[6450-01-P]

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

[Case No. RF-020]

Publication of the Petition for Waiver and Notice of Granting the Application for Interim Waiver of Sub-Zero from the Department of Energy Residential Refrigerator and Refrigerator-Freezer Test Procedure

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

ACTION: Notice of Petition for Waiver, Notice of Granting Application for Interim Waiver, and Request for Public Comments.

SUMMARY: This notice announces receipt of and publishes the Sub-Zero,Inc. (Sub-Zero) petition for waiver (hereafter, "petition") from specified portions of the U.S. Department of Energy (DOE) test procedure for determining the energy consumption of electric refrigerators and refrigerator-freezers. The waiver request pertains to the basic models set forth in Sub-Zero's petition that incorporate dual compressors. In its petition, Sub-Zero provides an alternate test procedure that resolves difficulties in testing dual compressor systems according to the DOE test procedure. DOE solicits comments, data, and information concerning Sub-Zero's petition and the suggested alternate test procedure. DOE also publishes notice of the grant of an interim waiver to Sub-Zero.

DATES: DOE will accept comments, data, and information with respect to the Sub-Zero Petition until, but no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: You may submit comments, identified by case number "RF-020," by any of the following methods:

- Federal eRulemaking Portal: http://www.regulations.gov. Follow the instructions for submitting comments.
- E-mail: AS_Waiver_Requests@ee.doe.gov Include the case number [Case No. RF-020] in the subject line of the message.
- Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J/1000 Independence Avenue, SW, Washington, DC 20585-0121. Telephone: (202) 586-2945. Please submit one signed original paper copy.
- Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 950 L'Enfant Plaza SW, Suite 600, Washington, DC 20024. Please submit one signed original paper copy.

Docket: For access to the docket to review the background documents relevant to this matter, you may visit the U.S. Department of Energy, 950 L'Enfant Plaza SW, Washington, DC, 20024; (202) 586-2945, between 9:00 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays. Available documents include the following items: (1) this notice; (2) public comments received; (3) the petition for waiver and application for interim waiver; and (4) prior DOE

rulemakings regarding similar refrigerator-freezers. Please call Ms. Brenda Edwards at the above telephone number for additional information.

FOR FURTHER INFORMATION CONTACT: Dr. Michael G. Raymond, U.S. Department of Energy, Building Technologies Program, Mail Stop EE-2J, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-9611. E-mail: Michael.Raymond@ee.doe.gov.

Ms. Elizabeth Kohl, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC-71, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0103. Telephone: (202) 586-7796. E-mail: Elizabeth.Kohl@hq.doe.gov.

SUPPLEMENTARY INFORMATION:

I. Background and Authority

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA), Pub. L. 94-163 (42 U.S.C. 6291-6309, as codified, established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances, which includes the electric refrigerators and refrigerator-freezers that are the focus of this notice.[1] Part B includes definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require information and reports from manufacturers. Further, Part B authorizes the Secretary of Energy to prescribe test procedures that are reasonably designed to produce results which measure the energy efficiency, energy use, or

[1] For editorial reasons, upon codification in the U.S. Code, Part B was re-designated Part A.

estimated annual operating costs of a covered product, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The test procedure for electric refrigerators and electric refrigerator-freezers is contained in 10 CFR part 430, subpart B, appendix A1.

DOE's regulations for covered products contain provisions allowing a person to seek a waiver for a particular basic model from the test procedure requirements for covered consumer products when (1) the petitioner's basic model for which the petition for waiver was submitted contains one or more design characteristics that prevent testing according to the prescribed test procedure, or (2) when prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 430.27(a)(1). Petitioners must include in their petition any alternate test procedures known to the petitioner to evaluate the basic model in a manner representative of its energy consumption characteristics. 10 CFR 430.27(b)(1)(iii).

The Assistant Secretary for Energy Efficiency and Renewable Energy (the Assistant Secretary) may grant a waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(l). Waivers remain in effect pursuant to the pro-visions of 10 CFR 430.27(m).

Any interested person who has submitted a petition for waiver may also file an application for interim waiver of the applicable test procedure requirements. 10 CFR 430.27(a)(2). The Assistant Secretary will grant an interim waiver request if it is determined that the applicant will experience economic hardship if the interim waiver is denied, if it appears likely that the petition

for waiver will be granted, and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the petition for waiver. 10 CFR 430.27(g).

II. Petition for Waiver of Test Procedure

On September 6, 2011, Sub-Zero filed a petition for waiver from the test procedure applicable to residential electric refrigerators and refrigerator-freezers set forth in 10 CFR Part 430, Subpart B, Appendix A1. Sub-Zero is designing new refrigerator-freezers that incorporate dual compressors. In its petition, Sub-Zero seeks a waiver from the existing DOE test procedure applicable to refrigerators and refrigerator-freezers under 10 CFR Part 430 for Sub-Zero's dual compressor products. Sub-Zero states that the test procedure was designed to test independent, sealed systems while Sub-Zero's dual compressor products have shared systems. Sub-Zero further states that it may not be possible to use the DOE test procedure for these products, or that use of the DOE test procedure would provide inaccurate results. In its petition, Sub-Zero set forth an alternate test procedure developed in conjunction with an independent test laboratory.

III. Application for Interim Waiver

Sub-Zero also requested an interim waiver from the existing DOE test procedure. Under 10 CFR 430.27(b)(2), each application for interim waiver must demonstrate likely success of the Petition for Waiver and address the economic hardship and/or competitive disadvantage that is likely to result absent a favorable determination on the application for interim waiver." An interim waiver may be granted if it is determined that the applicant will experience economic hardship if the application for interim waiver is denied; if it appears likely that the petition for

waiver will be granted; and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination of the petition for waiver. 10 CFR 430.27(g).

DOE has determined that Sub-Zero's application for interim waiver does not provide sufficient market, equipment price, shipments and other manufacturer impact information to permit DOE to evaluate the economic hardship Sub-Zero might experience absent a favorable determination on its application for interim waiver. DOE recognizes, however, that the DOE test procedure for dual compressor systems assumes independent, sealed system and that Sub-Zero dual compressor refrigerators have shared systems. As a result, it is not possible to test these products using the DOE test procedure, and use of the test procedure would provide test results so unrepresentative as to provide materially inaccurate comparative data. Sub-Zero worked with an independent testing laboratory to develop a test procedure that would accurately measure the energy consumption of its dual compressor products while alleviating the testing difficulties, and submitted the results as an alternate test procedure. DOE reviewed the alternate procedure and determined that it will alleviate the testing problems associated with Sub-Zero's implementation of a dual compressor system. Therefore, it appears likely that Sub-Zero's petition for waiver will be granted.

For the reasons stated above, DOE grants Sub-Zero's application for interim waiver from testing of its refrigerator-freezer product line containing dual compressors. Therefore, *it is ordered that*:

The application for interim waiver filed by Sub-Zero is hereby granted for Sub-Zero's refrigerator-freezer product lines that incorporate dual compressors subject to the following specifications and conditions:

(1) Sub-Zero shall be required to test and rate its refrigerator-freezer product line containing dual compressors according to the alternate test procedure as set forth in section IV, "Alternate test procedure."

(2) The interim waiver applies to the following basic model groups:

700TCI
700TR
736TCI
736TCIE
736TR
736TRE
BI-30U/O
BI-30U/S/PH
BI-30U/S/TH
BI-30UA/O
BI-30UA/S/PH
BI-30UA/S/TH
BI-30UG/O
BI-30UG/S/PH
BI-30UG/S/TH
BI-36S/O
BI-36S/S/PH
BI-36S/S/TH
BI-36U/O
BI-36U/S/PH
BI-36U/S/TH
BI-36UA/O
BI-36UA/S/PH
BI-36UA/S/TH
BI-36UFD/O
BI36UFD/S/PH
BI36UFD/S/TH

BI-36UG/O
BI-36UG/S/PH
BI-36UG/S/TH
BI-42S/O
BI-42S/S/PH
BI-42S/S/TH
BI-42SD/O
BI-42SD/S/PH
BI-42SD/S/TH
BI-42SID/O
BI-42SID/S/PH
BI-42SID/S/TH
BI-48S/O
BI-48S/S/PH
BI-48S/S/TH
BI-48SD/O
BI-48SD/S/PH
BI-48SD/S/TH
BI-48SID/O
BI-48SID/S/PH
BI-48SID/S/TH
ID-36CI
IT-27CI
IT-30CI
IT-30CIID
IT-36CI
IT-36CIID
PRO48
PRO48G
PRO48HAG

DOE makes decisions on waivers and interim waivers for only those models specifically set out in the petition, not future models that may be manufactured by the petitioner. Sub-Zero may submit a new or amended petition for waiver and request for grant of interim waiver, as appropriate, for additional models of refrigerator-freezers for which it seeks a waiver from the DOE test procedure. In addition, DOE notes that grant of an interim waiver or waiver does not release a petitioner from the certification requirements set forth at 10 CFR Part 429.

Further, this interim waiver is conditioned upon the presumed validity of statements, representations, and documents provided by the petitioner. DOE may revoke or modify this interim waiver at any time upon a determination that the factual basis underlying the petition for waiver is incorrect, or upon a determination that the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics.

IV. Alternate Test Procedure

For the duration of the interim waiver, Sub-Zero shall be required to test the products listed above according to the test procedures for residential electric refrigerator-freezers prescribed by DOE at 10 CFR Part 430, Subpart B, Appendix A1, except that, for the Sub-Zero products listed above only, replace the multiple defrost system section 5.2.1.4 of Appendix A1 with the following:

5.2.1.4 Dual Compressor Systems with Dual Automatic Defrost. The two-part test method in section 4.2.1 must be used, and the energy consumption in kilowatt-hours per day shall be calculated equivalent to:

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

Where:

• 1440 = number of minutes in a day

• ET is the test cycle energy (kWh/day);

• i is the variable that can equal to 1,2 or more that identifies the compartment with distinct defrost system;

• D is the total number of compartments with distinct defrost systems;

• EP1 is the dual compressor energy expended during the first part of the test (it is calculated for a whole number of freezer compressor cycles at least 24 hours in duration and may be the summation of several running periods that do not include any precool, defrost, or recovery periods);

• T1 is the length of time for EP1 (minutes);

• EP2i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);

• T2i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.

• CTi is the compressor on time between defrosts for only compartment i. CTi for compartment i with long time automatic defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.2. CTi for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.3. (hours rounded to the nearest tenth of an hour).

Stabilization:

The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

Steady State for EP1:

The temperature average for the first and last compressor cycle of the test period must be within 1.0°F (0.6°C) of the test period temperature average for each compartment. Make this determination for the fresh food compartment for the fresh food compressor cycles closest to the start and end of the test period. If multiple segments are used for test period 1, each segment must comply with above requirement.

Steady State for EP2i:

The second (defrost) part of the test must be preceded and followed by regular compressor cycles. The temperature average for the first and last compressor cycle of the test period must be within 1.0°F (0.6°C) of the EP1 test period temperature average for each compartment.

Test Period for EP2i, T2i:

EP2i includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor steady state run cycles to allow T2i to be at least 24 hours. The test period shall start at the end of a regular freezer compressor on-cycle after the previous defrost occurrence (refrigerator or freezer). The test period also includes the target defrost and following regular

freezer compressor cycles, ending at the end of a regular freezer compressor on-cycle before the next defrost occurrence (refrigerator or freezer). If the previous condition does not meet 24 hours time, additional EP1 steady state segment data could be included. Steady state run cycle data can be utilized in EP1 and EP2i.

Test Measurement Frequency

Measurements shall be taken at regular interval not exceeding 1 minute.

V. Summary and Request for Comments

Through today's notice, DOE grants Sub-Zero an interim waiver from the specified portions of the test procedure applicable to Sub-Zero's line of refrigerator-freezers with dual compressors and announces receipt of Sub-Zero's petition for waiver from those same portions of the test procedure. DOE publishes Sub-Zero's petition for waiver pursuant to 10 CFR 430.27(b)(1)(iv). The petition includes a suggested alternate test procedure to determine the energy consumption of Sub-Zero's specified refrigerator-freezers with dual compressors. Sub-Zero is required to follow this alternate procedure as a condition of its interim waiver, and DOE is considering including this alternate procedure in its subsequent Decision and Order.

DOE solicits comments from interested parties on all aspects of the petition, including the suggested alternate test procedure and calculation methodology. Pursuant to 10 CFR 430.27(b)(1)(iv), any person submitting written comments to DOE must also send a copy of such comments to the petitioner. The contact information for the petitioner is: Paul V. Sikir, Vice President of Design Engineering, Sub-Zero, Inc., 4717 Hammersley Road, Madison, Wisconsin

53711. All submissions received must include the agency name and case number for this proceeding. Submit electronic comments in WordPerfect, Microsoft Word, Portable Document Format (PDF), or text (American Standard Code for Information Interchange (ASCII)) file format and avoid the use of special characters or any form of encryption. Wherever possible, include the electronic signature of the author. DOE does not accept telefacsimiles (faxes).

According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit two copies to DOE: one copy of the document including all the information believed to be confidential, and one copy of the document with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Issued in Washington, DC, on November 8, 2011.

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Kathleen B. Hogan
Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy

September 6, 2011

Henry Kelly
Energy Efficiency and Renewable Energy
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Assistant Secretary Kelly:

Pursuant to 10 CFR 430.27, Sub-Zero respectfully requests expedited attention to this revised request for both an interim and final waiver to modify the DOE test procedure (Test Procedures for Refrigerators, Refrigerator-Freezers, and Freezers (Final Rule and Interim Final Rule), 75 Fed. Reg. 78,810 (Dec. 16, 2010)) for Sub-Zero refrigerators using two compressors. Without this waiver, we are unable to certify new dual compressor models as compliant with Energy Star and/or DOE minimum efficiency standards.

Sub-Zero is a family-owned company that has been headquartered in Madison, Wisconsin for over 60 years. Sub-Zero developed the niche market for customized built-in residential refrigeration using dual compressors and manufactures all our products in the United States, with factories in Wisconsin and Arizona. While technically not a "small business" using DOE's definition, Sub-Zero is a small producer of refrigerators striving to compete in an age of large, multi-national manufacturers and is one of the few remaining U.S. companies that produce all of its refrigerator products here in the U.S.

In previous comments to the Department, The Association of Home Appliance Manufacturers and individual manufacturers including Sub-Zero urged DOE to consider the technical difficulties imposed by the DOE dual compressor test method. DOE's approach in the final test procedure is difficult, if not impossible, to apply. In fact, it will require waivers, such as this one, because many products simply do not work the way DOE's equation assumes. DOE's approach assumes independent, sealed systems. Sub-Zero dual compressor refrigerators do not have independent, sealed systems—they have shared systems. Thus, DOE's approach for these products, at best, requires several added measurements to comply (adding burden), and may even provide insurmountable obstacles, leading to test results so misrepresentative as to provide inaccurate energy consumption data.

CSA International, which is conducting testing for the AHAM Refrigerator-Freezer Verification Program, has informed us that they also believe that the DOE test procedure is unworkable for our dual compressor refrigerators. The modified test procedure that we propose for DOE's consideration in this waiver request is the product of analysis by CSA International, Sub-Zero and General Electric Appliances resulting in a practical, accurate and repeatable method. CSA International also intends to submit this modified procedure for adoption by Natural Resources Canada.

Since the vast majority of Sub-Zero's models utilize dual compressors, the company's future viability is clearly threatened by this situation and we sincerely ask DOE to grant immediate relief.

Issues with the DOE Test Procedure

AHAM provided an alternative test procedure in its August 10, 2010 comments on the proposed test procedure rule. DOE responded in 75 Fed. Reg. 78,810 (Dec. 16, 2010): "After analyzing this alternative proposal for multiple compressors, DOE does not believe that it simplifies testing of systems with two or more compressors. In particular, it does not alleviate the test procedure burden associated with having to separately measure the energy use for the different systems, which is part of the procedure of the current dual-compressor product test procedure. DOE understands that this is a key difficulty in testing such systems since it introduces burden and that, in some cases, it may be impossible to accomplish, depending on the details of the internal wiring of such products…DOE acknowledges that this final rule does not eliminate the difficulty of obtaining separate energy use measurements required in the test procedure for dual compressor products. However, as discussed above, neither does the AHAM-proposed approach." Thus, DOE acknowledged problems with the current test procedure but did not believe the AHAM proposal provided an adequate solution. We believe the proposed approach in this waiver petition, developed by CSA International, GE and Sub-Zero, addresses DOE's concerns.

Proposed Modified Dual Compressor Test Procedure

The DOE test procedure dual compressor calculation requires the system to be divided into two separate systems– refrigerator and freezer. This is extremely difficult due to the fact that all dual compressor systems use a single power inlet and almost all, including Sub-Zero units, use a single electronic control to control both compressors. Energy testing protocols and laboratory equipment and measurement methods are not capable of evaluating each compressor system separately and individually. Also, the current steady state definition may not be achievable in the dual compressor system due the time required to calculate steady state.

We propose a modified procedure to measure dual compressor energy. This method will use a single electrical data collection system which is same as used in any variable defrost unit energy test procedure. Sub-Zero proposes simplifying EP1 to provide an accurate method for measuring energy that is simpler and less burdensome. It will also decrease the testing burden on manufacturers. To ensure accuracy, dual compressor energy times must be of sufficient length to reduce synchronization errors. With dual compressors, a short T1 or T2 may result in a significant error for the system that does not have full compressor cycles represented. Lengthening out these times reduces this effect. To further reduce error, Sub-Zero recommends that the frequency of measurements taken during the testing should be increased. This will reduce synchronization error and is more consistent with test methods being used in manufacturer's and in third party verification company's labs.

Thus, Sub-Zero requests that DOE modify the multiple defrost system equation in 5.2.1.4 of Appendix A1 as follows:

• 1440 = number of minutes in a day

• ET is the test cycle energy (kWh/day);

• i is the variable that can equal to 1,2 or more that identifies the compartment with distinct defrost system;

• D is the total number of compartments with distinct defrost systems;

• EP1 is the dual compressor energy expended during the first part of the test (it is calculated for a whole number of freezer compressor cycles at least 24 hours in duration and may be the summation of several running periods that do not include any precool, defrost, or recovery periods);

• T1 is the length of time for EP1 (minutes);

• EP2i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);

• T2i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.

• CTi is the compressor on time between defrosts for only compartment i. CTi for compartment i with long time automatic defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.2. CTi for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.3. (rounded to the nearest tenth of an hour) (hours).

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

Stabilization:
The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

Steady State for EP1:
The temperature average for the first and last compressor cycle of the test period must be within 1.0°F (0.6°C) of the test period temperature average for each compartment. Make this determination for the fresh food compartment for the fresh food compressor cycles closest to the start and end of the test period. If multiple segments used for test period 1, each segment must comply with above requirement.

Steady State for EP2i:
The second (defrost) part of the test must be preceded and followed by normal compressor cycle. The temperature average for the first and last compressor cycle of the test period must be within 1.0°F (0.6°C) of the EP1 test period temperature average for each compartment.

Test Period for EP2i, T2i:
EP2i includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor steady state run cycles to allow T2i to be at least 24 hours. The test period shall start

at the beginning of normal compressor cycle after the previous defrost occurrence (refrigerator or freezer). The test period includes the target defrost and following normal compressor cycles until the next defrost occurrence (refrigerator or freezer). If the previous condition does not meet 24 hours time, additional EP1 steady state segment data could be included. Steady state run cycle data can be utilized in EP1 and EP2i.

Test Measurement Frequency

Measurements shall be taken at regular interval not exceeding 1 minute.

Affected Models

The basic models of Sub-Zero dual compressor refrigerators affected are:

700TCI
700TR
736TCI
736TCIE
736TR
736TRE
BI-30U/O
BI-30U/S/PH
BI-30U/S/TH
BI-30UA/O
BI-30UA/S/PH
BI-30UA/S/TH
BI-30UG/O
BI-30UG/S/PH
BI-30UG/S/TH
BI-36S/O
BI-36S/S/PH
BI-36S/S/TH
BI-36U/O
BI-36U/S/PH
BI-36U/S/TH
BI-36UA/O
BI-36UA/S/PH
BI-36UA/S/TH
BI-36UFD/O
BI36UFD/S/PH
BI36UFD/S/TH
BI-36UG/O
BI-36UG/S/PH
BI-36UG/S/TH
BI-42S/O
BI-42S/S/PH
BI-42S/S/TH
BI-42SD/O
BI-42SD/S/PH

BI-42SD/S/TH
BI-42SID/O
BI-42SID/S/PH
BI-42SID/S/TH
BI-48S/O
BI-48S/S/PH
BI-48S/S/TH
BI-48SD/O
BI-48SD/S/PH
BI-48SD/S/TH
BI-48SID/O
BI-48SID/S/PH
BI-48SID/S/TH
ID-36CI
IT-27CI
IT-30CI
IT-30CIID
IT-36CI
IT-36CIID
PRO48
PRO48G
PRO48HAG

In summary, this is a critical issue for our company and we request that DOE expedite the handling of this petition for an interim and final waiver. Sub-Zero would be pleased to discuss this waiver petition with DOE and provide any additional information that the Department might require. We will also notify all manufacturers of domestically marketed refrigerators known to us of this waiver petition by letter.

Sincerely,

Paul V. Sikir
Vice President of Design Engineering

Cc: Kathleen Hogan, Deputy Assistant Secretary for Energy Efficiency in the Office of Energy Efficiency and Renewable Energy (EERE)

[FR Doc. 2011-29715 Filed 11/16/2011 at 8:45 am; Publication Date: 11/17/2011]