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[Docket No. EERE–2009–BT–TP–0003]

RIN 1904–AB92

Energy Conservation Program for Consumer Products: Test Procedures for Refrigerators, Refrigerator-Freezers, and Freezers

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

ACTION: Final rule.

SUMMARY: This rulemaking amends the interim final rule for test procedures for refrigerators, refrigerator-freezers, and freezers, issued on December 16, 2010. Specifically, it amends test procedures at subpart B, appendices A and B, by incorporating changes to the interim final rule that will apply to all measurements of energy consumption of newly manufactured products starting September 15, 2014.

These amendments modify the required test period for the second part of the test for products with cycling compressor systems and long-time automatic defrost or variable defrost control and adjust the default values of maximum and minimum compressor run time for products with variable defrost. These changes will ensure a more accurate measurement of the energy use of products with variable defrost control.

DATES: The amendments are effective February 24, 2012 and are required to establish compliance with the applicable energy conservation standards starting on September 15, 2014.

ADDRESSES: The docket is available for review at regulations.gov, including **Federal Register** notices, framework documents, public meeting attendee lists and transcripts, comments, and other supporting documents/materials. All documents in the docket are listed in the regulations.gov index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

A link to the docket web page can be found at: *http://www.regulations.gov/#!docketDetail;dct=FR%252BPR%252BN%252BO%252BSR;rpp=10;po=0;D=EERE-2009-BT-TP-0003.*

This web page will contain a link to the docket for this rulemaking on the regulations.gov site. The regulations.gov web page will contain simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact Ms. Brenda Edwards at (202) 586–2945 or by email: *Brenda.Edwards@ee.doe.gov.*

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SUPPLEMENTARY INFORMATION:

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I. Background and Authority

Title III of the Energy Policy and Conservation Act (42 U.S.C. 6291, *et seq.;* ''EPCA'' or, ''the Act'') sets forth a variety of provisions designed to improve energy efficiency. (All references to EPCA refer to the statute as amended through the Energy Independence and Security Act of 2007 (EISA 2007), Public Law 110–140 (Dec. 19, 2007)). Part B of title III (42 U.S.C. 6291–6309), which was subsequently redesignated as Part A for editorial reasons, establishes the ''Energy Conservation Program for Consumer Products Other Than Automobiles.'' Refrigerators, refrigerator-freezers, and freezers (collectively referred to below as ''refrigeration products'') are all treated as ''covered products'' under this Part. (42 U.S.C. 6291(1)–(2) and 6292(a)(1)) Under the Act, this program consists essentially of three parts: (1) Testing, (2) labeling, and (3) Federal energy conservation standards. The testing requirements consist of test procedures that manufacturers of covered products must use (1) as the basis for certifying to the U.S. Department of Energy (DOE) that their products comply with the applicable energy conservation standards adopted under EPCA, and (2) for making representations about the efficiency of those products. Similarly, DOE must use these test requirements to determine whether the products comply with any relevant standards promulgated under EPCA.

By way of background, the National Appliance Energy Conservation Act of 1987 (NAECA), Public Law 100–12,

amended EPCA by including, among other things, performance standards for refrigeration products. (42 U.S.C. 6295(b)) On November 17, 1989, DOE amended these performance standards for products manufactured on or after January 1, 1993. 54 FR 47916. DOE subsequently published a correction to revise these new standards for three product classes. 55 FR 42845 (October 24, 1990). DOE again updated the performance standards for refrigeration products on April 28, 1997, for products manufactured on or after July 1, 2001. 62 FR 23102.

EISA 2007 amended EPCA by requiring DOE to publish a final rule determining whether to amend the energy conservation standards for refrigeration products manufactured starting in 2014. (42 U.S.C. 6295(b)(4)) Consistent with this requirement, DOE issued on September 18, 2008, a framework document that outlined a series of issues related to its examination of potential amendments to the standards for refrigeration products. 73 FR 54089. On September 29, 2008, DOE held a public workshop to discuss the framework document and the issues it raised. The framework document identified several test procedure issues, including: (1) Compartment temperature changes; (2) modified volume calculation methods; (3) products that deactivate energy-using features during energy testing; (4) variable anti-sweat heaters; (5) references to the updated AHAM Standard HRF–1–2008, (''HRF–1–2008''), ''Energy and Internal Volume of Refrigerating Appliances (2008),'' developed by the Association of Home Appliance Manufacturers (AHAM), including the ''Errata to Energy and Internal Volume of Refrigerating Appliances, Correction Sheet'' issued on November 17, 2009; (6) convertible compartments; and (7) harmonization with international test procedures. (''Energy Conservation Standards Rulemaking Framework Document for Residential Refrigerators, Refrigerator-Freezers, and Freezers,'' RIN 1904–AB79, Docket No. EERE–2008–BT–STD–0012). DOE conducted analyses and developed new energy conservation standards for refrigeration products that led to the eventual publication of the final rule adopting new energy conservation standards for refrigeration products manufactured starting September 15, 2014. See 76 FR 59516 (Sept. 15, 2011) (''standards final rule'') and 76 FR 70865 (Nov. 16, 2011) (date correction notice).

DOE initiated the test procedure rulemaking in part to address the issues identified in the framework document, and published a notice of proposed rulemaking on May 27, 2010, hereafter referred to as ''the NOPR.'' 75 FR 29824. In response to issue (3) above, as applied to automatic icemakers, DOE separately published a guidance document addressing various aspects related to the icemaker, including the proper manner in which to render an icemaker inoperative for the energy consumption test. *See* 75 FR 2122 (Jan. 14, 2010). DOE held a public meeting to discuss the NOPR proposals on June 22, 2010 and subsequently published the combined final/interim-final rule on December 16, 2010. 75 FR 78810. The final rule (or ''December 2010 final rule'') implemented test procedure amendments applicable to products manufactured before the effective date of the new energy conservation standards that DOE had been considering, and the interim final rule (or ''interim final rule'') implemented on an interim basis test procedure amendments applicable to products subject to the new energy conservation standards—*i.e.,* those products manufactured starting September 15, 2014. *Id.* DOE adopted this split approach in response to industry requests to provide an additional opportunity to comment on final aspects related to the interim final rule. *Id.* at 78845.

General Test Procedure Rulemaking Process

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered products. EPCA provides in relevant part that ''[a]ny test procedures prescribed or amended under this section shall be reasonably designed to produce test results which measure energy efficiency, energy use * * * or estimated annual operating cost of a covered product during a representative average use cycle or period of use, as determined by the Secretary [of Energy], and shall not be unduly burdensome to conduct.'' (42 U.S.C. 6293(b)(3))

In addition, if DOE determines that a test procedure amendment is warranted, it must publish proposed test procedures and offer the public an opportunity to present oral and written comments. (42 U.S.C. 6293(b)(2)) When considering amending a test procedure, DOE must determine ''to what extent, if any, the proposed test procedure would alter the * * * measured energy use * * * of any covered product as determined under the existing test procedure.'' (42 U.S.C. 6293(e)(1)) If DOE determines that the amended test procedure would alter the measured energy use of a covered product, DOE must also amend the applicable energy conservation standard accordingly. (42 U.S.C. 6293(e)(2))

With respect to today's rulemaking, DOE has determined that none of the amendments adopted in this final rule notice is likely to significantly change the measured energy use of refrigeration products when compared to the test procedure set forth in the interim final rule. In such situations, EPCA does not require a standards rulemaking to address such changes in measured energy efficiency. (42 U.S.C. 6293(e)(2)).

Today's rule also fulfills DOE's obligation to periodically review its test procedures under 42 U.S.C. 6293(b)(1)(A). DOE anticipates that its next evaluation of this test procedure will occur in a manner consistent with the timeline set out in this provision.

Refrigerators and Refrigerator-Freezers

DOE's test procedures for refrigerators and refrigerator-freezers are found at 10 CFR part 430, subpart B, appendices A1 (currently in effect) and A (required for rating of products starting September 15, 2014). DOE initially established its test procedures for refrigerators and refrigerator-freezers in a final rule published in the **Federal Register** on September 14, 1977. 42 FR 46140. Industry representatives viewed these test procedures as too complex and eventually developed alternative test procedures in conjunction with AHAM that were incorporated into the 1979 version of HRF–1, ''Household Refrigerators, Combination Refrigerator-Freezers, and Household Freezers'' (HRF–1–1979). Using this industry-created test procedure, DOE revised its test procedures on August 10, 1982. 47 FR 34517. On August 31, 1989, DOE published a final rule establishing test procedures for variable defrost control (a control type in which the time interval between successive defrost cycles is determined by operating conditions indicating the need for defrost rather than by compressor run time), dual compressor refrigerator-freezers, and freezers equipped with ''quick-freeze'' (a manually-initiated feature that bypasses the thermostat and runs the compressor continuously until terminated). 54 FR 36238. DOE amended the test procedures again on March 7, 2003, by modifying the test period used for products equipped with long-time automatic defrost (a control type in which defrost cycles are separated by 14 hours or more of compressor run time) or variable defrost. 68 FR 10957. The test procedures include provisions for determining the annual energy use in

kilowatt-hours (kWh) and the accompanying annual operating costs.

DOE further amended the test procedures on December 16, 2010. 75 FR 78810. These amendments helped clarify how to test products for compliance with the applicable standards. The amendments clarified certain elements in Appendix A1 to ensure that regulated entities fully understand how to apply and implement the test procedure. These changes included clarifying how refrigeration products equipped with special compartments and/or more than one fresh food compartment or more than one freezer compartment should be tested. The amendments also accounted for the various waivers granted by DOE, specifically with regard to variable anti-sweat heater controls. The final rule also modified the regulatory definition of ''electric refrigerator-freezer'' to require that storage temperatures in the fresh food compartment be at a level that would effectively exclude coverage of combination wine storage-freezer products. See 10 CFR 430.2. The definition for ''electric refrigerator'' was also changed to clarify the characteristics that distinguish it from related products such as wine storage products. DOE is considering modifying its product definitions to address wine storage products in a separate future rulemaking.

In that same notice, DOE also established a new Appendix A, via an interim final rule. The new Appendix A included a number of comprehensive changes to help improve the measurement of energy consumption of refrigerators and refrigerator-freezers. These changes included, among other things: (1) New compartment temperatures and volume adjustment factors, (2) new methods for measuring compartment volumes, (3) a modification of the long-time automatic defrost test procedure to ensure that the test procedure measures all energy use associated with the defrost function, and (4) test procedures for products with a single compressor and multiple evaporators with separate active defrost cycles. DOE noted that the compartment temperature changes introduced by Appendix A would significantly impact the measured energy use and affect the calculated adjusted volume and energy factor (*i.e.* adjusted volume divided by energy use) values. Lastly, the interim final rule also addressed icemaking energy use by including a fixed value for manufacturers to add when calculating the energy consumption of those products equipped with an automatic icemaker. DOE may consider revising this approach once a more appropriate means of accounting for this feature's energy consumption is developed.

Freezers

DOE's test procedures for freezers are found at 10 CFR part 430, subpart B, appendices B1 (currently in effect) and B (required for the rating of products starting in 2014). DOE established its test procedures for freezers in a final rule published in the **Federal Register** on September 14, 1977. 42 FR 46140. As with DOE's test procedures for refrigerators and refrigerator-freezers, industry representatives viewed the freezer test procedures as too complex and worked with AHAM to develop alternative test procedures, which were incorporated into the 1979 version of HRF–1. DOE revised its test procedures for freezers based on this AHAM standard on August 10, 1982. 47 FR 34517. The subsequent August 31, 1989 final rule established test procedures for freezers with variable defrost control and freezers with the quick-freeze feature. 54 FR 36238. A subsequent amendment occurred to correct that rule's effective date. 54 FR 38788 (Sept. 20, 1989). The current test procedures include provisions for determining the annual energy use in kWh and annual electrical operating costs for freezers.

The December 16, 2010 notice also clarified compliance testing requirements for freezers under Appendix B1 and created a new Appendix B, the latter of which would apply in 2014. That new procedure changed a number of aspects to the procedure detailed in Appendix B1, including, among other things: (1) The freezer volume adjustment factor, (2) methods for measuring compartment volumes, and (3) the long-time automatic defrost test procedure. In addition, Appendix B also addresses icemaking energy use by implementing the same procedure as for refrigerator-freezers in which a fixed energy use value is applied when calculating the energy consumption of freezers with automatic icemakers.

Finalization of the Test Procedure Rulemaking for Products Manufactured Starting in 2014

The interim final rule established comprehensive changes to the manner in which the test procedures are conducted by creating new Appendices A and B. In addition to the changes discussed above, these appendices incorporate the recent changes made to Appendices A1 and B1. These new appendices also incorporate the modifications to Appendices A1 and B1 that were finalized and adopted on December 16, 2010.

DOE had provided an initial comment period on the interim final rule that ended on February 14, 2011. DOE subsequently reopened the comment period on September 15, 2011 (76 FR 57612) to allow further public feedback in response to the promulgation of the final energy conservation standards that were published on the same day. 76 FR 57516. DOE reopened the comment period to permit interested parties to comment on the interplay between the test procedure and the energy conservation standards in order to permit DOE to make any final changes that may be needed to the final test procedure for products that will be manufactured starting in 2014. 76 FR 57612–57613 (Sept. 15, 2011). The comment period ended on October 17, 2011.

Three stakeholders submitted comments in response to both supplemental comment periods that DOE provided for additional feedback—the Association of Home Appliance Manufacturers (AHAM), Sub Zero-Wolf, Inc. (Sub Zero), and Whirlpool Corporation (Whirlpool). Table I.1 below identifies these commenters and their affiliation. No other comments were received.

TABLE I.1—STAKEHOLDERS THAT SUBMITTED COMMENTS ON THE INTERIM FINAL RULE

Name	Acronym	Type*
Association of Home Appliance Manufacturers.	AHAM	IR
Sub Zero-Wolf, Inc	Sub Zero	M
Whirlpool Corporation.	Whirlpool	M

*IR: Industry Representative; M: Manufacturer.

DOE also considered comments related to a petition for a test procedure waiver (RF–018, Samsung) that had a direct bearing on elements of the test procedures used in Appendix A. See 76 FR 16760 (March 25, 2011).

II. Summary of the Final Rule

Today's rulemaking finalizes the test procedures that manufacturers must follow when certifying basic models as compliant with the new energy conservation standards starting in 2014. In finalizing these procedures, DOE made minor changes to the procedure laid out in the December 2010 interim final rule to account for comments from interested parties. The changes will not result in a significant change in measured energy use when compared to

the procedure detailed in the interim final rule. The December 2010 amendments for Appendices A1 and B1 are unchanged by today's rulemaking and continue to apply to products manufactured through September 14, 2014. (Those aspects of the December 2010 notice were not reopened for comment as they were not part of the interim final rule. 75 FR at 78813–78815 (Dec. 16, 2010).) In addition, other amendments made in the December 2010 final rule, including modified definitions, anti-circumvention language, applying the anti-sweat heater switch credit to energy use measurements, and rounding off energy test results also were not part of the interim final rule and were not reopened for comment. Accordingly, these aspects of the December 2010 notice remain unchanged.

Today's rulemaking makes a series of changes that include (a) modifying the default values of CT_L and CT_M, parameters, which represent the minimum and maximum compressor run time between defrosts, for products with variable defrost that do not have values for these parameters specified in their control algorithms, and (b) modifying the test period for products with cycling compressors and long-time or variable defrost to ensure the procedure accurately captures energy use associated with temperature recovery after defrost. The rulemaking also makes changes to clarify how to apply the second part of the test for products with long-time or variable defrost.

III. Discussion

The following section discusses in further detail the various issues addressed by today's rulemaking. These issues center chiefly on issues raised in commenter submissions. Section A identifies the products covered by the rule; section B specifies the compliance dates for the test procedure amendments made; section C discusses the test procedure amendments; and section D discusses stakeholder comments not associated with new amendments.

A. Products Covered by the Final Rule

Today's amendments cover those products that meet the definitions for refrigerator, refrigerator-freezer, and freezer, as codified in 10 CFR 430.2. The definitions for refrigerator and refrigerator-freezer were amended in the December 2010 final rule on December 16, 2010. 75 FR 78810, 78817.

Today's rulemaking does not change any of the definitions for refrigeration products that DOE amended as part of the December 2010 final rule. While DOE appreciates the concerns raised by commenters, these particular issues were not completely vetted through the rulemaking process. DOE may, however, revisit and more closely examine these issues as part of a future rulemaking activity. Section D.3 discusses the comments related to wine storage and wine storage combination products, including the amended definitions for refrigerator and refrigerator-freezer.

B. Compliance Dates for the Amended Test Procedures

Manufacturers will need to use new Appendices A and B to rate refrigeration products once they are required to comply with the amended energy conservation standards—*i.e.* September 15, 2014. Likewise, Appendices A and B will be mandatory for representations regarding energy use or operating cost of these products starting on that date.

C. Test Procedure Amendments Incorporated in This Final Rule

Today's rulemaking finalizes Appendices A and B, with some amendments. These amendments are described in greater detail below.

1. Default Values for CT_L and CT_M

Refrigeration products with variable defrost vary the frequency of defrost by reducing this frequency to save energy when the frost accumulation rate on the evaporator drops—such as when the number of door openings is reduced or when ambient humidity is low. Defrost frequency is characterized by the compressor run time between defrosts, CT, which is expressed in the test procedure in hours rounded to the nearest tenth of an hour. Variable defrost control algorithms vary CT as the defrost need changes. These algorithms may specify a minimum CT value (CT_L) and a maximum CT value (CT_M), consistent with the minimum and maximum defrost frequencies required for specific products to provide reliable defrost performance while minimizing energy use. The DOE test procedure calculates the energy use of variable defrost products using a weighted average of the algorithm's CT_L and CT_M. *See* 75 FR at 78857, 78865 (Dec. 16, 2010) (detailing requirements of section 5.2.1.3 of new Appendix A and existing Appendix A1, respectively). To address those products that may have control algorithms that do not use specific maximum and minimum values for the compressor run time between defrost cycles, the test procedure specifies a CT_L value of 12 hours and a CT_M value of 84 hours. *See id.* These values remained the same for both Appendix A1 (final rule) and Appendix A (interim final rule).

AHAM argued that the default CT_L and CT_M values for the variable defrost control algorithm should be changed to 6 and 96 hours in order to maintain consistency with HRF–1–2008. (AHAM, No. 39 at p. 5) AHAM did not provide any supporting data to show that these values would be more representative of the operation of refrigeration products with variable defrost control algorithms without specific CT values, nor did it provide any justification for the change other than to maintain consistency with HRF–1–2008.

In light of AHAM's comments, DOE reviewed the certification data submitted by refrigeration product manufacturers in August 2011 and specifically examined the submissions of those products with variable defrost to determine the prevalence of different values for CT_L and CT_M. DOE also investigated whether the certification data showed any evidence of products without specified CT values, since these would be the products whose energy use measurement would be affected by the change suggested by AHAM. Of 2,674 records in the database, 1,397 products were identified as having variable defrost. None of the records for these products included undeclared values for CT_L and CT_M. Table III.1 below shows the default CT_L and CT_M values of the current test procedure and of HRF–1–2008. It also shows the average, mean, and most prevalent values for CT_L and CT_M gleaned from available certification records. For each of these CT_L and CT_M combinations, the calculated CT value is also presented. The summary table shows that neither the 12 and 84 default values nor the AHAM-suggested values of 6 and 96 provide an exact representation of the products in the database. However, the data below also suggest that using 6 and 96 as default values more closely approximates the recorded values of those refrigeration products from the database than 12 and 84.

TABLE III.1—VALUES OF CT_L, CT_M AND CT

	CT_L	CT_M	CT
Current DOE Test Procedure Default	12.0	84.0	38.2
HRF–1–2008 Default	6.0	96.0	24.0
Database Average	8.0	82.3	*28.8
Database Median	8.0	96.0	30.0
Database Most Prevalent Values	8.0	96.0	30.0

*This is the CT calculated using the average CT_M and CT_L values. The average of the CT values calculated individually for each database record is 28.2.

Further, the use of the default CT_L and CT_M values is prescribed for those products that do not have specific values for these parameters in the product's control algorithm. Since the algorithm for such a product presumably does not explicitly set a minimum value for this time period, it is conceivable that the compressor run time between defrosts could at times be lower than the 6 hours specified in the test procedure as a minimum for CT_L (see section 5.2.1.3 of Appendix A1 or A). When operating in this mode, such a product would be using more energy for defrost than would a product with an algorithm-defined CT_L of 6 hours, due to the higher defrost frequency. Hence, DOE concludes that to ensure that the test procedure provides a conservative estimate of energy use associated with defrost (*i.e.* at least as high as the actual energy use), it is reasonable to require use of a lower default CT_L value when calculating energy use for products that do not have algorithm-specified CT_L values. For this reason, because the HRF–1–2008 default values are more representative of the refrigeration products in the database than the current default values, and in order to maintain consistency with this industry standard, DOE is changing the default values to 6 and 96 in this final rule. This change is being made for refrigerators, refrigerator-freezers, and freezers in both Appendices A and B.

2. Modification of Long-Time and Variable Defrost Test Method To Fully Capture Energy Use for Temperature Recovery

Background

The interim final rule amended the test procedure for products with long-time and variable defrost by modifying the second part of the test to better capture energy use associated with precooling and temperature recovery. 75 FR 78810, 78832–78836 (Dec. 16, 2010). A test procedure waiver petition submitted by Samsung (see 76 FR 17670 (March 25, 2011)) has raised the question of whether DOE should consider further changes to the second part of the test procedure for these products.

As described in DOE's December 2010 notice, precooling involves cooling the compartment(s) of a refrigerator-freezer to temperatures significantly lower than the user-selected temperature settings prior to an automatic defrost cycle. *Id.* at 78832. The document also noted that the two-part test served as a means to reduce the burden on testing long-time and variable defrost products. *Id.* These products initiate defrost cycles after significantly longer periods of compressor run time than conventional automatic defrost products. Long-time defrost products initiate defrost after more than 14 hours of compressor run time, and variable defrost products adjust defrost frequency based on whether defrost is needed, potentially delaying the next defrost up to 96 hours of compressor run time. The second part of the test measures the energy use consumed during a defrost cycle.

The two-part test and procedures for the second part of the test were initially established in 1982. 47 FR 34521–34522 (Aug. 10, 1982). Since that time, more sophisticated controls have replaced the mechanical defrost timers that were generally used. 68 FR 10958 (March 7, 2003). Consequently, the initial procedures for the second part of the test did not fully capture or consider the high level of sophistication that is now possible and made available with the use of modern electronic control systems. The defrost controls in use when the second part of the test was first established consisted of a mechanical defrost timer energized to advance when the compressor is energized. The initial two-part test specified that the second part starts when the heater energizes, which is coincident with the time the compressor turns off in a product using a mechanical timer control. 68 FR 10957–10958 (March 7, 2003). The first adjustment of the test procedure considering the potential for more sophisticated control was made on March 7, 2003. This amendment of the test procedure revised the second part of the test to allow it to start when the compressor turns off prior to activation of the defrost heater, which is typical of an approach enabled by more sophisticated electronic controls. *Id.*

The interim final rule made additional amendments to the second part of the test to address precooling, another defrost control feature requiring more sophisticated control than a mechanical timer. 75 FR 78832–78836 (Dec. 16, 2010). The amendments also addressed partial temperature recovery, which refers to a case in which the compartment temperatures of a refrigerator partially recover, but do not reach, their steady-state operating temperatures. For the purposes of testing, a product is considered to reach a state of partial temperature recovery when compartment temperatures do not reach the steady-state operating temperature by the end of the second part of the test (as previously specified in the test procedure) after the rise in compartment temperature associated with defrost. The amendments require, for a system with a cycling compressor, that the average compartment temperatures for the compressor cycles occurring immediately before and after the test period for the second part of the test be within 0.5 °F of the compartment temperature measured for the first part of the test. Under the interim final rule's procedure, the modified test period would start at the end of a compressor ''on'' cycle and end at the start of a compressor ''on'' cycle. *Id.* at 73885

Additional Issue Identified During Review of Samsung Waiver

After publication of the interim final rule, an additional issue associated with the two-part test was raised during the agency's review of a test procedure waiver petition submitted by Samsung Electronics America, Inc. (Samsung). That petition sought a waiver from the current test requirements for the company's products that use dual evaporators. 76 FR 16760 (March 25, 2011).[1] These products use a variable

[1] The evaporator is the component of a refrigeration system that cools the cabinet air. Most conventional refrigerators use a single evaporator

Continued

defrost strategy that employs multiple defrost cycle types, which the interim final rule's procedure addresses for products starting in 2014. 75 FR at 78836–78838 (Dec. 16, 2010). DOE explained in the December 2010 notice that Appendices A1 and B1 do not address such products and manufacturers seeking to certify these types of products as compliant prior to 2014 must first obtain a test procedure waiver to enable them to test these products. *Id.* at 78838. Samsung sought a waiver to permit the company to use the Appendix A procedures for products with multiple defrost cycle types when rating current products. 76 FR at 16763 (March 25, 2011).

Whirlpool commented in response to Samsung's waiver petition that applying the second part of the test to the fresh food defrost of one of these products results in an energy credit. (Whirlpool, Samsung Petition for Test Procedure Waiver, Case No. RF–018, Docket No. EERE–2011–BT–WAV–0017, No. 4 at p. 3) [2] Whirlpool's waiver comments discuss the data from testing performed by the Canadian Standards Association that examined the energy consumption of a Samsung model that uses multiple defrost cycles—Samsung model No. RFG297AAPN. Whirlpool asserts that the test results are illogical because the energy use contribution of the fresh food compartment defrost is negative (*i.e.* an energy credit), and adds that the energy use contribution of the freezer compartment defrost is underestimated. (*Id.* at p. 4) Whirlpool recommended that the test period for the second (defrost) part of the test for the fresh food defrost should end at the end of the second compressor ''on'' cycle after defrost, and that such a change to the test procedure only for the fresh food defrost would increase the measured energy use of the product by 1.6 percent. (Id. at pp. 5–6)

Samsung's response to Whirlpool's comment pointed out that the potential energy credit issue had been raised by DOE in its test procedure NOPR public meeting on June 22, 2010. (Samsung, Samsung Petition for Test Procedure Waiver, Case No. RF–018, Docket No. EERE–2011–BT–WAV–0017, No. 5 at p. 2) In its view, this issue had been presented by DOE for discussion and consideration by all interested parties—including Whirlpool. The company pointed out that the test procedure DOE ultimately selected had received the support of Whirlpool. *Id.* See also Whirlpool, No. 13 at p. 6.

DOE's Previous Discussion Regarding the Appropriate End of the Test Period

As indicated by Samsung, DOE raised this issue of Appendix A1's potential inability to capture all energy usage during defrost cycles when using the second (defrost) part of the test. (NOPR Public Meeting Presentation, No. 9 at p. 53) DOE recognized this possibility during its evaluation of the energy use associated with the fresh food compartment defrost of a Samsung product similar to the products addressed in the company's test procedure waiver request. That evaluation indicated that the calculated energy use contribution from the fresh food defrost was often negative, which resulted in an energy use ''credit''. DOE evaluated alternative test periods and concluded that more reasonable results are obtained when the test period ends at the end of a compressor cycle after the defrost cycle. (*Id.*) DOE sought comment during its public meeting to seek additional information on the issues associated with the long-time defrost test method that were presented. (*Id.* at p. 55)

DOE's presentation also indicated that it projected that the impact on measured energy use of the test procedure change would be an increase of approximately 3 percent, if applied to both defrosts of the Samsung product that was the focus of the discussion. (*Id.* at p. 53) This 3 percent impact was determined based on moving the end of the test period for the second part of the test from the second compressor start after defrost to the second compressor stop. DOE again reviewed the same data and concluded that the test procedure change associated with this final rule would reduce this measured energy use differential by half (*i.e.* 1.5 percent). (''Summary of Energy Use Measurements for a Refrigerator-Freezer with two Defrost Cycle Types'', No. 46) The interim final rule test procedure applied to this product does not allow the second part of the test to end at the second compressor start after defrost, due to the requirement that the average temperature for the compressor cycle immediately following the test period be within 0.5 °F of the average temperature measured for the first part of the test. (*See* Appendix A, section 4.2.1.1) Hence, the impact on energy use measurement associated with test procedure changes to address the observed negative energy use measurement associated with fresh-food-only defrost cycles depends on details of the compared test periods.

Stakeholders generally supported the test procedure approach as proposed in the Notice of Proposed Rulemaking (NOPR)—and as adopted in the interim final rule—and none suggested that the test period of the second part of the test should be changed to address the anomaly presented, *i.e.* that measurements for a specific product showed a negative energy use contribution associated with the fresh food defrost. Hence, DOE concluded that the anomaly was associated with an insignificant number of products and thus not generally significant to the test procedure for products tested using the two-part test. Consequently, in the interim final rule, DOE did not amend the end of the test period for the second part of the test to coincide with the end of a compressor ''on'' cycle (rather than the start of that cycle).

Comment Submitted in Response to the Reopening of the Comment Period

After considering Whirlpool's waiver petition comments suggesting that DOE modify the second part of the test, DOE specifically requested comment on this topic when it reopened the interim final rule comment period. 76 FR 57613–57614 (Sept. 15, 2011). DOE received one comment on this topic, from Whirlpool, which suggested that the end of the second part of the test be moved so that it coincides with the end of a compressor ''on'' cycle. (Whirlpool, No. 44 at pp. 1–2) Whirlpool asserted that this change should be made for all defrosts, whether they are for fresh food compartments or freezer compartments.

Whirlpool indicated that, for at least one product, the impact of this test procedure change on the measured energy use for a product having a separate defrost for the fresh food compartment would be an increase of approximately 3 percent. Although Whirlpool did not identify the manufacturer of that product, it mentioned that its concerns are an extension of those concerns it raised earlier in response to a waiver request made by a competitor—*i.e.* Samsung. The 3 percent impact cited by Whirlpool matches the CSA data presented in Whirlpool's comments regarding the Samsung waiver petition: the waiver comments indicate that the tested product's energy use increases from 572.5 kWh to 592.1 kWh per year (an increase of 3.4 percent) with the modified test procedure, *i.e.* when ending the second part of the test at the

that cools the freezer compartment, transferring cold freezer air to the fresh food compartment to cool the latter compartment. Samsung's dual evaporator approach uses separate evaporators in the freezer and fresh food compartments and does not exchange air between the compartments.

[2] The Samsung waiver docket items have been consolidated and loaded into the docket for this refrigerator test procedure rulemaking, see ''Documents Related to Samsung Waiver—Case No. RF–018, Docket No. EERE–2011–BT–WAV–0017'', No. 45.

end rather than the start of the second compressor ''on'' cycle after the defrost. (Whirlpool, Samsung Petition for Test Procedure Waiver, Case No. RF–018, Docket No. EERE–2011–BT–WAV–0017, No. 4 at p. 5) This projected impact on the measured energy use is consistent with DOE's own conclusions regarding Samsung products with multiple defrosts. *See* NOPR Public Meeting Presentation, No. 9 at p. 53. However, as discussed above, it overestimates the measurement impact associated with the amendments made in this final rule.

Assessment of the Suggested Test Period Modification

Whirlpool's interim final rule comments provided little or no explanation of how and why the suggested test period will result in more accurate test results. Instead, the comments indicate that the ''underlying principle when measuring the energy consumption of any product which operates in cycles is to measure from the same point in one cycle to the same point in a successor cycle,'' and assert that the test procedure of Appendix A measures from a compressor stop to a compressor start for products with cycling compressors. However, Whirlpool did not provide any explanation supporting the concept of measuring from a point in one cycle to the same point in a successor cycle. (Whirlpool, No. 44 at pp. 1–2) Nevertheless, Whirlpool's waiver comments note the unintended consequences associated with the negative energy use contribution measured for the fresh food defrost of the Samsung product when using the interim final rule's version of the Appendix A test period as demonstrating that the test period contained in the interim final rule is inappropriate. (Whirlpool, Samsung Petition for Test Procedure Waiver, Case No. RF–018, Docket No. EERE–2011–BT–WAV–0017, No. 4 at p. 5)

DOE had provided data in its NOPR public meeting presentation supporting the use of the modified test period, ending when the compressor stops. This situation was illustrated both for the fresh food defrost contribution alone and for the total defrost energy use contribution, including both fresh food and freezer compartment defrosts. The data showed that a test period that both starts and ends when the compressor stops matched the energy expended by the defrost heater during a fresh food defrost—and provided a closer match of energy use measured from one initiation of the combined defrost cycle (the defrost cycle involving both the fresh food and freezer compartments) to the next initiation of the combined defrost cycle than the Appendix A1 procedure. (NOPR Public Meeting Presentation, No. 9 at p. 53) More recently, DOE prepared an assessment demonstrating that a test period for the second part of the test both starting and ending at the end of a compressor ''on'' cycle is consistent with the full-cycle measurement specified for testing non-variable automatic defrost products. *See* (''Refrigerator Test Procedure: Adjustments to Second Part of Test'', No. 47) This document shows mathematically that a calculation of energy use using the ''section 4.2'' test period (''full test period'') matches the two-part calculation only when the second part of the test ends at the end of a compressor ''on'' cycle.

Part of the justification for modifying the test procedure in the manner suggested by Whirlpool is based on the observation that when using the test period prescribed by the interim final rule, the average compartment temperature would be warmer at the end of the test period than at its start for a system with a cycling compressor. The interim final rule test procedure includes a provision to verify that the product does not employ partial recovery. Using this provision requires examining the full compressor cycle immediately after the test period to ensure that it is a regular compressor cycle, *i.e.* a compressor cycle associated with steady state operation. However, the test does not account for the additional temperature recovery associated with a regular compressor ''on'' cycle. The December 2010 notice indicates that the test period T2 starts when the compartment is at its typical minimum temperature associated with steady state cycling operation. This minimum temperature is represented by the lower horizontal line of the temperature plot in Figure 1 of Appendix A. 75 FR at 78855 (Dec. 16, 2010) (*see* temperature plot of Figure 1, ''Long-time Automatic Defrost Diagram for Cycling Compressors'').

On the other hand, the compartment temperature is at its typical steady-state cycling maximum (the higher horizontal line of the temperature plot) when test period T2 ends. Hence, while the compartment temperature has recovered to the range within which it varies during steady state operation, it has not recovered to the temperature state associated with the start of the test period—*i.e.* the temperature is warmer than at the start of the test period. In order to allow recovery to the start-of-test-period temperature, the test period would have to continue till the end of the compressor ''on'' cycle. These arguments illustrate that the test period prescribed by the interim final rule for the second part of the test is unlikely to fully account for energy use associated with temperature recovery.

DOE concludes that the test period for the second part of the test that is specified in the interim final rule for products with cycling compressors and long-time or variable defrost may not accurately represent energy use associated with defrost, which necessitates a change to enhance the accuracy of the measurement. DOE received no other comments on this topic. Hence, in light of this new information, and its own review, DOE is adopting the approach suggested by Whirlpool to help ensure the procedure in Appendix A provides a greater level of accuracy.

Four-Hour Time Limit

DOE also considered whether to retain the four-hour time limit that the current test imposes on the second part of the test. This limit applies to the elapsed time after the defrost heater is energized.[3] (See Appendix A section 4.2.1.1 or Figure 1) The four-hour limit terminates the test period when recovery from defrost and return to steady-state cycling operation takes an unusually long time. During its review of the test period for the second part of the test, DOE noticed that for some products, the extension of the test period associated with the test period revision recommended by Whirlpool led to a test period invoking the four-hour limit (*i.e.* the desired end of the test period was more than four hours later than activation of the defrost heater).

DOE notes that modern data collection is performed almost exclusively using automated data acquisition systems. This approach to recording data significantly reduces the test burden that could potentially be associated with extending the test beyond the four-hour limit, allowing a product to fully complete its temperature recovery after defrost during testing. Test technicians do not need to observe product behavior during the test from minute to minute to ensure that data are recorded. Instead, technicians are more likely to periodically check the status of a given test once or twice a day to determine whether a defrost has occurred and whether the test period has been completed. With modern variable-defrost products, a full refrigerator test

[3] Note that the elapsed time after the defrost heater is energized is not the same as T2, since the test period generally starts prior to activation of the heater for testing in accordance with Appendix A.

can take a week to complete because of the duration of the time intervals between defrosts. The compressor run time between defrosts can last as long as 96 hours for variable defrost products (see Appendix A, section 5.2.1.3 regarding the maximum allowable duration for CT_M, the maximum compressor run time between defrosts). At a typical compressor on-time of 50 percent, the time involved in waiting for a defrost cycle can be days. With the use of automated data acquisition equipment by test labs necessitating only periodic status checks, the need for 24-hour staffing for data recording has been effectively eliminated.[4]

Further, the continued application of the four-hour limit is likely to reduce measurement accuracy, since the limit could cause a significant portion of the compressor ''on'' cycle to be dropped from the measurement.[5] In light of the more advanced capabilities of testing labs and the operation of modern refrigeration products, DOE believes that the four-hour time limit of the second part of the test is obsolete as a means to limit test burden and may in fact prevent the accurate measurement of energy consumption of these products. Because of the impact of the four-hour time limit on test measurement accuracy, and because it is no longer needed to reduce test burden, DOE is eliminating this provision of the test procedure for Appendices A and B in this notice. Making this change will also fully address the potential problem identified by Whirlpool by eliminating any incentives by some manufacturers to exploit potential limitations presented by a procedure that artificially limits the overall testing duration without fully capturing that product's energy consumption.

Recovery for Both Compartments of a Refrigerator or Refrigerator-Freezer

The interim final rule requirements for confirming that the second part of the test does not include events associated with precooling and temperature recovery provide a means to compare the temperatures of ''the compartment'' measured during the first part of the test with the average temperatures of ''the compartment'' for compressor cycles preceding and following the second part of the test. (*See* Appendix A, section 4.2.1.1) The language does not specify which compartment must be evaluated in this fashion. In order to assure that the test procedure properly accounts for energy use associated with precooling and temperature recovery of the entire product, the language of section 4 of Appendix A is modified to clarify that these requirements apply to both compartments (*i.e.* the freezer compartment and the fresh food compartment), regardless of which compartment's evaporator undergoes defrost. DOE is making this clarification to assure testing accuracy.

Modification of Figure 2 of Appendices A and B

The interim final rule includes a figure for both Appendices A and B that illustrates the second part of the test for products with non-cycling compressors. That figure, Figure 2, includes two horizontal lines in the temperature plot that have no meaning. In this final rule, these lines of Figure 2 have been removed. DOE is making this change to avoid confusion and to ensure the accuracy of the measured test results. This amendment represents no change to the specified test procedure.

Addition of Minor Edits for Clarification

While reviewing the modified new sections 4.2.1.1 and 4.2.1.2 incorporating the changes discussed above, DOE concluded that some minor adjustments to the language would be needed to clarify the test procedure and to ensure the overall consistency of the procedure. These adjustments include the following:

- In the first and second lines of both sections, changing ''* * * the second part starts * * *'' to ''* * * the second part of the test starts * * *''.
- In section 4.2.1.1, changing ''* * * first part's temperature * * *'' to ''* * * average temperature for the first part of the test * * *''

These changes are made in parallel sections to both Appendices A and B.

Impact of the Test Procedure Change on Measured Energy Use

Whirlpool estimated that modifying the test procedure to address the observed negative energy use associated with fresh food compartment defrosts would increase the measured energy use of a tested competitor's product by 3 percent. (Whirlpool, No. 44 at p. 2) These results are consistent with the results DOE observed, as reported in the NOPR public meeting. (NOPR Public Meeting Presentation, No. 9 at p. 53). However, as discussed above, DOE has re-examined the available data and now projects that the increase in energy use for such a product is only 1.5 percent applying the amended procedure made in this final rule. This latter estimate more accurately reflects the differences in the test period of the second part of the tests as represented by the interim final rule and today's final rule. (''Summary of Energy Use Measurements for a Refrigerator-Freezer with two Defrost Cycle Types'', No. 46) In addition, as discussed further below, DOE has determined that the impact of the test procedure change on energy use measurement for most affected products is near 1 percent. DOE also notes that the energy use impact of this change would apply only for those variable defrost products that use cycling compressors.

To assess the potential impact on the measured energy use associated with the test procedure change suggested by Whirlpool, DOE reviewed the data it collected to support the test procedure's development and data collected as part of its compliance efforts. The analysis DOE conducted drew from two separate sets of test reports. The first set included tests conducted using the current test procedures of Appendix A1. For this set of tests, the applicable temperature settings did not permit one to calculate a weighted-average energy use at the Appendix A standardized compartment temperatures of 0 °F for the freezer compartment, and 39 °F for the fresh food compartment, because the measured compartment temperatures for the two tests conducted at different temperature control settings (*i.e.* median setting and either warmest or coldest settings prescribed in the temperature control setting requirements of Appendix A1, section 3) did not generally bound these standardized temperatures. The second set of tests, in contrast, included measurements at temperature settings allowing calculation of results consistent with the Appendix A standardized compartment temperatures. These tests involved the use of temperature control settings suitable for the Appendix A standardized temperatures.

For the first set of tests, DOE evaluated the impact of the test procedure change only for the coldest compartment temperature setting used in the test, which was typically the median setting. The compartment temperatures of these tests fell within 3°F of the Appendix A standardized temperatures. While this difference represents a deviation from the Appendix A test requirements, DOE still considers these results to be a good predictor of the expected operation of

[4] Personal communication, Detlef Westphalen of Navigant Consulting, Inc. with Terry Drew, CSA International, 12/5/11.

[5] For example, suppose the test period criteria for temperature recovery are met at the end of the third compressor ''on'' cycle after the defrost, but the four hour limit ends the test period just after the start of the third compressor ''on'' cycle. In this case, a significant portion of compressor energy use is eliminated from the measurement for the second part of the test.

these products under standardized compartment temperature conditions for two reasons—(1) the small size of the temperature deviations and (2) the measured data demonstrate that the influence of compartment temperature on the estimated impact of the test procedure change was negligible.

The analysis focused on four key refrigerator-freezer product classes: class 3 (refrigerator-freezers—automatic defrost with top-mounted freezer without through-the-door ice service), class 5 products without exception relief (refrigerator-freezers—automatic defrost with bottom-mounted freezer without through-the-door ice service), class 5 with exception relief to account for through-the-door ice service (for the purposes of this discussion, designated product class 5A under the recently promulgated standards for 2014), and class 7 (refrigerator-freezers—automatic defrost with side-mounted freezer with through-the-door ice service). These product classes were chosen because they represent significant market share, have automatic defrost, and are the most likely products to have variable defrost, thus indicating that they would be more likely candidates to be tested using the two-part test. The assessment focused solely on products with cycling compressors and variable defrost, since the test procedure change does not affect energy use measurement for other products.

DOE re-evaluated the test results for both sets of data using the modified test period for the second part of the test as described in this section, including both shifting the end of the test period to a compressor stop (rather than a compressor start) and removing the four-hour time limit. Table III.2 summarizes the results of this assessment for both sets of data and does not include any data covering Samsung products. The average measurement impact for these 25 products is under 1 percent.

TABLE III.2—MEASURED ENERGY USE INCREASE

Product class	First set of tests		Second set of tests	
	Number of units	Average energy use impact (percent)	Number of units	Average energy use impact (percent)
3	6	0.99	2	0.90
5	2	1.05	1	0.89
5A	3	1.08	2	1.21
7	6	0.73	3	0.85
All Units	17	0.92	8	0.95

DOE also separately evaluated data for six Samsung products falling into classes 5A and 7, for which the overall average measured impact was 1.55 percent. DOE believes that the reason for the greater sensitivity of Samsung products to this test procedure change as compared with other products is that these products have two defrosts (one combined defrost of both the freezer and fresh food compartment evaporators and one defrost of only the fresh food evaporator) occurring in the same amount of time that other products use one defrost.

Shipment-Weighted Impact of the Test Procedure Change on Measured Energy Use

DOE developed estimates of shipment-weighted impacts on the measured energy use of the test procedure change for the four product classes highlighted in Table III.2. The test procedure amendments apply only to variable defrost products with cycling compressors. Table III.3 summarizes the percentage of models with variable defrost for the evaluated refrigerator-freezer product classes as reported to DOE in August 2011 as part of the annual certification data submission. DOE used these percentages of basic models as a proxy for shipment-weighted average percentages. Because the certification data do not distinguish between cycling and non-cycling compressor systems, these percentages include both types and for that reason provide a conservative (*i.e.* larger) estimate regarding the market share of affected products. (As discussed above, only products with variable defrost and cycling compressors will be affected by the test procedure change.) The table also shows the market share of Samsung products by product class based on sales data purchased from the NPD Group[6] for the years 2007 and 2008. DOE calculated the shipment-weighted average impact of the test procedure change as follows.

$$Percent\ Change = 1.55 \times S_S + 1.00 \times (S_V - S_S) + 0.00 \times (1 - S_V)$$

In this equation, S_S is the Samsung market share and S_V is the variable defrost market share. DOE assumed that the Samsung products all have variable defrost. Table III.3 shows the results of this calculation of weighted average energy use impact for the four product classes. The percentage impact varies from less than 0.5 percent to just above 1 percent. From these projections, DOE concludes that the level of change in the measurement does not necessitate a change in the energy conservation standards, as discussed in section III.E.2.

[6] NPD Group, Inc. *http://www.npd.com/corpServlet?nextpage=corp_welcome.html.*

TABLE III.3—WEIGHTED IMPACT

Product class	Percent of basic models with variable defrost	Percent Samsung products	Weighted average energy use impact
3	36	0	0.36
5	90	18	1.00
5A	100	24	1.13
7	95	6	0.98

D. Other Issues

This section discusses comments made by stakeholders regarding items for which DOE has not made corresponding changes in the test procedure.

1. Anti-Circumvention Language

In the December 2010 final rule, DOE added anti-circumvention language to 10 CFR 430.23, in section (a)(10) addressing refrigerators and refrigerator-freezers and in section (b)(7) addressing freezers. 75 FR 78818–78820 (Dec. 16, 2010). AHAM commented that the anti-circumvention language has significant differences as compared with the language of HRF–1–2008 and that the exact language of HRF–1–2008 should be adopted. (AHAM, No. 39 at p. 4) The language identified by AHAM appears in a section that provides general guidance for manufacturers to consider with respect to potential anti-circumvention issues. The specific language changes AHAM recommended include the following:

1. ''Energy saving features that are designed to be activated by a lack of door openings shall not be functional during the energy test.'' should read ''Energy saving features that are designed to operate when there are no door openings for long periods of time shall not be functional during the energy test.''

2. ''The defrost heater should not either function or turn off differently during the energy test than it would when operating in typical room conditions.'' should read ''The defrost heater shall not either function or turn off differently during the energy test than it would when operating in typical room conditions. Also, the product shall not recover differently during the defrost recovery period than it would in typical room conditions.''

3. In ''Electric heaters that would normally operate at typical room conditions with door openings should also operate during the energy test.'' the ''should'' should be replaced with ''shall.''

As noted earlier, amendments to 10 CFR 430.23 as part of the December 16, 2010 notice were made as part of the December 2010 final rule. These issues were not fully vetted as part of the re-opening notice, which focused on issues related to Appendices A and B. DOE notes, however, that it developed this limited guidance in reliance on the 2007 version of HRF–1. (Compare section HRF–1–2007, section 1.2 with HRF–1–2008, section 1.2). Should DOE need to clarify the application of these conditions, it may do so in the future.

2. Refrigeration Products Designed for Sale With or Without Icemakers

In the standards final rule, DOE discussed issues raised by AHAM regarding refrigeration products designed for sale with or without icemakers (''kitable models''). Such products may leave the factory with an icemaker installed, but could also leave the factory without an icemaker and instead have an icemaker installed downstream in the distribution chain, by the retailer, or even by a customer after purchase of the product. 76 FR at 57538 (Sept. 15, 2011). Icemakers can also be produced by third-party manufacturers separate from the refrigeration products' manufacturers. (For example, the third party brand Aquafresh is advertised as a replacement for all major icemaker brands. See ''Aquafresh RIM900 Ice Maker Information,'' No. 48 at p. 1) AHAM commented in response to the energy standards NOPR that kitable models should be treated as if they have the icemaker installed. (AHAM, Refrigeration Products Energy Conservation Standard Rulemaking, Docket Number EE–2008–BT–STD–0012, No. 73 at p. 6) DOE responded to these claims by noting that such products could be purchased either with or without the icemaker, that the field energy use for products without an icemaker would be less by the amount of energy use associated with icemaking (which is represented by a fixed value of 84 kWh in the interim final rule test procedure) and that better consistency with the test procedure would be established if such products were required to be certified both with and without the icemaker. 76 FR at 57538–57539 (Sept. 15, 2011).

AHAM strongly opposed the DOE approach and its comments to DOE stressed that the approach would create unnecessary burden and cost with no public benefit. AHAM cited the following reasons in support of its position:

- As far as AHAM is aware, manufacturers typically assign kitable models a single model number regardless of whether the icemaker is installed when the product leaves the factory. Requiring certification of the model with and without the icemaker might require establishing a second model number for each such product, which would represent a great cost to manufacturers.
- The approach is overly burdensome because it requires twice the test burden and twice as much reporting.
- Consumers that install an icemaker after purchase of a refrigerator would not be aware of the additional energy use associated with icemaking.
- If manufacturers maintain a single model number for the product with and without the icemaker, there might be confusion if consumers see two different energy use values indicated for the same model (*i.e.* one for the unit with the icemaker and one for the unit without the icemaker).
- The manufacturer may not have any control over whether an icemaker is installed in the unit after it leaves the factory, making it difficult to ensure that the correct energy label is included with the unit.

AHAM's approach would be to treat kitable models as if they have an icemaker. Such an approach would ensure that a purchaser of a kitable model would receive a product that would have energy use no more than the rated value. This approach would also mean that there would be only one energy use value associated with each model number, and would avoid multiple testing and reporting. (AHAM, No. 43 at pp. 6–7)

DOE is declining to adopt AHAM's approach within the context of today's notice.

DOE acknowledges, however, that manufacturers may have no control of events occurring after a product leaves their factory, and, hence, may not know which label to ship with a product, if the label were required to accurately reflect whether the product has an icemaker installed. Further, although AHAM claims that this approach is burdensome, its claim that such products would have to be tested twice is incorrect—a single test would indicate product performance with and without the icemaker, because it would include a measurement of the product without an icemaker. Calculating the energy use for an icemaker-equipped product would be a matter of adding a fixed value to calculate this value, as specified by the Appendix A test procedure (see section 6.2.2.2). Additionally, AHAM did not quantify the burden involved. Without such quantification, or a meaningful explanation as to why a second set of tests would be needed, DOE has little information with which to judge the merits of AHAM's recommendations or its claims. DOE also notes that product labeling is the jurisdiction of the FTC and that any contents of those labels lie primarily within the province of that agency's rulemaking authority.

Further, DOE notes that any approach eventually adopted for kitable models must ensure that both versions of the kitable model (*i.e.* sold either with or without the icemaker) meet their respective energy standards. DOE notes that this goal would automatically be achieved with the new standards and the new test procedures as represented by the September 2011 standards final rule and this test procedure final rule notice, since both the test procedure and the standards apply a fixed value of 84 kWh (to represent icemaker energy consumption) to the measured energy use of a product when configured without an icemaker—this new value represents the energy use of an icemaker-equipped version of that product. This situation will likely change once a laboratory-based procedure is implemented for measuring icemaking energy use, as is contemplated in a future rulemaking. Consideration of an approach to address kitable models would, in all likelihood, be more appropriately addressed as part of a future rulemaking to decide whether to incorporate such a laboratory-based icemaking energy use measurement. DOE adds that the full rulemaking process would allow the issues associated with kitable models to be thoroughly considered and reviewed by stakeholders, thus ensuring that the adopted approach is vetted and acceptable to all affected parties. Accordingly, DOE is declining to adopt AHAM's suggestion.

3. Wine Storage and Combination Wine Storage Products

This section addresses issues associated with wine storage products and combination wine storage products. The latter are refrigeration products combining wine storage with fresh food and/or freezer compartments.

Definitions for Refrigerator and Refrigerator-Freezer

DOE amended the definitions for refrigerator and refrigerator-freezer as part of the final rule published in the December 16, 2010 notice. *See* 75 FR at 78817. The modified definitions did two things that the previous definitions did not. First, they clarified that products that combine freezer compartments with compartments not designed to be capable of 39 °F storage temperature (but include no other types of compartments) are not refrigerator-freezers. Second, the definitions clarified the requirements for fresh food compartments of refrigerators and refrigerator-freezers. Regarding this second item, the revised definitions clarified that a product is not necessarily disqualified from status as a refrigerator or refrigerator-freezer if its fresh food compartments can maintain average temperatures above 39 °F for some temperature control settings. *Id.*

The amendments did not include language specifying that products incorporating wine storage compartments—for the purpose of this discussion, compartments that are not designed to be capable of maintaining storage temperatures below 39 °F—in products that would otherwise be refrigerators or refrigerator-freezers under the definition would be treated as something other than these covered products. *Id.* at 78817. Wine chillers are typically designed to operate between 50 °F and 60 °F to ensure the proper storage temperature for bottled wine. DOE subsequently posted on its Web site a guidance document explaining its interpretation of the amended definitions. (''Guidance on Scope of Coverage for Hybrid (Wine Storage) Refrigeration Products Issued Feb. 10, 2011'', No. 49). The Guidance clarified DOE's interpretation of the definitions and explained that adding a wine storage compartment to a refrigerator or a refrigerator-freezer does not change its status as a refrigerator or refrigerator-freezer under the regulations.

AHAM objected to this interpretation of the test procedure final rule definitions. (AHAM, No. 43 at pp. 4–5). It argued that DOE's interpretation is inequitable because it treats freezers differently than refrigerators and refrigerator-freezers. AHAM also argued that the Guidance was, in its view, inconsistent with the separate rulemaking approach that DOE had indicated it was considering applying to wine chillers. AHAM argued further that establishing coverage through interpretation, which it believed was performed by the Guidance, was inappropriate, and stated that such steps should be taken only through the established rulemaking process.

At the outset, DOE notes that these definitions were established as part of the December 2010 final rule. Because of the limited nature of the re-opening of the comment period, which focused on those issues related to the conduct of the test procedures detailed in Appendices A and B, these particular issues were not completely vetted through the rulemaking process. Hence, DOE may revisit and reconsider these issues as part of a future rulemaking activity.

DOE further notes that AHAM does not contest the validity of the text of the definitions themselves but only how DOE may choose to apply these definitions to a small group of products that have yet to comprise any significant share of the overall refrigeration product market. DOE's research was able to identify only seven distinct products that are clearly part of this product group. (''Wine Storage Combination Products'', No. 50).

With respect to the definitions, the coverage of refrigeration products has been clarified through guidance to help explain that products that meet a specific set of performance criteria would be treated as covered products. Any product meeting these criteria are subject to the regulations covering these products. These criteria were established through a lengthy notice and comment process associated with this test procedure rulemaking that began in May 2010 and on which manufacturers had ample opportunity to comment. DOE adds that, consistent with its prior statements, it fully intends to initiate a wine-chiller-specific rulemaking to address potential standards for these products.

DOE also notes that there are some key technical differences between freezers and refrigerators/refrigerator-freezers. These differences require that different approaches be considered when deciding how to treat those refrigeration products that include a wine storage compartment. In particular, the standardized temperature

for a freezer is 0 °F, while the standardized temperature for the fresh food compartment of a refrigerator-freezer is 45 °F under current test procedures and 39 °F under test procedures that manufacturers will need to use for compliance purposes in 2014. A wine storage compartment can be expected to approach a 45 °F temperature during testing, but approaching 0 °F would be extremely unlikely given the nature of the product—specifically, the technical requirements for designing a compartment of a product to achieve a 0 °F temperature differs significantly from those required to achieve the much higher temperature (39 °F) needed for the safe storage of fresh food—or the even higher standardized temperature (45 °F) required by the current test procedure during the testing of these products. These differences not only require different design considerations, but they also result in very different energy consumption characteristics.

Moreover, the definitions for these three products (refrigerator, refrigerator-freezer, and freezer), which DOE adopted with full input from the public, including manufacturers, contain clear differences with respect to the inclusion of separate compartments. Both the refrigerator and refrigerator-freezer definitions explicitly contemplate the inclusion of compartments with more than one temperature range, while the freezer definition does not. *See* 10 CFR 430.2. As a result, a freezer-wine chiller combination product does not fall squarely into any of these definitions. In contrast, a wine chiller combined with either a refrigerator or refrigerator-freezer would fall within the definitions for those two products. Treating these three products in the exact same manner as suggested by AHAM—*i.e.*, to exclude them from any coverage—would ignore these differences as well as the technical differences noted above. Accordingly, because of these differences, a freezer-wine chiller product should not be treated in the same manner as a refrigerator-wine chiller or refrigerator-freezer-wine chiller products.

DOE recognizes, however, that some combination wine storage products may have characteristics that would make attempts at testing them with the wine storage compartment approaching 45 °F provide non-representative results. For such products, manufacturers may still market such items by first petitioning DOE for an appropriate test procedure waiver. DOE highlighted this option when it issued its February 2011 Guidance. Also, in the case of those products that may be unable to comply with the applicable standards, manufacturers have the option of applying for exception relief with the Office of Hearings and Appeals. *See* 42 U.S.C. 7194 *and* 10 CFR part 1003.

Federal Energy Conservation Standards for Wine Chillers

In the energy conservation standards NOPR (''standards NOPR''), and again in the standards final rule, DOE explained its interpretation that wine chillers are not covered products under the definition for electric refrigerator, and thus are not covered by the energy conservation standards for refrigeration products. 75 FR 59470, 59486 (Sept. 27, 2010) and 76 FR 57516, 57534 (Sept. 15, 2011). As noted in the standards final rule, several stakeholders submitted comments favoring the regulation of wine chiller products. DOE noted that it may consider initiating a rulemaking to establish coverage and energy standards for these products. *Id.*

In its comments on the interim final rule, AHAM reiterated its support for a rulemaking to regulate wine storage products, and indicated that such a rulemaking should include products in which wine storage compartments are combined with fresh food and/or freezer compartments. (AHAM, No. 43 at p. 4). Sub Zero requested that DOE conduct a comprehensive analysis, with full stakeholder input, leading to a Federal efficiency standard for all wine storage products and combination/hybrid that include wine chillers. (Sub Zero, No. 42 at p. 2).

Consistent with earlier statements, DOE will consider conducting rulemakings addressing coverage, test procedures, and energy conservation standards for wine chiller and related products. DOE has already taken an initial step in this process by publishing a coverage determination proposal to establish coverage for refrigeration products that do not have compressors and condensers integrated with their cabinets—many of which include wine chillers. 76 FR 69147 (Nov. 8, 2011). Such products cannot be immediately covered under the authority granted to DOE by EPCA to regulate conventional refrigeration products, which necessitates a separate coverage determination to address these non-condenser/compressor products. (42 U.S.C. 6292(a)(1)).

4. Multiple Compressor Systems

In the test procedure NOPR, DOE proposed to address certain inconsistencies in the test procedure for dual compressor systems. 75 FR at 29841 (May 27, 2010). These systems have separate refrigeration systems serving the fresh food and freezer compartments. AHAM commented that DOE should simplify this test procedure and suggested an alternative test procedure addressing such products. (AHAM, No. 16 at p. 7). DOE explained that it could not adopt the AHAM proposal in the interim final rule because the AHAM procedure represents a significant departure from the proposal that was presented in the NOPR, and that stakeholders were not provided an adequate opportunity to comment on the procedure to allow its adoption. 75 FR at 78831 (Dec. 16, 2010). DOE noted, however, that it may consider this approach in a future rulemaking that would more fully revise the test procedure. *See id.*

AHAM raised this issue in all three of its written comments submitted in response to the interim final rule. (AHAM, No. 39 at p. 4; AHAM, No. 40 at pp. 1–2; AHAM, No. 43 at pp. 2–3). AHAM's recommendations regarding how this test procedure should measure the energy consumption of multiple compressor-based systems has changed each time it has provided specific test procedure recommendations. *See* AHAM, No. 16 at p. 7 (Aug. 10, 2010), AHAM, No. 40 at pp. 1–2 (March 4, 2011), *and* AHAM, No. 43 at pp. 2–3 (Oct. 17, 2011). In spite of its continually evolving position, AHAM urged DOE to modify the dual compressor test procedure because, in its view, the DOE test procedure contains specific problems that relate to its requirement that a manufacturer separately measure the energy use of the two separate systems.[7] The group made two assertions in support of its view. First, AHAM argued that this requirement posed a significant test burden. Second, AHAM asserted that many dual compressor products do not work in the manner that the test procedure assumes they do—*i.e.* as separate independent systems. Instead, AHAM argued that many of these products use shared systems. (AHAM, No. 40 at p. 2). Sub-Zero supported the alternative approach incorporated in AHAM's October 17, 2011 comments and asserted that it provided a practical, accurate, and repeatable test procedure that should be incorporated into the final rule.[8] (Sub Zero, No. 42 at pp. 1–2).

[7] DOE notes that the requirement for separate measurement of the two systems for dual compressor products is not new. It was initially established in the test procedure on August 31, 1989. 54 FR 36238.

[8] Sub Zero's comments mention that they have submitted a petition for a test procedure waiver to obtain relief for their dual-compressor products from use of the current test procedure (*see* 76 FR 71335 (Nov. 17, 2011)), which they claim are

AHAM added that Appendix A1 should be modified to include the revised test procedure for dual compressor system products it suggested that DOE adopt. (AHAM, No. 43 at p. 2).

DOE notes that modifications to the Appendix A1 test procedure for dual compressor systems implemented in the December 16, 2010 notice were made as part of the final rule. Because of the limited nature of the reopening notice, which focused on issues related to Appendices A and B, these suggested changes to Appendix A1 were not fully vetted for consideration in this rulemaking.

DOE further notes that the current procedure's requirement that each compressor system of a dual compressor system be separately measured was first established in 1989. *See* 54 FR 36238, 36241 (Aug. 31, 1989). Manufacturers are, by now, very familiar with this procedure and how to most efficiently and accurately perform it. The issues that AHAM initially raised in its August 10, 2010, comments regarding the burden associated with this test (which AHAM did not detail) require additional consideration and a more fulsome evaluation. Additionally, the constantly changing nature of AHAM's recommended approach highlights the unsettled nature of that approach and underscores the complexity of this issue. In DOE's view, these facts tend to indicate that the adoption of any one of AHAM's three suggested alternatives would likely be premature, particularly without further public input. Hence, DOE is declining to adopt any of AHAM's suggestions at this time.

DOE notes that AHAM did not indicate that its approach will be applicable to freezers. Consequently, DOE did not evaluate the appropriateness of this approach for those products. DOE is unaware of any freezer products that employ a dual compressor system.

5. Triangulation

During the test procedure NOPR public meeting, stakeholders introduced the concept of triangulation in the context of setting a refrigeration product's temperature controls for testing. The triangulation approach involves conducting tests at three temperature control setting combinations as opposed to the two settings generally required in the current test procedures. By properly setting the controls for the three tests and calculating the appropriate weighted average of the energy use measurements of those tests, triangulation allows one to calculate the projected level of energy use if both the fresh food and freezer compartment temperatures matched their standardized temperatures (*i.e.* 0 °F in the freezer compartment and 39 °F in the fresh food compartment for a refrigerator-freezer tested according to Appendix A). In comparison, the current DOE test procedure provides a more conservative measurement (*i.e.* potentially higher value) of energy use at the standardized temperatures that reduces the overall testing burdens by limiting the number of required tests from three under the triangulation approach to two.[9]

Stakeholders suggested in oral and written comments on the NOPR that triangulation should be introduced into the DOE test procedures. *See* 75 FR at 78822 (Dec. 16, 2010). DOE indicated in the interim final rule that this test procedure approach has not been subject to stakeholder evaluation and comment and that it could not be adopted at the time for that reason. *Id.*

AHAM commented again that triangulation should be adopted in the test procedures, indicating that it should be introduced as an optional approach for setting temperature controls for testing. AHAM also indicated that DOE could have put this topic up for stakeholder comment in the interim final rule, and added that if the DOE adopts triangulation for certification purposes, it should also be required for enforcement purposes. (AHAM, No. 39 at pp. 3–4)

DOE believes the triangulation approach departs enough from current procedures for setting temperature controls that it would have been inappropriate for DOE to incorporate it based solely on the strength of the NOPR comments, which were sparse and contained little to no supporting data. Those technical differences, coupled with the lack of any opportunity for all interested parties to fully evaluate this issue, weigh in favor of not incorporating the triangulation approach into DOE's test procedure at this time. Consequently, DOE did not adopt it in either the December 2010 final rule or the interim final rule.

Additionally, introducing triangulation could have unforeseen implications, as alluded to in AHAM's comments, which suggested that, if adopted, it should also be used for enforcement purposes. (*Id.* at p. 4) Testing using triangulation could, in certain circumstances, yield different results as compared with the approach of the current DOE test procedure. Those differences could be significant enough to affect whether a given product complies with an applicable standard. This complication alone merits a more thorough consideration by the agency before the triangulation approach is adopted. For these reasons, DOE is declining to adopt the triangulation method into the test procedures of Appendix A at this time. DOE, may, however, consider the incorporation of this method when it considers potential changes to the test procedure as periodically required under 42 U.S.C. 6293(b).

E. Compliance With Other EPCA Requirements

In addition to the issues discussed above, DOE examined its other obligations under EPCA in developing the amendments in today's notice. These requirements are addressed in greater detail below.

1. Test Burden

EPCA requires that the test procedures DOE prescribes or amends be reasonably designed to produce test results which measure the energy efficiency, energy use, or estimated annual operating cost of a covered product during a representative average use cycle or period of use. These procedures must also not be unduly burdensome to conduct. See 42 U.S.C. 6293(b)(3). DOE has concluded that the amendments being adopted today satisfy this requirement. In large part, today's rule simply finalizes the interim final rule of December 16, 2010. Where the interim final rule has been modified, the amendments require no changes to the current requirements for equipment and instrumentation for testing.

While the amendments adopted today have the potential to slightly extend the testing time for some products that use long-time or variable defrost, this extended duration is likely to represent an insignificant impact on the overall test burden. In particular, while the duration of the second part of the test

difficult or impossible to conduct. (Sub Zero, No. 44 at pp. 1–2). The waiver process is the appropriate step in addressing such products that cannot properly be tested using the DOE test procedures.

[9] A more conservative (*i.e.* larger) estimate of energy usage is most likely to occur in situations where a tested product's temperature controls have not been tuned—without such tuning, the two calculations of energy use of Appendix A, section 6.2.2.2 using the fresh food compartment temperature for one calculation and the freezer compartment temperature for the other can differ significantly from each other. For such a product, the two compartments attain their standardized temperatures at very different positions within the range of their temperature controls (*e.g.* the fresh food compartment may attain 39 °F with its control at the mid setting while the freezer compartment control may have to be in its coldest position to achieve 0 °F in the compartment).

will extend for those products that use cycling compressors—the test period will be extended typically for the duration of a compressor ''on'' cycle, but may be longer in the limited number of cases where the four-hour time limit between defrost heater activation and the end of the test period under the current test procedure applies. The amended procedure will, in the vast majority of cases, not extend the testing duration for products. DOE estimates that any products that would be affected by these changes would have an extended testing duration of between 1 and 2 hours. Given that most, if not all, modern testing is conducted using automated data acquisition equipment and that these tests typically last a full week for a typical product, the addition of this amount of time is unlikely to result in any significant added burden.

As described in section C.2, in tests conducted using automated data acquisition, a test technician does not actively monitor the test minute to minute. Instead, the test status is checked periodically during the test, perhaps once or twice per day. At the time of such a check, the test generally would have completed the next defrost cycle to be measured, or alternatively, the next defrost cycle would not yet have started, in which case the test would be checked again later. In few, if any, cases would extension of the defrost part of the test by 1 or 2 hours significantly lengthen the overall test time. The extension of the test period of the second part of the test would cause delay only if, during such status check, the latest defrost cycle has started but not ended. Also, for such a case, a two-hour extension of the test, if it did occur, would represent about a 1 percent increase in test time, assuming a one-week average test duration. Consequently, DOE concludes that the possible small increase in test time is more than outweighed by the improved accuracy of the test represented by the test procedure amendment.

The test procedure changes modifying the default values for CT_L and CT_M and revising the reference to the test data records requirements impose no changes in test burden.

2. Changes in Measured Energy Use

In this final rule, DOE is amending the test period for the second part of the test. This test is conducted as part of the two-part test for products with long-time or variable-defrost and cycling compressor systems. DOE estimates that this test procedure change will increase measured energy use roughly 1 percent for affected standard-size refrigerator-freezers. The other test procedure amendments made in this final rule will not affect energy use measurement.

When DOE modifies test procedures, it must determine to what extent, if any, the new test procedure would alter the measured energy use of covered products. (42 U.S.C. 6293(e)(1)) In this case, DOE has determined that the projected impact on the measured energy use of covered products that are affected would be altered by approximately 1 percent. DOE considers this an insignificant impact on measured energy use. Accordingly, DOE has determined that an adjustment to the applicable standard is not required.

IV. Procedural Requirements

A. Review Under Executive Order 12866

The Office of Management and Budget has determined that test procedure rulemakings do not constitute ''significant regulatory actions'' under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB).

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*) requires preparation of an initial regulatory flexibility analysis for any rule that by law must be proposed for public comment, unless the agency certifies that the proposed rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's Web site (*http://www.gc.doe.gov*).

DOE reviewed the test procedures in today's final rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. This final rule prescribes test procedures that will be used to test compliance with energy conservation standards for the products that are the subject of this rulemaking.

The Small Business Administration (SBA) considers an entity to be a small business if, together with its affiliates, it employs less than a threshold number of workers specified in 13 CFR part 121, which relies on size standards and codes established by the North American Industry Classification System (NAICS). The threshold number for NAICS code 335222, which applies to Household Refrigerator and Home Freezer Manufacturing, is 1,000 employees.

DOE searched the SBA Web site (*http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm*) to identify manufacturers within this NAICS code that produce refrigerators, refrigerator-freezers, and/or freezers. Most of the manufacturers supplying these products are large multinational corporations with more than 1,000 employees. There are several small businesses involved in the sale of refrigeration products that are listed on the SBA Web site under the NAICS code for this industry. However, DOE believes that only U-Line Corporation of Milwaukee, Wisconsin is a small business that manufactures these products. U-Line primarily manufactures compact refrigerators and related compact products such as wine chillers and stand-alone icemakers—these icemakers differ from the automatic icemakers installed in many refrigeration products in that they are complete icemaking appliances designed solely for the production and storage of ice, using either typical residential icemaking technology or a reduced-scale version of the icemaking technology used extensively in commercial icemakers.

DOE had initially concluded in its December 2010 notice that the final rule will not have a significant impact on small manufacturers under the provisions of the Regulatory Flexibility Act. DOE received no comments objecting to this conclusion.

DOE concludes also that the test procedure amendments of today's notice will not have a significant impact on small manufacturers under the provisions of the Act. These amendments do not require use of test facilities or test equipment that differ in any substantive way from the test facilities or test equipment that manufacturers currently use to evaluate the energy efficiency of these products. Further, the amended test procedures will not be significantly more difficult or time-consuming to conduct than current DOE energy test procedures.

For these reasons, DOE concludes and certifies that the rule would not have a significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared a regulatory flexibility analysis for this rulemaking. DOE has transmitted the

certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the SBA for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of refrigeration products must certify to DOE that their products comply with any applicable energy conservation standard. In certifying compliance, manufacturers must test their products according to the DOE test procedure for refrigeration products, including any amendments adopted for that test procedure. The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been submitted to OMB for approval. DOE received OMB approval to collect this information and has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including the refrigeration products addressed by today's final rule. 76 FR 12422 (March 7, 2011). The public reporting burden for the certification is estimated to average 20 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

In this notice, DOE amends its test procedure for refrigerators, refrigerator-freezers, and freezers. These amendments will improve the ability of DOE's procedures to more accurately account for the energy consumption of products that incorporate a variety of new technologies that were not contemplated when the current procedure was promulgated. The amendments also will be used to develop and implement future energy conservation standards for refrigeration products. DOE has determined that this final rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this rule amends an existing rule without changing its environmental effect, and, therefore, is covered by the Categorical Exclusion in 10 CFR part 1021, subpart D, appendix A6. See 76 FR 63764, 63788 (Oct. 13, 2011). The exclusion applies because this rule establishes a strictly procedural requirement by revising existing test procedures. These revisions will not affect the amount, quality, or distribution of energy usage, and, therefore, will not result in any environmental impacts. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. 64 FR 43255 (Aug. 10, 1999). The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process that it will follow in developing such regulations. 65 FR 13735. DOE examined this final rule and determined that it will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of today's final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; (3) provide a clear legal standard for affected conduct rather than a general standard; and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation specifies the following: (1) The preemptive effect, if any; (2) any effect on existing Federal law or regulation; (3) a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) the retroactive effect, if any; (5) definitions of key terms; and (6) other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or whether it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104–4; 2 U.S.C. 1501 *et seq.*) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. For a regulatory action resulting in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish estimates of the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a)–(b)) UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially-affected small governments before establishing any requirements that might significantly or uniquely affect such governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. (The policy is also available at *www.gc.doe.gov*). Today's final rule contains neither an intergovernmental mandate nor a mandate that may result

in an expenditure of $100 million or more in any year, so these requirements do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. Today's final rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (March 18, 1988), that this regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed today's rule under OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OIRA a Statement of Energy Effects for any significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgates or is expected to lead to promulgation of a final rule and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use if the regulation is implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use. Today's regulatory action is not a significant regulatory action under Executive Order 12866. It has likewise not been designated as a significant energy action by the Administrator of OIRA. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

L. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the DOE Organization Act (Pub. L. 95–91; 42 U.S.C. 7101 *et seq.*), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977 (FEAA). (15 U.S.C. 788) Section 32 essentially provides in part that, where a rule authorizes or requires use of commercial standards, the rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (FTC) concerning the impact of the commercial or industry standards on competition.

Today's action does not incorporate testing methods contained in any new commercial standards not already referenced by the current regulations on which the Attorney General and FTC have not already been previously consulted earlier during this rulemaking process.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of today's rule before its effective date. The report will state that it has been determined that the rule is not a ''major rule'' as defined by 5 U.S.C. 804(2).

V. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of these final rules.

List of Subjects in 10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Small businesses.

Issued in Washington, DC, on January 9, 2012.

Kathleen B. Hogan,

Deputy Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons stated in the preamble, DOE amends part 430 of chapter II of title 10, of the Code of Federal Regulations, as set forth below:

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 1. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

■ 2. Appendix A to subpart B of part 430 is amended by:
■ a. Revising section 4.2.1.1, including figure 1;
■ b. Revising section 4.2.1.2, including figure 2;
■ c. Revising 4.2.4; and
■ d. Revising sections 5.2.1.3 and 5.2.1.5.

The revisions read as follows:

Appendix A to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Electric Refrigerators and Electric Refrigerator-Freezers

* * * * *

4. Test Period

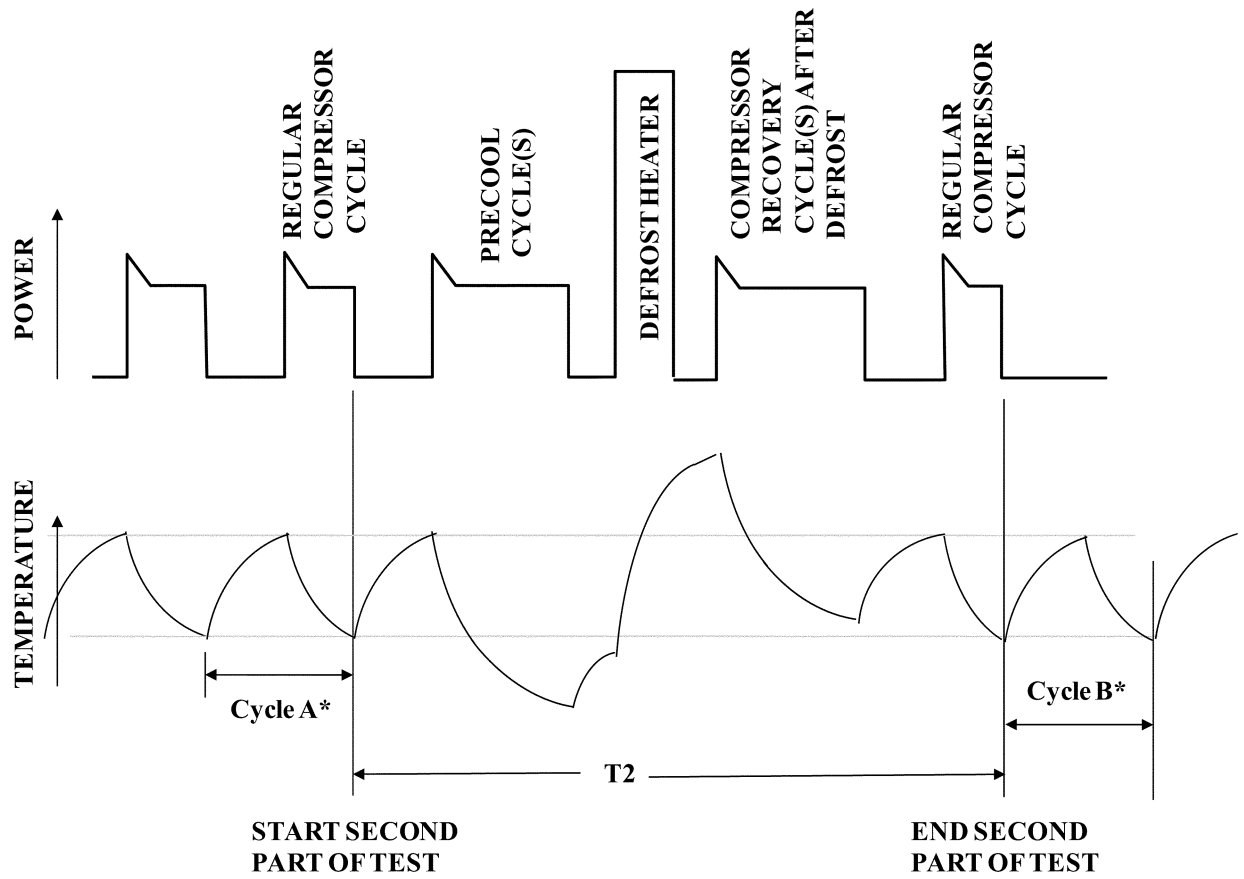
* * * * *

4.2.1.1 Cycling Compressor System. For a system with a cycling compressor, the second part of the test starts at the termination of the last regular compressor ''on'' cycle. The average temperatures of the fresh food and freezer compartments measured from the termination of the previous compressor ''on'' cycle to the termination of the last regular compressor ''on'' cycle must both be within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. If any compressor cycles occur prior to the defrost heater being energized that cause the average temperature in either compartment to deviate from its average temperature for the first part of the test by more than 0.5 °F (0.3 °C), these compressor cycles are not considered regular compressor cycles and must be included in the second part of the test. As an example, a ''precooling'' cycle, which is an extended compressor cycle that lowers the temperature(s) of one or both compartments prior to energizing the defrost heater, must be included in the second part of the test. The test period for the second part of the test ends at the termination of the first regular compressor ''on'' cycle after both compartment temperatures have fully recovered to their stable conditions. The average temperatures of the compartments

measured from this termination of the first regular compressor ''on'' cycle until the termination of the next regular compressor ''on'' cycle must both be within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. See Figure 1.

Figure 1

Long-time Automatic Defrost Diagram for Cycling Compressors

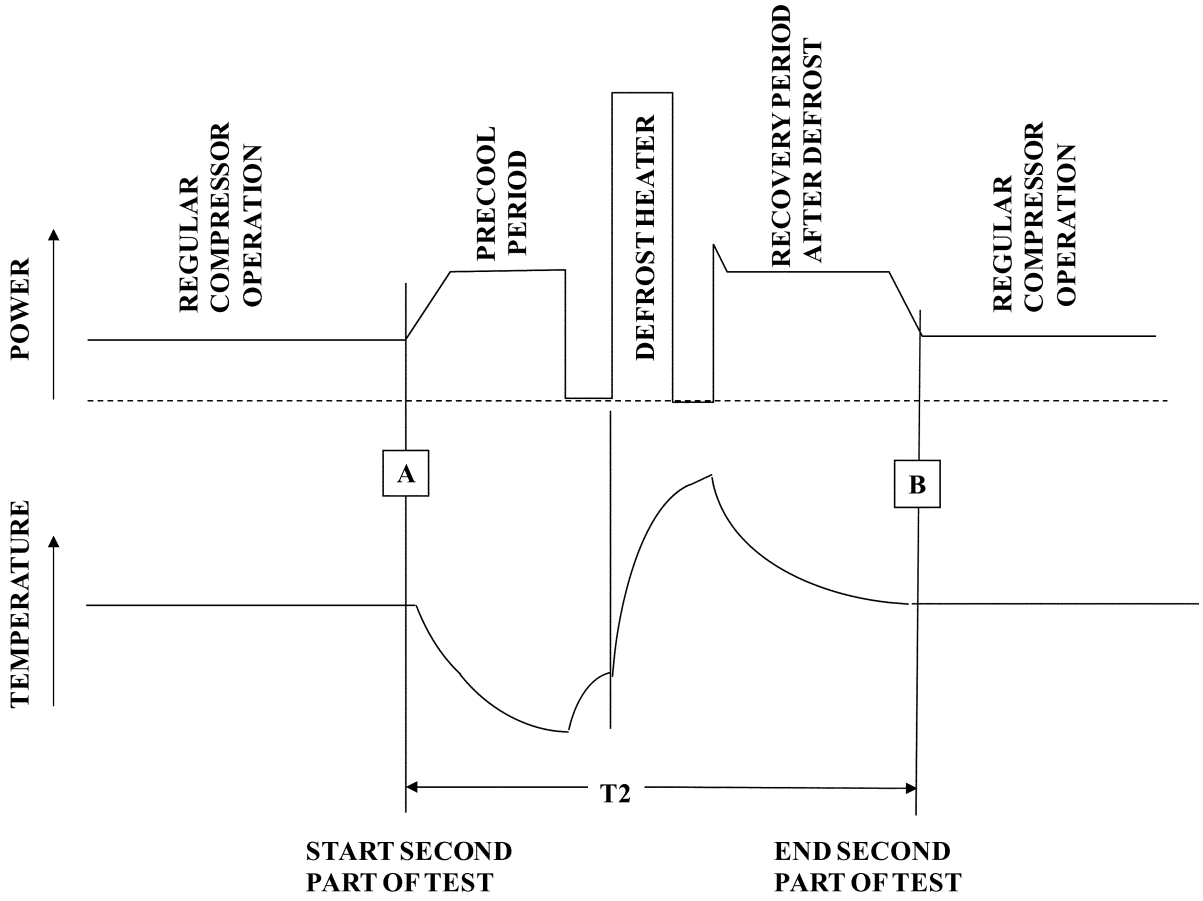


***Average compartment temperature(s) during cycles A & B must be within 0.5 ˚F of the average temperature(s) for the first part of the test.**

4.2.1.2 Non-cycling Compressor System. For a system with a non-cycling compressor, the second part of the test starts at a time before defrost during stable operation when the temperatures of both fresh food and freezer compartments are within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. The second part stops at a time after defrost during stable operation when the temperatures of both compartments are within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. See Figure 2.

Figure 2

Long-time Automatic Defrost Diagram for Non-Cycling Compressors



***Average compartment temperature(s) at times A & B must be within 0.5 ˚F of the average temperature(s) for the first part of the test.**

* * * * *

4.2.4 Systems with Multiple Defrost Frequencies. This section applies to models with long-time automatic or variable defrost control with multiple defrost cycle types, such as models with single compressors and multiple evaporators in which the evaporators have different defrost frequencies. The two-part method in 4.2.1 shall be used. The second part of the method will be conducted separately for each distinct defrost cycle type.

* * * * *

5. Test Measurements

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5.2.1.3 Variable Defrost Control. The energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$ET = (1440 \times EP1/T1) + (EP2 - (EP1 \times T2/T1)) \times (12/CT)$,

Where:

1440 is defined in 5.2.1.1 and EP1, EP2, T1, T2, and 12 are defined in 5.2.1.2;

$CT = (CT_L \times CT_M)/(F \times (CT_M - CT_L) + CT_L)$;

CT_L = least or shortest compressor run time between defrosts in hours rounded to the nearest tenth of an hour (greater than or equal to 6 but less than or equal to 12 hours);

CT_M = maximum compressor run time between defrosts in hours rounded to the nearest tenth of an hour (greater than CT_L but not more than 96 hours);

F = ratio of per day energy consumption in excess of the least energy and the maximum difference in per-day energy consumption and is equal to 0.20.

For variable defrost models with no values for CT_L and CT_M in the algorithm, the default values of 6 and 96 shall be used, respectively.

* * * * *

5.2.1.5 Long-time or Variable Defrost Control for Systems with Multiple Defrost cycle Types. The energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$$ET = (1440 \times EP1/T1) + \sum_{i=1}^{D} \left[\left(EP2_i - (EP1 \times T2_i/T1) \right) \times (12/CT_i) \right]$$

Where:

1440 is defined in 5.2.1.1 and EP1, T1, and 12 are defined in 5.2.1.2;

i is a variable that can equal 1, 2, or more that identifies the distinct defrost cycle types applicable for the refrigerator or refrigerator-freezer;

$EP2_i$ = energy expended in kilowatt-hours during the second part of the test for defrost cycle type i;

$T2_i$ = length of time in minutes of the second part of the test for defrost cycle type i;

CT_i is the compressor run time between instances of defrost cycle type i, for long-time automatic defrost control equal to a fixed time in hours rounded to the nearest tenth of an hour, and for variable defrost control equal to

$(CT_{Li} \times CT_{Mi})/(F \times (CT_{Mi} - CT_{Li}) + CT_{Li})$;

CT_{Li} = least or shortest compressor run time between instances of defrost cycle type i in hours rounded to the nearest tenth of an hour (CT_L for the defrost cycle type with the longest compressor run time between defrosts must be greater than or equal to 6 but less than or equal to 12 hours);

CT_{Mi} = maximum compressor run time between instances of defrost cycle type i in hours rounded to the nearest tenth of an hour (greater than CT_{Li} but not more than 96 hours);

For cases in which there are more than one fixed CT value (for long-time defrost models) or more than one CT_M and/or CT_L value (for variable defrost models) for a given defrost cycle type, an average fixed CT value or average CT_M and CT_L values shall be selected for this cycle type so that 12 divided by this value or values is the frequency of occurrence of the defrost cycle type in a 24 hour period, assuming 50% compressor run time.

F = default defrost energy consumption factor, equal to 0.20.

For variable defrost models with no values for CT_{Li} and CT_{Mi} in the algorithm, the default values of 6 and 96 shall be used, respectively.

D is the total number of distinct defrost cycle types.

■ 3. Appendix B to subpart B of part 430 is amended by:

■ a. Revising section 4.2.1.1 including figure 1;

■ b. Revising section 4.2.1.2, including figure 2; and

■ c. Revising section 5.2.1.3.

The revisions read as follows:

Appendix B to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Freezers

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4. Test Period

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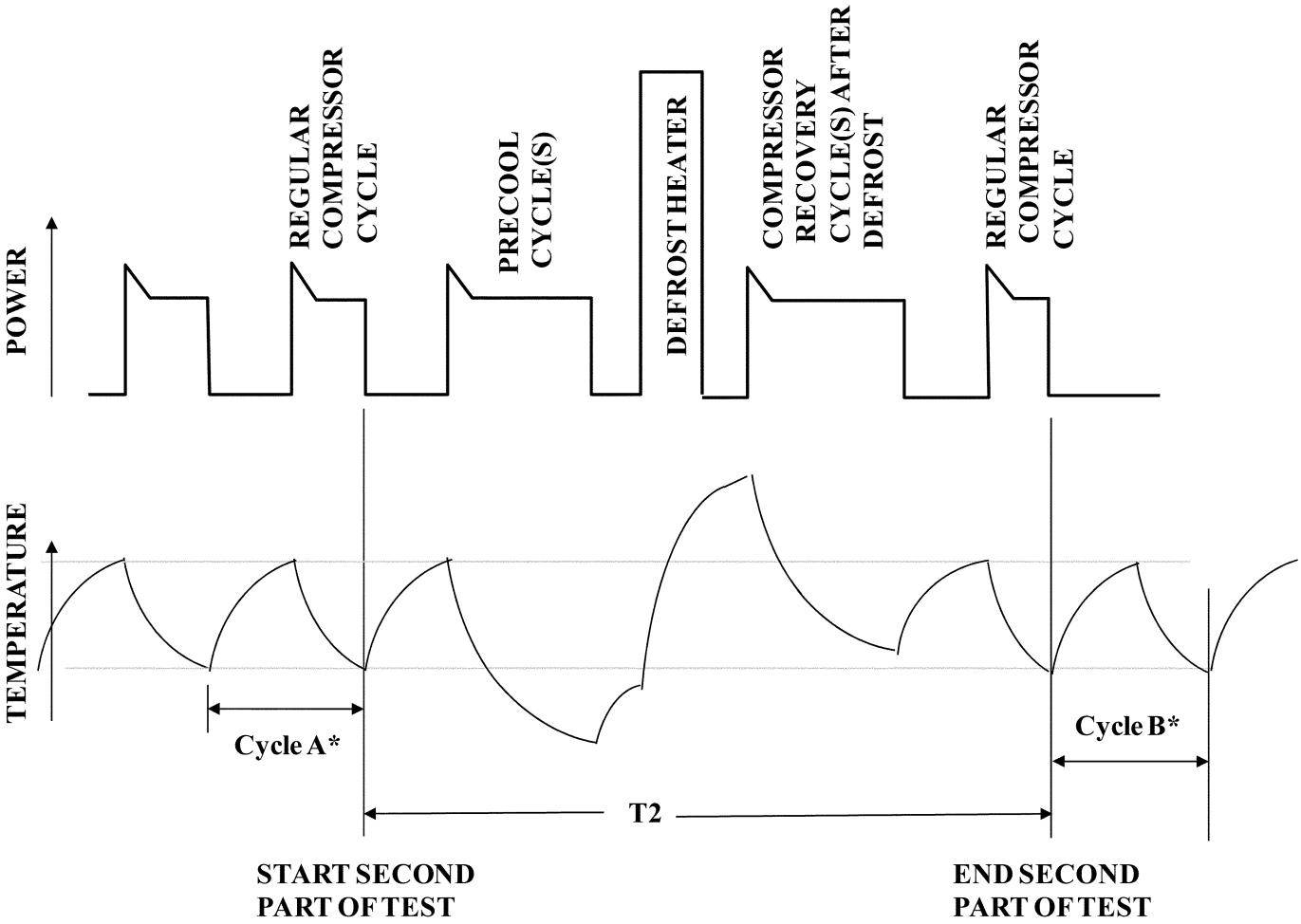
4.2.1.1 Cycling Compressor System. For a system with a cycling compressor, the second part of the test starts at the termination of the last regular compressor ''on'' cycle. The average temperature of the compartment measured from the termination of the previous compressor ''on'' cycle to the termination of the last regular compressor ''on'' cycle must be within 0.5 °F (0.3 °C) of the average temperature of the compartment measured for the first part of the test. If any compressor cycles occur prior to the defrost heater being energized that cause the average temperature in the compartment to deviate from the average temperature for the first part of the test by more than 0.5 °F (0.3 °C), these compressor cycles are not considered regular compressor cycles and must be included in the second part of the test. As an example, a ''precooling'' cycle, which is an extended compressor cycle that lowers the compartment temperature prior to energizing the defrost heater, must be included in the second part of the test. The test period for the second part of the test ends at the termination of the first regular compressor ''on'' cycle after the compartment temperatures have fully recovered to their stable conditions. The average temperature of the compartment measured from this termination of the first regular compressor ''on'' cycle until the termination of the next regular compressor ''on'' cycle must be within 0.5 °F (0.3 °C) of the average temperature of the compartment measured for the first part of the test. See Figure 1.

Figure 1

Long-time Automatic Defrost Diagram for Cycling Compressors

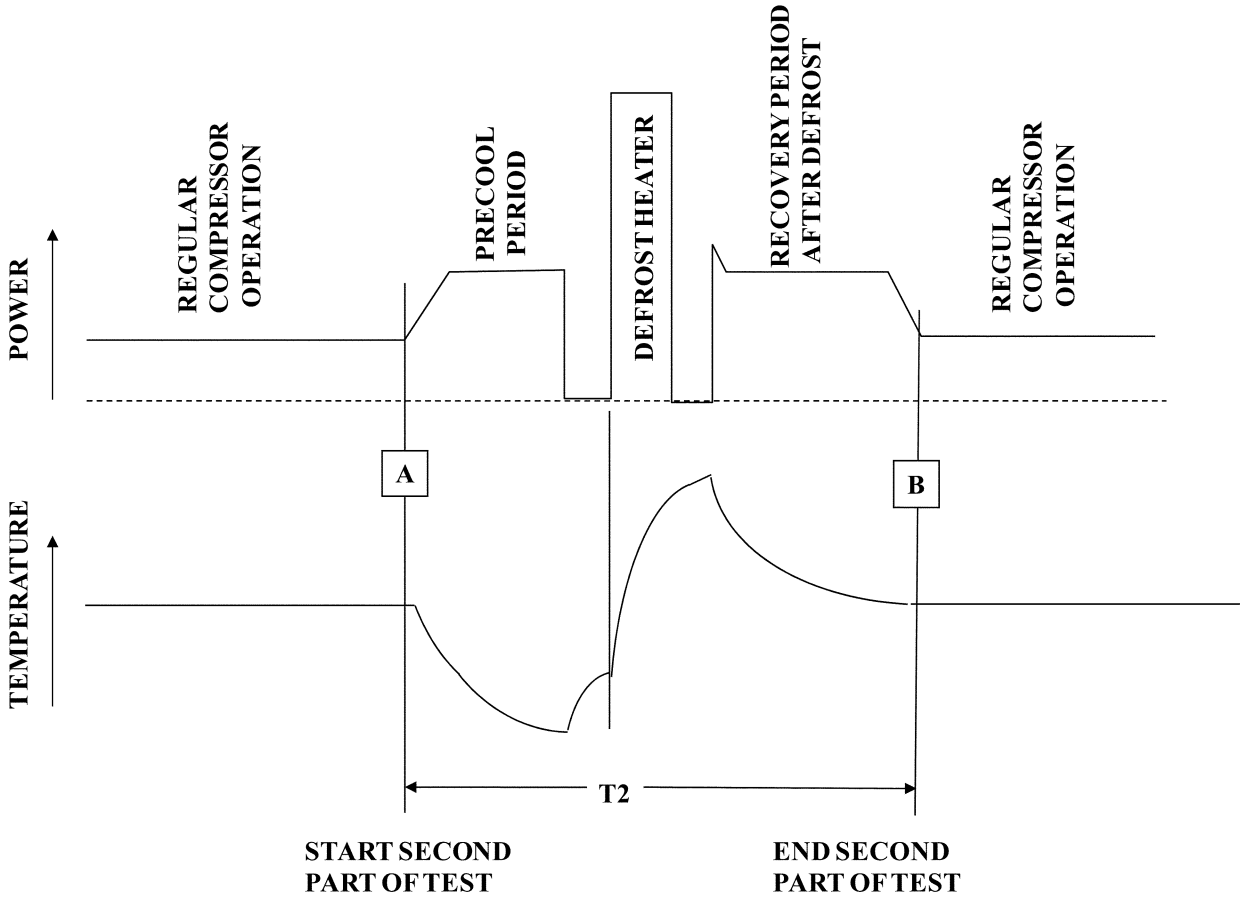


***Average compartment temperature during cycles A & B must be within 0.5 ˚F of the average temperature for the first part of the test.**

4.2.1.2 Non-cycling Compressor System. For a system with a non-cycling compressor, the second part of the test starts at a time before defrost during stable operation when the compartment temperature is within 0.5 °F (0.3 °C) of the average temperature of the compartment measured for the first part of the test. The second part stops at a time after defrost during stable operation when the compartment temperature is within 0.5 °F (0.3 °C) of the average temperature of the compartment measured for the first part of the test. See Figure 2.

Figure 2

Long-time Automatic Defrost Diagram for Non-cycling Compressors



***Average compartment temperature at times A & B must be within 0.5 ˚F of the average temperature for the first part of the test.**

* * * * *

5. Test Measurements

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5.2.1.3 Variable Defrost Control. The energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$ET = (1440 \times K \times EP1/T1) + (EP2 - (EP1 \times T2/T1)) \times K \times (12/CT)$,

Where:

ET, K, and 1440 are defined in section 5.2.1.1;

EP1, EP2, T1, T2, and 12 are defined in section 5.2.1.2;

$CT = (CT_L \times CT_M)/(F \times (CT_M - CT_L) + CT_L)$

Where:

CT_L = least or shortest compressor run time between defrosts in hours rounded to the nearest tenth of an hour (greater than or equal to 6 hours but less than or equal to 12 hours);

CT_M = maximum compressor run time between defrosts in hours rounded to the nearest tenth of an hour (greater than CT_L but not more than 96 hours);

F = ratio of per day energy consumption in excess of the least energy and the maximum difference in per-day energy consumption and is equal to 0.20.

For variable defrost models with no values for CT_L and CT_M in the algorithm, the default values of 6 and 96 shall be used, respectively.

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[FR Doc. 2012–1341 Filed 1–24–12; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2011–0219; Directorate Identifier 2010–NM–228–AD; Amendment 39–16921; AD 2012–01–09]

RIN 2120–AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain The Boeing Company Model 757–200, –200CB, and –300 series airplanes with off-wing escape slide systems installed. This AD was prompted by reports of in-flight loss of the off-wing escape slide.