same need for a waiver from the applicable test procedure must petition for and be granted a waiver prior to the distribution in commerce of CO2 direct expansion unit coolers in the United States. 10 CFR 431.401(j). Manufacturers may also submit a request for interim waiver pursuant to the requirements of 10 CFR 431.401.

Case # 2020-014
Decision and Order

I. Background and Authority

The Energy Policy and Conservation Act, as amended ("EPCA"),[1] authorizes the U.S. Department of Energy ("DOE") to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part C[2] of EPCA established the Energy Conservation Program for Certain Industrial Equipment, which sets forth a variety of provisions designed to improve energy efficiency for certain types of industrial equipment. This equipment includes walk-in cooler and walk-in freezer (collectively, "walk-ins") refrigeration systems, the focus of this document. (42 U.S.C. 6311(1)(G))

The energy conservation program under EPCA consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA include definitions (42 U.S.C. 6311), test procedures (42 U.S.C. 6314), labeling provisions (42 U.S.C. 6315), energy conservation standards (42 U.S.C. 6313), and the authority to require information and reports from manufacturers (42 U.S.C. 6316; 42 U.S.C. 6299).

The Federal testing requirements consist of test procedures that manufacturers of covered equipment must use as the basis for: (1) certifying to DOE that their equipment complies with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6316(a); 42 U.S.C. 6295(s)), and (2) making representations about the efficiency of that equipment (42 U.S.C. 6314(d)). Similarly, DOE must use these test procedures to determine whether the

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[1] All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116-260 (Dec. 27, 2020).
[2] For editorial reasons, upon codification in the U.S. Code, Part C was redesignated as Part A-1.

equipment complies with relevant standards promulgated under EPCA. (42 U.S.C. 6316(a); 42 U.S.C. 6295(s))

Under 42 U.S.C. 6314, EPCA sets forth the criteria and procedures DOE is required to follow when prescribing or amending test procedures for covered walk-ins. EPCA requires that any test procedures prescribed or amended under this section must be reasonably designed to produce test results which reflect energy efficiency, energy use or estimated annual operating cost of covered equipment during a representative average use cycle and requires that test procedures not be unduly burdensome to conduct. (42 U.S.C.6314(a)(2)) The test procedure for walk-in refrigeration systems is set forth in the Code of Federal Regulations ("CFR") at 10 CFR part 431, subpart R, appendix C, *Uniform Test Method for the Measurement of Net Capacity and AWEF of Walk-In Cooler and Walk-In Freezer Refrigeration Systems* ("Appendix C").

Any interested person may submit a petition for waiver from DOE's test procedure requirements. 10 CFR 431.401(a)(1). DOE will grant a waiver from the test procedure requirements if DOE determines either that the basic model for which the waiver was requested contains a design characteristic that prevents testing of the basic model according to the prescribed test procedures, or that the prescribed test procedures evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 431.401(f)(2). DOE may grant the waiver subject to conditions, including adherence to alternate test procedures. *Id*.

As soon as practicable after the granting of any waiver, DOE will publish in the *Federal Register* a notice of proposed rulemaking to amend its regulations so as to eliminate any need for the continuation of such waiver. 10 CFR 431.401(l). As soon thereafter as practicable, DOE will publish in the *Federal Register* a final rule to that effect. *Id*. When DOE amends the test procedure to address the issues presented in a waiver, the waiver will automatically terminate on

the date on which use of that test procedure is required to demonstrate compliance. 10 CFR 431.401(h)(3).

II. KeepRite's Petition for Waiver: Assertions and Determinations

By letter docketed on August 11, 2020, KeepRite filed a petition for waiver and a petition for interim waiver from the DOE test procedure applicable to CO2 direct expansion unit coolers set forth in Appendix C. (KeepRite, No. 1 at p. 1[3]) KeepRite claimed that the test conditions described in Table 15 and Table 16 of the Air-Conditioning, Heating, and Refrigeration Institute ("AHRI") Standard 1250-2009, Standard for Performance Rating of Walk-In Coolers and Freezers ("AHRI 1250-2009") (for walk-in refrigerator unit coolers and freezer unit coolers tested alone), as incorporated by Appendix C with modification, cannot be achieved by the specified basic models and are not consistent with the operation of KeepRite's CO2 direct expansion unit coolers. (KeepRite, No. 1 at p. 2) KeepRite asserted that the test conditions are not achievable, since CO2 refrigerant has a critical temperature of 87.8 °F[4] and the current DOE test procedure requires a liquid inlet saturation temperature of 105 °F and liquid inlet subcooling of 9 °F. *Id.* KeepRite suggested that the test conditions should be more consistent with typical operating conditions for a transcritical CO2 booster system. *Id.*

KeepRite's suggested test procedure specified using modified liquid inlet saturation and liquid inlet subcooling temperatures of 38 °F and 5 °F, respectively, for both walk-in refrigerator unit coolers and walk-in freezer unit coolers. (KeepRite, No. 1 at pp. 4-5). Additionally,

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[3] A notation in the form "KeepRite, No. 1" identifies a written submission: (1) Made by KeepRite; and (2) recorded in document number 1 that is filed in the docket of this petition for waiver (Docket No. EERE–2020–BT–WAV–0028) and available at *http://www.regulations.gov*

[4] The test procedure specifies the unit cooler refrigerant inlet condition in terms of a saturation temperature (the temperature at which it completes the condensation process in a condenser) and the subcooling temperature (additional reduction in temperature lower than the specified saturation temperature). For CO2, the critical temperature above which there cannot exist separate liquid and gas phases is below the saturation condition specified in the test procedure -- hence, the specified condition cannot be achieved.

KeepRite suggested that because the subject units are used in transcritical CO2 booster systems, the calculations in AHRI 1250-2009, section 7.9 should be used to determine the annual walk-in energy factor ("AWEF") and net capacity for unit coolers matched to parallel rack systems, as required under the DOE test procedure. (KeepRite, No. 1 at p. 4) This section of AHRI 1250-2009 is prescribed by the DOE test procedure for determining AWEF for all unit coolers tested alone (Appendix C, section 3.3.1). Finally, KeepRite also suggested that AHRI 1250-2009, Table 17, EER for Remote Commercial Refrigerated Display Merchandisers and Storage Cabinets, should be used to determine power consumption of CO2 direct expansion unit cooler systems, as required under the DOE test procedure. (Keeprite, No. 1 at p. 4)

On March 3, 2021, DOE published a notification that announced its receipt of the petition for waiver and granted KeepRite an interim waiver. 86 FR 12433 ("Notification of Petition for Waiver"). In the Notification of Petition for Waiver, DOE acknowledged the difference in critical pressure and temperature between traditional refrigerants (such as R404A) and CO2 as used in KeepRite's direct expansion unit coolers. 86 FR 12433, 12436. DOE also noted that the transcritical nature of CO2 generally requires a more complex refrigeration cycle design to approach the efficiency of traditional refrigerant cycles during operation in high temperature conditions. *Id.*

In the Notification of Petition for Waiver, DOE also solicited comments from interested parties on all aspects of the petition and the specified alternate test procedure. 86 FR 12433. DOE received no substantive comments[5] in response to the Notification of Petition for Waiver.

For the reasons explained here and in the Notification of Petition for Waiver, absent a waiver, the basic models identified by KeepRite in its petition cannot be tested and rated for

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[5] One comment was received, but it contained no content. The comment stated only the docket number for the notification of petition for waiver and grant of an interim waiver.

energy consumption on a basis representative of their true energy consumption characteristics. DOE has reviewed the procedure suggested by KeepRite and concludes that it will allow for the accurate measurement of the energy use of the CO2 direct expansion unit coolers, while alleviating the testing issues associated with KeepRite's implementation of DOE's applicable walk-in refrigeration system test procedure for the specified basic models.

Thus, DOE is requiring that KeepRite test and rate specified CO2 direct expansion unit cooler basic models according to the alternate test procedure specified in this Decision and Order, which is identical to the procedure provided in the interim waiver.

This Decision and Order applies only to the basic models listed and does not extend to any other basic models. DOE evaluates and grants waivers for only those basic models specifically set out in the petition, not future models that may be manufactured by the petitioner. KeepRite may request that DOE extend the scope of this waiver to include additional basic models that employ the same technology as those listed in this waiver. 10 CFR 431.401(g). KeepRite may also submit another petition for waiver from the test procedure for additional basic models that employ a different technology and meet the criteria for test procedure waivers. 10 CFR 431.401(a)(1).

DOE notes that it may modify or rescind the waiver at any time upon DOE's determination that the factual basis underlying the petition for waiver is incorrect, or upon a determination that the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics. 10 CFR 431.401(k)(1). Likewise, KeepRite may request that DOE rescind or modify the waiver if the company discovers an error in the information provided to DOE as part of its petition, determines that the waiver is no longer needed, or for other appropriate reasons. 10 CFR 431.401(k)(2).

III. Order

After careful consideration of all the material that was submitted by KeepRite, KeepRite's consumer-facing materials, including websites and product specification sheets for the basic models listed in KeepRite's petition, as well as other industry information pertaining to the subject basic models listed by KeepRite, it is **ORDERED** that:

(1) KeepRite must, as of the date of publication of this Order in the *Federal Register*, test and rate the following CO2 direct expansion unit cooler basic models with the alternate test procedure as set forth in paragraph (2):

KeepRite/Trenton/Bally Branded Basic Models on which the Waiver and Interim Waiver is Being Requested:

LP104C-**D*	*LP104D*-**D*	*LP103F*-**D*
LP106C-**D*	*LP105D*-**D*	*LP104F*-**D*
LP107C-**D*	*LP106D*-**D*	*LP106F*-**D*
LP209C-**D*	*LP207D*-**D*	*LP207F*-**D*
LP211C-**D*	*LP209D*-**D*	*LP208F*-**D*
LP214C-**D*	*LP211D*-**D*	*LP211F*-**D*
LP317C-**D*	*LP314D*-**D*	*LP313F*-**D*
LP320C-**D*	*LP316D*-**D*	*LP316F*-**D*
LP422C-**D*	*LP418D*-**D*	*LP418F*-**D*
LP427C-**D*	*LP421D*-**D*	*LP421F*-**D*
LP534C-**D*	*LP526D*-**D*	*LP524F*-**D*
LP640C-**D*	*LP631D*-**D*	*LP627F*-**D*
MP120C-**D*	*MP116L*-**D*	*MP113F*-**D*
MP124C-**D*	*MP120L*-**D*	*MP117F*-**D*
MP232C-**D*	*MP224L*-**D*	*MP221F*-**D*
MP240C-**D*	*MP233L*-**D*	*MP226F*-**D*
MP248C-**D*	*MP239L*-**D*	*MP234F*-**D*
MP360C-**D*	*MP347L*-**D*	*MP338F*-**D*
MP372C-**D*	*MP355L*-**D*	*MP349F*-**D*
MP486C-**D*	*MP470L*-**D*	*MP457F*-**D*
MP495C-**D*		
TM215C-**D*	*TM204D*-**D*	*LV106C*-**D*
TM318C-**D*	*TM206D*-**D*	*LV109C*-**D*
TM321C-**D*	*TM209D*-**D*	*LV212C*-**D*
TM426C-**D*	*TM212D*-**D*	*LV217C*-**D*
TM531C-**D*	*TM315D*-**D*	*LV325C*-**D*
TM215C-**D*	*TM318D*-**D*	*LV331C*-**D*
TM318C-**D*	*TM422D*-**D*	*LV437C*-**D*
TM321C-**D*	*TM526D*-**D*	*LV441C*-**D*
TM426C-**D*		*LV546C*-**D*

(2) The alternate test procedure for the KeepRite basic models listed in paragraph (1) of this Order is the test procedure for walk-in refrigeration systems prescribed by DOE at 10 CFR part 431, subpart R, appendix C ("Appendix C"), except that the liquid inlet saturation temperature test condition and liquid inlet subcooling temperature test condition shall be modified to 38 °F and 5 °F, respectively, for both walk-in refrigerator unit coolers and walk-in freezer unit coolers, as detailed below. All other requirements of Appendix C and DOE's other relevant regulations remain applicable.

In Appendix C, under section 3.1**.** *General modifications: Test Conditions and Tolerances,* revise section 3.1.5., to read as follows:

3.1.5. Tables 15 and 16 shall be modified to read as follows:

TABLE 15—REFRIGERATOR UNIT COOLER

Test description	Unit cooler air entering dry-bulb, °F	Unit cooler air entering relative humidity, %	Saturated suction temp, °F	Liquid inlet saturation temp, °F	Liquid inlet subcooling temp, °F	Compressor capacity	Test objective
Off Cycle Fan Power	35	<50	—	—	—	Compressor Off	Measure fan input power during compressor off cycle.
Refrigeration Capacity Suction A	35	<50	25	38	5	Compressor On	Determine Net Refrigeration Capacity of Unit Cooler.

Note: Superheat to be set according to equipment specification in equipment or installation manual. If no superheat specification is given, a default superheat value of 6.5 °F shall be used. The superheat setting used in the test shall be reported as part of the standard rating.

TABLE 16—FREEZER UNIT COOLER

Test description	Unit cooler air entering dry-bulb, °F	Unit cooler air entering relative humidity, %	Saturated suction temp, °F	Liquid inlet saturation temp, °F	Liquid inlet subcooling temp, °F	Compressor capacity	Test objective
Off Cycle Fan Power	−10	<50	—	—	—	Compressor Off	Measure fan input power during compressor off cycle.
Refrigeration Capacity Suction A	−10	<50	−20	38	5	Compressor On	Determine Net Refrigeration Capacity of Unit Cooler.
Defrost	−10	Various	—	—	—	Compressor Off	Test according to Appendix C Section C11.

Note: Superheat to be set according to equipment specification in equipment or installation manual. If no superheat specification is given, a default superheat value of 6.5 °F shall be used. The superheat setting used in the test shall be reported as part of the standard rating.

(3) *Representations*. KeepRite may not make representations about the energy efficiency of a basic model listed in paragraph (1) of this Order for compliance or marketing, unless the basic model has been tested in accordance with the provisions set forth above and such representations fairly disclose the results of such testing.

(4) This waiver shall remain in effect according to the provisions of 10 CFR 431.401.

(5) DOE issues this waiver on the condition that the statements, representations, and information provided by KeepRite are valid. If KeepRite makes any modifications to the controls or configurations of these basic models, such modifications will render the waiver invalid with respect to that basic model, and KeepRite will either be required to use the current Federal test

method or submit a new application for a test procedure waiver. DOE may rescind or modify this waiver at any time if it determines the factual basis underlying the petition for waiver is incorrect, or the results from the alternate test procedure are unrepresentative of a basic model's true energy consumption characteristics. 10 CFR 431.401(k)(1). Likewise, KeepRite may request that DOE rescind or modify the waiver if KeepRite discovers an error in the information provided to DOE as part of its petition, determines that the waiver is no longer needed, or for other appropriate reasons. 10 CFR 431.401(k)(2).

(6) KeepRite remains obligated to fulfill any applicable requirements set forth at 10 CFR part 429.

DOE makes decisions on waivers and interim waivers for only those basic models specifically set out in the petition, not future models that may be manufactured by the petitioner. KeepRite Refrigeration may submit a new or amended petition for waiver and request for grant of interim waiver, as appropriate, for additional basic models of CO2 direct expansion unit coolers. Alternatively, if appropriate, KeepRite Refrigeration may request that DOE extend the scope of a waiver or an interim waiver to include additional basic models employing the same technology as the basic model(s) set forth in the original petition consistent with 10 CFR 431.401(g).

Signing Authority

This document of the Department of Energy was signed on May 2, 2021, by Kelly Speakes-Backman, Principal Deputy Assistant Secretary and Acting Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on May 4, 2021.

Treena V. Garrett,
Federal Register Liaison Officer,
U.S. Department of Energy.

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