

defects the Department addressed as described above, and the fact no comments were submitted concerning the Department's interim determination, the Department concludes that the CSA International Motor Efficiency Verification Service Program satisfactorily meets the criteria in 10 CFR 431.27.

Therefore, the Department's final determination is to classify the CSA International Motor Efficiency Verification Service Program as nationally recognized in the United States for the purposes of section 345(c) of EPCA. This final determination is effective upon the publication of this notice in the **Federal Register**, notwithstanding the Department's final determination, in the event that the CSA International Motor Efficiency Verification Service Program fails to continue to meet the criteria in 10 CFR 431.27 for a nationally recognized certification program, the Department can withdraw recognition after following the procedural requirements in 10 CFR 431.28(g).

Issued in Washington, DC, on December 19, 2002.

**David K. Garman,**

*Assistant Secretary, Energy Efficiency and Renewable Energy.*

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## DEPARTMENT OF ENERGY

### Office of Energy Efficiency and Renewable Energy

[Docket No. EE-RM-96-400]

#### **Energy Efficiency Program for Certain Commercial and Industrial Equipment: Final Determination Concerning the Petition for Recognition of Underwriters Laboratories Inc. as a Nationally Recognized Certification Program for Electric Motor Efficiency**

**AGENCY:** Office of Energy Efficiency and Renewable Energy; Department of Energy.

**ACTION:** Final determination.

**SUMMARY:** Today's notice announces the Department of Energy's final determination classifying the Underwriters Laboratories Inc. Energy Verification Service Program for Electric Motors as a nationally recognized certification program in the United States for the purposes of section 345(c) of the Energy Policy and Conservation Act.

**DATES:** This final determination is effective December 27, 2002.

#### **FOR FURTHER INFORMATION CONTACT:**

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##### III. Final Determination

##### **I. Introduction**

On July 5, 2002, the Department of Energy (DOE or Department) published in the **Federal Register** an interim determination to classify Underwriters Laboratories Inc.'s Energy Verification Service Program for Electric Motors (UL EVS Program or Program) as a nationally recognized certification program for electric motor efficiency and solicited comments, data and information with respect to that interim determination. 67 FR 45028. The Department did not receive any comments concerning its interim determination.

##### *A. Authority*

Part C of Title III of the Energy Policy and Conservation Act (EPCA) contains energy conservation requirements for electric motors, including requirements for test procedures, energy efficiency standards, and compliance certification

(42 U.S.C. 6311-6316). Section 345(c) of EPCA directs the Secretary of Energy to require motor manufacturers "to certify, through an independent testing or certification program nationally recognized in the United States, that [each electric motor subject to EPCA efficiency standards] meets the applicable standard." 42 U.S.C. 6316(c). Regulations to implement this EPCA directive, with respect to certification programs, are codified in 10 CFR Part 431 at sections 431.123, *Compliance Certification*, 431.27, *Department of Energy recognition of nationally recognized certification programs*, and 431.28, *Procedures for recognition and withdrawal of recognition of accreditation bodies and certification programs*.

For a certification program to be classified by the Department as being nationally recognized, the program must: (1) Have satisfactory standards and procedures for conducting and administering a certification system, and for granting a certificate of conformity; (2) be independent; (3) be qualified to operate in a highly competent manner; and (4) be expert in the test procedures and methodologies in Institute of Electrical and Electronics Engineers (IEEE) Standard 112-1996 Test Method B and CSA Standard C390-93 Test Method (1), or similar procedures and methodologies for determining the energy efficiency of electric motors; and (5) have satisfactory criteria and procedures for selecting and sampling electric motors for energy efficiency testing. 10 CFR 431.27(b).

##### *B. Background*

Pursuant to 10 CFR 431.27, UL submitted a petition, "Classification in Accordance with 10 CFR 431.27," (UL Petition or the Petition), which was published in the **Federal Register** on October 3, 2001. 66 FR 50355. The Petition consisted of a letter from UL to the Department, narrative statements on five subject areas, and supporting documentation. At the same time, DOE solicited comments, data, and information as to whether UL's Petition should be granted. The Department received two comments. The Department also conducted an independent investigation concerning the UL Petition pursuant to 10 CFR 431.28(f).

The supporting documents that accompanied the Petition, as well as the material UL subsequently submitted to the Department in support of UL's Petition, continue to be available in the Freedom of Information Reading Room, U.S. Department of Energy, Forrestal Building, Room 1E-190, 1000

Independence Avenue, SW., Washington, DC 20585-0101, Telephone (202) 586-3142, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. Additional information about the UL EVS Program and its Petition to be a nationally recognized certification program for electric motor efficiency can be obtained on the World Wide Web at [http://www.eren.doe.gov/buildings/codes\\_standards/rules/index.htm](http://www.eren.doe.gov/buildings/codes_standards/rules/index.htm), or from Ms. Jodine E. Smyth, Senior Coordinator, Global Accreditation Services, Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062, or Telephone: (847) 272-8800, ext. 42418; or Telefax (847) 509-6321, or electronic mail at [Jodine.E.Smyth@us.ul.com](mailto:Jodine.E.Smyth@us.ul.com).

The Department initially received comments on the UL Petition from Advanced Energy, dated October 12, 2001, and Emerson Motor Company, dated October 15, 2001. Advanced Energy is an independent motor testing facility and Emerson is a manufacturer of electric motors. In general, these commenters stated that UL was not qualified to test and certify electric motors for energy efficiency for the purposes of section 345(c) of EPCA.

After reviewing UL's Petition as well as other applicable documents, including the public comments and facts found through its investigation, the Department issued its interim determination, which was published in the **Federal Register** on July 5, 2002, and notified UL in writing of that interim determination pursuant to 10 CFR 431.28(d). See 67 FR 45028. After review of any comments and information submitted in response to the interim determination the Department is required to publish in the **Federal Register** an announcement of its final determination on the Petition. See 10 CFR 431.28(e). This notice sets forth DOE's final determination.

## II. Discussion

### A. General

For the Department to classify a certification program as "nationally recognized," the program must meet the following criteria:

*Sections 431.27(b)(1) and (c)(1) of 10 CFR Part 431* set forth criteria and guidelines for the standards and procedures for conducting and administering a certification system and for granting a certificate of conformity. As such, a certification program must have satisfactory standards and procedures for conducting and administering a certification system, including periodic follow up activities

to assure that basic models of electric motors continue to conform to the efficiency levels for which they were certified and for granting a certificate of conformity. International Standards Organization/International Electrotechnical Commission (ISO/IEC) Guide 65 (discussed in 10 CFR 431.27(c)(3) and also below) sets forth the general requirements intended to ensure a certification program is operated in a consistent and reliable manner. These requirements address: (1) Impartiality; (2) sufficient personnel having the necessary education, training, technical knowledge and experience; (3) relevant procedures for sampling, testing and inspecting the product, and the means necessary to evaluate conformance by a manufacturer with those standards; (4) surveillance and periodic audits to ensure continued conformance with the applicable standards; (5) subcontracting work, such as testing, with proper arrangements to ensure competence, impartiality, and compliance with the applicable standards; (6) procedures to control records, documents and data, including review and approval by appropriately authorized personnel; and (7) control over use and display of certificates and marks of conformity.

*Sections 431.27(b)(2) and (c)(2) of 10 CFR Part 431* set forth criteria and guidelines for independence. A certification program must be independent of electric motor manufacturers, importers, distributors, private labelers or vendors. It cannot be affiliated with, have financial ties with, be controlled by, or be under common control with any such entity. Further, it should disclose any relationship it believes might appear to create a conflict of interest. ISO/IEC Guide 65 sets forth requirements for a certification program to be impartial and requires that a program have a documented structure that safeguards impartiality. For example, each decision on certification is made by a person(s) different from those who carried out the evaluation or actual testing of the motor. A certification program's policies and procedures must distinguish between product certification and other activities, its certification process must be free from any commercial, financial and other pressures that might influence decisions, and it must have a committee structure where members are chosen to provide a balance of affected interests.

*Sections 431.27(b)(3) and (c)(3) of 10 CFR Part 431* set forth criteria and guidelines requiring that a certification organization must be qualified to operate a certification system in a highly competent manner. Of particular

relevance is documentary evidence that establishes experience in the application of guidelines contained in ISO/IEC Guide 65: 1996, *General requirements for bodies operating product certification systems*, ISO/IEC Guide 27: 1983, *Guidelines for corrective action to be taken by a certification body in the event of either misapplication of its mark of conformity to a product, or products which bear the mark of the certification body being found to subject persons or property to risk*, ISO/IEC Guide 28: 1982, *General rules for a model third-party certification system for products*, as well as experience in overseeing compliance with the guidelines contained in the ISO/IEC Guide 25: 1990, *General requirements for the competence of calibration and testing laboratories*.

*Sections 431.27(b)(4) and (c)(4) of 10 CFR Part 431* set forth criteria and guidelines requiring that a certification program must be expert in the content and application of the test procedures and methodologies in IEEE Standard 112-1996 Test Method B and CSA Standard C390-93 Test Method (1). Of particular relevance would be documentary evidence that establishes experience in the application of guidelines contained in the ISO/IEC Guide 25.

ISO/IEC Guide 25 addresses general requirements for establishing quality systems in laboratories and for recognizing their competence to carry out specified tests. In part, these requirements address standards and procedures for ensuring that: (1) Organization and management that are free from commercial, financial, and other pressures which might adversely affect quality of work; (2) there is independence of judgment and integrity; (3) supervision is provided by persons familiar with the applicable test procedures; (4) a quality system, and a manual which contains procedures for control and maintenance of documents, and procedures for periodic audit and review are all in place; (5) there are sufficient personnel having the necessary education, training, technical knowledge and experience for their assigned functions, and training of its personnel is kept up-to-date; (6) all items of equipment and reference materials for the correct performance of tests are available and used, and the equipment is properly maintained and calibrated; (7) test equipment is calibrated and verified prior to operation, and there is traceability to national standards of measurement; (8) documented instructions for the use and operation of equipment, manuals, and applicable test procedures are in place;

(9) testing records with sufficient information to permit repetition of a test are retained; and (10) where a laboratory is subcontracted to conduct testing, that laboratory complies with the requirements contained in ISO/IEC Guide 25 and is competent to perform the applicable testing activities. An example of a "sub-contracted" laboratory would be a manufacturer's laboratory that tests motors for energy efficiency under the UL EVS Program.

Also, where 10 CFR 431.27(b)(4) requires a certification program to have satisfactory criteria and procedures for the sampling and selection of electric motors, likewise, ISO/IEC Guide 25 requires the use of documented sampling procedures and appropriate techniques to select samples.

### B. Application of Evaluation Criteria

#### 1. Standards and Procedures for Conducting and Administering a Certification System

Sections 431.27(b)(1) and (c)(1) of 10 CFR 431, and ISO/IEC Guide 65, set forth criteria and guidelines for the standards and procedures to be used in administering a certification system and granting a certificate of conformity.

In Attachment 1 to the UL Petition, entitled "431.27(c)(1) Standards and Operating Procedures," it is stated that "Underwriters Laboratories Inc. product safety certification program is an ISO Guide 65 compliant program" and that "UL's Energy Verification utilizes the same operation manuals as UL's product safety certification services with minor variations that are detailed in the UL Energy Verification Manual."

Advanced Energy's comments, dated October 12, 2001, and Emerson Motor Company's comments, dated October 15, 2001, generally asserted that the UL EVS Program is not an ISO/IEC Guide 65 compliant program.

The Department's investigation found that the UL procedures for operating a certification system, provided as attachments to the Petition, were very general in nature and could be satisfactorily applied to any UL certification program. This raised the issue as to whether the specific standards and procedures by which the UL EVS Program operates are adequate, properly documented, well established and maintained according to the aforementioned ISO/IEC Guide 65 criteria. The Department's letter to UL, dated June 12, 2001, requested copies of the specific documents that have been approved by appropriately authorized UL personnel, and are used as the standard operating procedures for the

UL EVS Program as it pertains to electric motors.

UL's letter to the Department, dated July 2, 2001, asserted that procedures which demonstrate compliance with sections 4.3, 4.8, 5 and 13 of ISO/IEC Guide 65 are contained in UL's *Conformity Assessment Manual*, the *Energy Verification Service Manual* (EVS Manual), and the *Client Interactive Programs Manual*. Copies were submitted to the Department during its investigative process. UL's letter, dated July 31, 2001, conveyed a copy of its *Motor Efficiency Guide*, 2001, which outlines the criteria UL uses to evaluate motor efficiency in the United States.

The UL *Conformity Assessment Manual* and *Client Interactive Programs Manual* establish general operating procedures that form a basis for UL certification programs, including the certification program for electric motors. The Department finds that ISO/IEC Guide 65 and the UL *Conformity Assessment* and *Client Interactive Programs Manuals* are consistent with each other in that they address, for example: (1) Steps necessary to evaluate conformance with relevant product standards, such as energy efficiency standards for electric motors; (2) competence of persons carrying out testing; (3) documented procedures for granting, maintaining and withdrawing certification; (4) control of documentation; and (5) surveillance to assure continued conformity with standards, such as energy efficiency standards for motors. The Department understands that these manuals are used in conjunction with the UL *EVS Manual* and *Motor Efficiency Guide*. The *Conformity Assessment Manual* and *Client Interactive Programs Manual* are further addressed in section II.3.c. of today's **Federal Register** Notice.

The EVS Manual outlines the standard criteria and operating procedures by which UL evaluates and verifies the energy efficiency of various types of products. In the case of electric motors, the EVS Manual refers to the energy efficiency test procedures found in 10 CFR 431.27. Its contents include efficiency verification procedures, documentation, sample selection, product testing, test facility evaluation, product construction evaluation, and manufacturers ongoing and follow-up testing. The *Motor Efficiency Guide* outlines the criteria that UL utilizes to evaluate motor efficiency in accordance with the energy efficiency regulations in the United States and Canada. It is used in combination with the EVS Manual for conducting evaluations in accordance with UL's EVS Program. It contains a tutorial on motor efficiency, information

on correlation of stray load loss and the basis of acceptability for motor efficiency, sample selection, assessment of a testing facility, test record data sheets, and guides the UL representative that conducts a facility assessment and witness testing. For example, the section entitled "Assessment of Client Facility," lists areas of a manufacturer's testing facility that UL would investigate under its certification program. These include investigation of a manufacturer's quality program system as to whether (1) an ISO 9001 or ISO 9002 quality assurance program is in place, (2) proficiency of personnel is witnessed, (3) the motor testing laboratory environment is properly maintained, (4) testing equipment is properly maintained and calibrated, and (5) testing of the energy efficiency of electric motors is conducted in accordance with 10 CFR 431.23.

Also, UL submitted the revised *Motor Efficiency Guide* ULS-02194-ZWAA, "Test Record Data Sheet" pages 1 through 14, and a page ULS-02194-ZWAA "Appendix D," page 0001, "Manufacturer's Test Equipment." The Department understands that this revised guide supersedes the above-referenced earlier version and is used in combination with the *Energy Verification Services Manual* for conducting evaluations in accordance with UL's EVS Program. Further, UL provided the Department a copy of UL's specific standard operating procedures which are utilized as part of the UL EVS Program. These included data sheets that describe the test methodology, follow-up inspections to verify electric motor efficiency, and an exemplary "Certificate of Compliance."

The Department has examined UL's Petition and all other documents described above, and affirms its conclusion that these documents provide evidence of satisfactory standards and procedures for UL to conduct its EVS Program to satisfy the requirements set forth in 10 CFR 431.27(b)(1) and (c)(1), and the guidelines contained in ISO/IEC Guide 65.

#### 2. Independence

Sections 431.27(b)(2) and (c)(2) of 10 CFR part 431, and ISO/IEC Guide 65, set forth criteria and guidelines for impartiality.

In Attachment 2 to the UL Petition, entitled "Independence," UL asserted that it is independent and impartial of any individual electric motor supplier or purchaser and is free from any other conflict of interest. A notarized Statement of Independence signed by an

officer of the corporation was submitted in support of its assertion.

The Department's June 12, 2001, letter to UL requested additional documents concerning the policies or procedures that distinguish (a) a direct or indirect relationship with a motor manufacturer, importer, or private labeler that is in a situation where UL both provides safety certification services and an EVS for such entity's motors, and (b) where a manufacturer's representative serves, for example, on UL Standards Technical Panel UL 1004, Electric Motors. Such relationships needed more explanation as to why each would not create or appear to create a conflict of interest, compromise UL's independence, or bias information presented to UL for the purposes of compliance with 10 CFR part 431.

UL's letter to the Department, dated July 2, 2001, asserted that UL is "independent and impartial of any individual supplier or purchaser and is free from any other conflict of interest," and that "UL has no stockholders, *i.e.*, no direct or indirect relationship with manufacturers, importers or private labelers." UL explained that it is incorporated as a not-for-profit organization in the State of Delaware, and its policy regarding conflict of interest is both addressed as a condition for employment and in its code of ethics. Also, chapter 2 of the UL "*Client Interactive Programs Manual*" sets forth procedures whereby each decision on certification is made by a person or persons different from those who carried out a motor efficiency evaluation. Furthermore, UL explained that its standards development process for safety matters is organizationally separated from its certification operations. Thus, a manufacturer's representative who participates in a UL Technical Panel as part of the standards development process only provides technical input to standards and has no influence over certification functions, such as the EVS Program for Electric Motors.

The Department has examined the above documents and affirms its conclusion that they provide sufficient evidence that the UL EVS Program meets the requirements for independence which are set forth in 10 CFR 431.27(b)(2) and(c)(2), and the guidelines for objectivity and impartiality of technical persons and committees which are set forth in ISO/IEC Guide 65. Furthermore, the UL EVS Program meets the ISO/IEC Guide 25 requirements for organization and management to ensure confidence that its independence of judgment and integrity are maintained at all times.

### 3. Operation of a Certification System in a Highly Competent Manner

Sections 431.27(b)(3) and (c)(3) of 10 CFR 431 require that the petitioner demonstrate that its certification program operates in a highly competent manner by establishing its experience in the application of certain ISO/IEC Guides, including ISO/IEC Guides 65, 27 and 28, as well as experience in overseeing compliance with the guidelines in ISO/IEC Guide 25.

In Attachment 3 to the UL Petition, "Testing Experience and Expertise," UL asserted that it has been conducting product safety evaluations for 105 years, and that in 1999 alone it conducted more than 94,300 product evaluations. As to further experience in operating a certification system and application of guidelines contained in ISO/IEC Guide 65, UL stated in Attachment 3, "Summary of UL's Accreditations," that it is involved in more than 80 accreditation programs that are involved with the evaluation and testing of products for public safety. It stated that its competence as a product certification organization has been, for the most part, established under the criteria in ISO/IEC Guides 25 and 65. Copies of UL's accreditation documents from the American National Standards Institute (ANSI) and the Standards Council of Canada (SCC), and recognition as a Nationally Recognized Testing Laboratory from the Occupational Safety and Health Administration were attached to the UL Petition.

#### a. General Operating Requirements (ISO/IEC Guide 65)

Both Advanced Energy and Emerson Motor Company stated that "UL has a solid reputation in testing services and quality assurance for safety programs," and is capable of administering safety programs because they are ISO/IEC Guide 65 compliant, as demonstrated by the ANSI accreditation. However, both Advanced Energy and Emerson Motor Company found "no evidence of this being true with respect to UL's Energy Verification Program." Advanced Energy's letter, dated October 12, 2001, asserted that UL's EVS Program has the potential to confuse customers in the marketplace and unduly burden motor manufacturers, because UL would visit each motor manufacturer's facilities twice per year, require testing of an unspecified number of sample motors, and require inspection of the motor manufacturing processes. Advanced Energy and Emerson Motor Company stated that the UL EVS Program is not sufficient for the purposes of EPCA on motor efficiency, and that it conflicts

with the intent of EPCA and 10 CFR Part 431.

In response to the above comments from Advanced Energy and Emerson Motor Company, UL's letter to the Department, dated October 22, 2001, asserted that Advanced Energy's view of the UL certification program is based upon limited exposure to UL's technical expertise and other portions of the EVS Program related to electric motors. Also, UL stated that it believes that Emerson Motor Company's concerns are addressed under 10 CFR Part 431 concerning the use of a certification program.

The Department examined the above UL accreditations and found that the majority of them concerned product safety certification and there was no explicit reference to the certification of energy efficiency for electric motors. The Department's June 12, 2001, letter to UL requested evidence as to whether the UL EVS Program for electric motors is, or will become, accredited by another organization, such as ANSI. Also, the Department's letter requested evidence of the technical qualifications and experience held by UL personnel directly involved with the UL EVS Program, such as technical evaluations and decisions concerning critical motor construction features, performance, and testing for energy efficiency using IEEE 112-1996 Test Method B and CSA C390-93 Test Method (1).

Thereafter, the Department received a letter, dated June 26, 2001, from ANSI which affirmed that the UL EVS Program is covered under the scope of the ANSI accreditation for Electrical and Electronic Products, Processes, Systems, and Services in accordance with ISO/IEC Guide 65. Also in response to the Department's June 12 letter, UL's letter, dated July 2, 2001, asserted that UL has documented procedures to ensure that qualified personnel review the evaluation of motors for compliance with energy efficiency requirements, and written instructions that set forth the duties and responsibilities of such personnel. UL staff undergoes continual on-the-job training and is evaluated through a documented performance appraisal process. UL has supervisory and review staff with the necessary education, training, skill, abilities and experience for evaluating motors for compliance with energy efficiency requirements, and its management structure provides for the supervision of reviewers and other personnel involved in the product certification process. UL's July 2nd letter conveyed resumes of certain staff involved in the EVS Program.

As to any undue burden on a manufacturer caused by UL's biannual inspections of a motor facility, the Department understands that UL's surveillance program consists of two random unannounced audits of the manufacturer's facilities, and such audits can be conducted separately or in conjunction with its motor safety investigations, thereby lessening the compliance burden on a manufacturer. Therefore, the Department believes that the UL EVS Program does not present any undue burden on a manufacturer.

As to the above-referenced comments from Advanced Energy and Emerson Motor Company concerning the UL EVS Program not meeting the requirements for a "certification program" in section 345(c) of EPCA and in 10 CFR 431.123(a)(1), the Department finds no facts or convincing arguments that support the assertions of Advanced Energy or Emerson Motor Company that the UL EVS Program is "not sufficient" or "conflicts with the intent" of EPCA, or "would place additional burden on manufacturers." Such issues involving the merits and use of an accredited laboratory or a certification program were argued at length under sections II.C.2. and 3. of the Preamble to the Final Rule for Electric Motors, 64 FR 54124-26 (October 5, 1999) and need not be repeated here. The Department continues to believe that use of a certification program, such as the UL EVS Program, where it meets the requirements set forth in 10 CFR 431.27(a) will provide adequate assurance of compliance with EPCA's energy efficiency requirements. Because the assertions of Advanced Energy and Emerson Motor Company are merely arguments against the wisdom of the final rule and of the Departments regulations themselves, and are not directed at the UL Petition, they are rejected.

b. Guidelines for Corrective Action in the Event of Misapplication of a Mark of Conformity (ISO/IEC Guide 27)

ISO/IEC Guide 27 identifies procedures which a certification program should consider in response to a reported misuse of its registered mark of conformity. According to paragraph 1.1 (a) of ISO/IEC Guide 27, "misuse" may take a variety of forms, such as a mark of conformity appearing on a non-certified product. The Department construes this to mean the unauthorized use by a manufacturer or private labeler of the UL Verification Mark for Energy Efficiency (Mark or UL Mark) on an electric motor, such as the use of a counterfeit UL Mark. Under ISO/IEC Guide 27, the certification program would then be required to have strong

corrective procedures in place. Such corrective measures would depend upon the nature of the misuse and the desire by the certification program to protect the integrity of its mark.

The Department has examined the UL *Conformity Assessment Manual* and finds that it contains procedures for reporting the misuse of any UL Mark used to identify certified products, such as any unauthorized or counterfeit use of a UL Registered mark. The Department affirms its conclusion that the UL *Conformity Assessment Manual* satisfactorily follows the guidelines for corrective action to be taken by a certification organization in the event of misapplication of a mark of conformity to an electric motor set forth in 10 CFR 431.27(c)(3) and ISO/IEC Guide 27.

c. General Rules for a Model Third-Party Certification System for Products (ISO/IEC Guide 28)

ISO/IEC Guide 28 addresses minimum guidelines for a third-party certification system in determining conformity with product standards through sample selection, initial testing and assessment of a factory quality management system, follow-up surveillance, subsequent testing of samples from the factory, and the use of a mark of conformity.

Consistent with the above ISO/IEC Guide 28 guidelines, Attachment 1 to the UL Petition, entitled "431.27(c)(1) Standards and Operating Procedures," described the UL certification of motors under its EVS Program as being based upon: (1) Satisfactory evaluation and testing to the requirements of the applicable standard, which in this case is under 10 CFR 431.23; (2) continued surveillance at the manufacturing location; (3) initial motor evaluation that consists of an examination of motor efficiency test data, test facilities, and motor design and construction; (4) selection of samples and witness testing by a UL representative; (5) where an electric motor is found to be in compliance, authorization to apply a mark of conformity; and (6) procedures for withdrawal or cancellation of a mark of conformity if an electric motor is found in non-conformance. Also, UL submitted its *Energy Verification Service Manual* as evidence that its EVS Program for electric motors follows the guidelines contained in ISO/IEC Guide 28.

In view of ISO/IEC Guide 28, the Department examined the UL EVS Manual that outlines the criteria by which UL performs third-party energy efficiency certifications for various products, including electric motors. In sum, the UL EVS Manual contains the general operating procedures and

business document formats applicable to UL's EVS Program, that when utilized in conjunction with the procedures and technical document formats in the UL *Conformity Assessment Manual* and *Motor Efficiency Guide*, correspond to the "model" procedures and example forms contained in ISO/IEC Guide 28. The Department finds that, in general, both ISO/IEC Guide 28, and the UL EVS and *Conformity Assessment Manuals* address: (1) The basic conditions and rules for a manufacturer to obtain and retain a certificate of conformity or mark of conformity; (2) initial inspection of a motor factory and a manufacturer's quality management system; (3) sample selection; (4) initial testing; (5) product evaluation; (6) surveillance; (7) identification of conformity in the form of a certificate of conformity or mark of conformity; (8) withdrawal of a certificate or mark of conformity by the certification program; and (9) guidelines on corrective action for misuse of a certificate or mark of conformity. The Department affirms its conclusion that the UL EVS Program satisfies the general guidelines for a model third-party certification system under 10 CFR 431.27(c)(3) and the guidelines set forth in ISO/IEC Guide 28.

Also, ISO/IEC Guide 28 requires a certification program operating at a national level, such as under section 345(c) of EPCA which requires manufacturers to certify compliance through a "nationally recognized" certification program, to have a suitable organizational structure and utilize personnel, equipment, and operating procedures that comply with the criteria for a testing laboratory in ISO/IEC Guide 25. Consistent with these guidelines, the UL *Conformity Assessment Manual* and *Client Interactive Programs Manual* provide general policies, practices and procedures that govern UL's conformity assessment services. These include submitting a product for investigation, conduct of the investigation, witnessed test data procedures, compliance management, issuance of the UL Mark, and follow-up services. The Department finds that the "Client Test Data Program," contained in the *Client Interactive Programs Manual*, particularly addresses the UL EVS Program, whereby tests for energy efficiency are conducted at client facilities and are subject to review and audit by UL. Furthermore, the "Client Test Data Program" establishes policies and procedures consistent with ISO/IEC Guide 25 which address operating a laboratory quality system, testing equipment, qualification of personnel, test standards and procedures for

testing, training, assessment of a test facility, program administration, documentation, and issuing a certificate of qualification. The Department understands that both the *Conformity Assessment* and *Client Interactive Programs Manuals* are used in conjunction with UL's product-specific operations manuals, such as the *UL Energy Verification Service Manual*, that applies specific procedures to the acceptance of energy efficiency test data for electric motors.

The Department has examined the contents of these manuals and affirms its conclusion that they satisfy the guidelines for conducting a model third-party certification program at the national level as applicable under 10 CFR 431.27(c)(3) and ISO/IEC Guide 28.

d. General Requirements for the Competence of Testing Laboratories (ISO/IEC Guide 25)

Third-party certification programs must have experience overseeing compliance with the guidelines contained in ISO/IEC Guide 25. ISO/IEC Guide 25 sets out the general requirements by which a laboratory must operate if it is to be recognized as competent to carry out specific tests.

According to Attachment 3 to the UL Petition, "Summary of UL's Accreditations," the majority of UL's accreditations cover UL as a testing laboratory and product safety certification organization. Although each accreditor to a certain extent establishes its own criteria, for the most part, two sets of criteria are utilized for evaluating the competence of a testing laboratory and product certification organization: ISO/IEC Guide 25, *General Requirements for the Competence of Calibration and Testing Laboratories* and ISO/IEC Guide 65 *General Requirements for Bodies Operating Product Certification Systems*. UL's written policies and associated operating procedures were designed using the criteria of these two guides.

UL's letter to the Department, dated January 24, 2002, asserted that UL has "significant experience understanding, adapting, documenting and applying the requirements of Guide 25 to manufacturers' laboratories as evidenced by the [Client Test Data Program] CTDP documentation and overseeing compliance of manufacturers with UL's CTDP." According to the January 24 letter, UL has determined that Guide 25 as written "can not solely be the basis on which it accepts responsibility for the test data generated from a manufacturer's laboratories," and as a result, UL's Client Test Data Program requirements are "an adaptation of Guide 25, with necessary

changes made, so that UL has an adequate basis for taking responsibility for the test data from a manufacturer's laboratory." For example, even though not required by ISO/IEC Guide 25, UL requires repeat testing and requires that the data from that repeat testing correlate with the original test data generated by the manufacturer. In addition, UL conducts audits of manufacturers' laboratories under the Client Test Data Program, whereas ISO/IEC Guide 25 only requires a laboratory to audit itself. UL believes such additional oversight requirements are necessary in order for it to accept responsibility for the test data. Further, UL asserted that it does not rely solely on a manufacturer's self-monitoring of laboratory competence through the laboratory's quality system; rather, UL itself "directly monitors those aspects of laboratory operations that contribute to the accuracy of the test data produced." Thus, UL adds a second level of assurance through audit testing and subsequent data correlation. UL's January 24 letter concluded with the assertion that it has "demonstrated experience overseeing a laboratory not just to Guide 25 requirements, but to even more stringent requirements related to transfer of responsibility for test data."

The Department compared ISO/IEC Guide 25 with UL's CTDP as it would apply to a manufacturer's motor efficiency testing laboratory under a certification program and found them to be consistent with each other. Under UL's CTDP, a motor manufacturer's laboratory must, in sum, have a quality program that is subject to assessment and reassessment, have physical resources, equipment, qualified personnel and procedures that conform to national and international accreditation criteria, and have test data that is reviewed and subject to a regular audit. The Department found, for example:

- Where ISO/IEC Guide 25 sets forth requirements for organization and management of a testing laboratory to ensure proper supervision and integrity of data, similarly, the UL CTDP requires a testing laboratory to have procedures and policies in place to assure accuracy and correctness of the performance of the tests, test data developed, and results reported, as well as qualified staff to oversee testing and ensure proper documentation.

- Where ISO/IEC Guide 25 requires a manufacturer's testing laboratory to have a quality system with documented policies and procedures, such as for the organization and operation of a testing

laboratory, traceability of measurements, calibration of equipment, test procedures used, procedures for corrective actions and audits, similarly, the UL CTDP requires a manufacturer's testing laboratory to have procedures and policies that assure accuracy and correctness of the performance of a test, test data developed, and results reported, and oversight of sampling, testing, data recording and periodic audits.

- Where ISO/IEC Guide 25 requires a manufacturer's testing laboratory to have sufficient personnel having the necessary education, training, technical knowledge and experience, the UL CTDP requires similar qualifications of testing laboratory personnel.

- Where ISO/IEC Guide 25 requires the proper environment and equipment for performance of testing, and that such equipment is properly maintained and calibrated, similarly the UL CTDP requires the proper environment for testing, and requires that equipment is fully operational, calibrated and traceable to nationally recognized standards of measurement.

- Where ISO/IEC Guide 25 requires the testing laboratory to maintain a record system of original observations, calculations, and derived data sufficient to permit repetition of a test, similarly, the UL CTDP requires data recording and test reports, and other documentation of initial assessments and reassessments and verification. Also, the UL CTDP requires that reference standards and test procedures used by the testing laboratory are current.

- Both ISO/IEC Guide 25 and the UL CTDP require test reports or test certificates that contain similar information.

In view of these comparisons, the Department affirms its belief, set forth in the interim determination, that UL's EVS Program satisfies the requirement of 10 CFR 431.27(c)(3) for documentary evidence that establishes experience in operating a certification system and overseeing compliance with the guidelines for competence contained in ISO/IEC Guide 25 to test electric motors for energy efficiency.

Also, 10 CFR 431.27 does not require a certification program to actually operate its own motor testing laboratory, nor is a laboratory operated or observed by a certification program required to be accredited. Nevertheless, the Department believes that the quality program to which a motor efficiency testing laboratory adheres under a certification program that is "nationally recognized" for the purposes of EPCA

should be inherently stringent because its efficiency measurements are the basis for compliance determinations for many motors. Therefore, the Department believes that a testing facility operated or observed by a certification program should follow the guidelines in ISO/IEC Guide 25. The Department understands that, in general, the evaluation of a motor testing laboratory under ISO/IEC Guide 25 includes an on-site assessment, proficiency testing, an audit of a laboratory's policies and operational procedures, review of staff qualifications, checks of proper maintenance and calibration of test equipment, and records review. Likewise, evaluation of a motor testing laboratory under the UL EVS includes evaluation of the manufacturer's testing facility, control and maintenance and calibration of test equipment, factory audits for continued compliance, document control, periodic audits of the operational and technical consistency of the program, control of non-conformances, staff training, and witness testing.

The Department believes that the goal of a third-party certification program is to provide assurance that test results are accurate, valid, and capable of being replicated. Tests must be performed with a degree of oversight so that the results are not influenced by marketing and production concerns. The Department affirms its belief that the UL EVS Program essentially follows the ISO/IEC 25 Guidelines.

#### 4. Expertise in IEEE Standard 112-1996 Test Method B and CSA Standard C390-93 Test Method (1)

Section 431.27(b)(4) of 10 CFR Part 431 set forth evaluation criteria and guidelines whereby personnel conducting a certification program should be expert and experienced in the content and application of IEEE Standard 112-1996 Test Method B and CSA Standard C390-93 Test Method (1), or similar procedures and methodologies for determining the energy efficiency of electric motors. The program must have satisfactory criteria and procedures for the selection and sampling of electric motors tested for energy efficiency, and provide documents that establish experience in applying the guidelines for confidence in testing laboratories contained in ISO/IEC Guide 25. Such guidelines address quality audits and reviews, personnel, equipment, test methods, sampling, and records.

In Attachment 4 to the UL Petition entitled, "431.27(c)(4) Expertise in Motor Test Procedures," it is stated that "UL has been providing Energy

Verification certification services since 1995," and that "UL has evaluated motors in sizes ranging from 1 hp to 200 hp using the standards IEEE 112 Test Method B or CSA C390." According to the Petition, UL publishes a *Directory of Electric, Gas Fired, and Oil-Fired Equipment Verified for Energy Efficiency 1999*, which includes electric motors, and asserts that each member of its engineering staff has at least a four-year Bachelor of Science degree in engineering. Also, UL submitted to the Department a copy of its *Conformity Assessment Manual*, *EVS Manual*, *Client Interactive Programs Manual*, and *Motor Efficiency Guide* as evidence of its expertise in electric motor test procedures.

The Department's letter to UL, dated June 12, 2001, requested evidence as to the nature and extent of training that current staff actually involved with the EVS Program regularly undergoes to maintain proficiency with the evaluation of motor designs and construction, and the practice of energy efficiency testing.

UL's letter, dated July 2, 2001, asserted that UL has documented procedures to ensure that qualified personnel review the evaluation of motors for compliance with energy efficiency requirements. These include the written instructions for the duties and responsibilities of personnel with respect to the evaluation of motor efficiency investigations, as well as qualification requirements to assure that its personnel are qualified in the scientific disciplines related to energy efficiency. Further, UL asserted that its staff undergoes continual, on-the-job training and each person is evaluated through a documented performance appraisal process. UL has supervisors as review staff with the necessary education, training, skill, abilities and experience for evaluating motors for compliance with energy efficiency requirements. Also, UL has developed its own *Motor Efficiency Guide* as a reference for staff involved in conducting motor efficiency evaluations. UL's management structure provides for the supervision of reviewers and other personnel involved in the product certification process. UL's letter, dated September 20, 2001, contained the names of UL technical staff involved with the EVS Program, indicates their experience with CSA C390-93 and IEEE 112-1996, and contained a résumé for each.

Furthermore, UL's letter dated September 20, 2001, asserted that the test procedures in "CSA C390-93 method B" [sic] are similar to those procedures already in place under other

CSA International Standards as well as UL Standards, and that the data and information recorded to verify energy efficiency is some of the same data and information required under the testing it conducts on a routine basis and which follows UL Standard 1004, "Electric Motors," UL Standard 2111, "Overheating Protection for Motors," UL 547, "Thermally Protected Motors," and CSA C22.2 No. 77, "Overheating Protection for Motors," and CSA C22.2 No. 100, "Motors and Generators." UL asserted that the data and information recorded for energy verification testing is some of the same data and information required under the above-referenced test procedures, which it uses in an automated spreadsheet program entitled "Motor Efficiency Testing Program V3.0," UL copyrighted 1994 and 1997, to calculate motor efficiency. The September 20 letter from UL compared the IEEE 112 and CSA C390 test procedures with similar procedures in the above "UL" and "CSA" standards for performance and safety.

Advanced Energy's letter, dated October 12, 2001, expressed concern with "the level of 'expert' knowledge regarding motor testing." Advanced Energy asserted that UL is thorough in the documentation of procedures and calibrations of laboratory equipment, but weak in motor efficiency testing, test data analysis, and in its prescriptive audit process that does not involve motor testing, review of motor test data, or proficiency testing by a laboratory.

Emerson Motor Company's letter, dated October 15, 2001, expressed concern that UL uses a motor manufacturer's testing facilities that have been "reviewed" by a UL staff member, but there is no evidence of the staff member's credentials, knowledge, level of training and certification with regard to motor efficiency testing laboratories.

In response to the above comments from Advanced Energy and Emerson Motor Company, UL's letter, dated October 22, 2001, asserted that Advanced Energy's view of the UL certification program is based upon limited exposure to UL's technical expertise when both UL and Advanced Energy were exploring a business relationship in the 1990s. According to UL, a laboratory assessment is one part of its Client Test Data Program under which external testing, such as by Advanced Energy, would be accepted by UL. However, other portions of the UL's EVS Program, including staff with specific technical capability related to motor testing, were not completed at that time, nor had Advanced Energy

been exposed to the "full expertise" within the UL Program.

UL's letter to the Department, dated February 21, 2002, asserted that UL's experience in standards development, testing, and safety evaluation of motors according to the requirements of UL and other U.S. and International standards and the corresponding data acquisition necessary to accomplish these endeavors, is "equivalent to and demonstrative of the indicated UL staff having the necessary proficiency and expertise to conduct energy efficiency evaluations." In sum, the experience with CSA C390-93 and IEEE Standard 112 of the five UL staff persons engaged in the UL EVS Program ranges from one to four years, which is in addition to their four to 13 years experience with test procedures for motor safety.

In the Department's view, any technically qualified person could satisfy the criteria for expertise in the content, application, and methodologies of the test procedures pursuant to 10 CFR 431.27(b)(4) if that person: (1) Is proficient in the test methodology of IEEE Standard 112 Test Method B and CSA C390-93 Test Method (1); (2) is familiar with the electrical, mechanical and environmental capabilities of a testing laboratory system, (3) understands how to prepare and mount a motor for testing, which includes the connection and operation of the test equipment, (4) is competent in calibrating test equipment; and (5) is competent with data collection and analysis. UL's experience in standards development, testing and evaluation of motors to both U.S. and international safety and similar energy efficiency procedures and methodologies provide sufficient evidence of UL staff having the necessary proficiency and expertise to conduct energy efficiency evaluations under ISO/IEC Guide 25. Thus, the Department affirms its belief that the qualifications of the UL Staff named in the above September 20 letter, regular additional training, and monitoring by UL management, satisfy the general requirements for the training, technical knowledge, and experience of testing laboratory personnel under 10 CFR 431.27(b)(4) and (c)(4).

#### 5. Sampling Criteria and Procedures for Selecting an Electric Motor for Energy Efficiency Testing

Section 431.27(b)(4) of 10 CFR 431 requires a certification organization to have satisfactory criteria and procedures for the selection and sampling of electric motors tested for energy efficiency. Based on the National Institute of Standards and Technology report, NISTIR 6092, "Analysis of

Proposals for Compliance and Enforcement Testing Under the New Part 431: Title 10, Code of Federal Regulations," January 1998, which analyzed various criteria and sampling plans proposed for establishing compliance with the nominal full-load efficiency levels prescribed by EPCA, 42 U.S.C. 6313(b)(1), the Department determined that "the NEMA proposal for compliance testing provides statistically meaningful sampling procedures." Moreover, the NIST analysis was extensive in order to determine whether a particular sampling plan would be valid for the purpose of establishing compliance with EPCA motor efficiency levels. Also, section 10.5 of ISO/IEC Guide 25: 1990 requires the use of documented procedures and appropriate statistical techniques to select samples.

In Attachment 1 of its Petition, UL described its sample selection process as one where representative samples from the manufacturer's production are selected for use in testing and witnessed by UL engineering staff. According to the Petition, representative samples are those that, when reviewed as a group, can adequately represent a line of similar models that use the same major energy consuming components. UL asserted that the objective in selecting representative samples is to obtain sufficient confidence that the series of motors verified meet the applicable energy efficiency standard while at the same time minimize the number of tests the manufacturer is required to perform. Samples are selected to represent an entire range of motors. Furthermore, as part of a manufacturer's ongoing production testing, UL audits the number of samples tested and the frequency of testing and test results which are documented by the manufacturer. The manufacturer is required to document the test results, which UL audits as part of each follow-up visit.

Notwithstanding UL's above assertions, the Department found no evidence that the samples used for a motor manufacturer's test data was selected randomly, that a UL representative participated in the sample selection process or witnessed any of the initial testing, or that it was clear that "two samples" were sufficient to statistically validate the energy efficiency of an entire line of electric motors.

Subsequently, UL submitted to the Department, under cover letter dated July 31, 2001, a copy of its *Motor Efficiency Guide* (Guide), to outline the criteria by which UL evaluates motor efficiency in accordance with energy

efficiency regulations. The Department examined the Guide and found that appendix D contained a section entitled "Sample Selection," Form Page 8 on ULS-02194-ZWAA-Appendix-0001, which set forth procedures whereby samples consisting of production units are "randomly selected by UL Staff" and appeared to satisfy one of the Department's concerns. However, in the "Definitions" section of the Guide, the Department found that the definition of "nominal full load efficiency" was not consistent with the definition of "nominal full load efficiency" in 10 CFR 431.2, nor did the Guide contain a definition of the term "Sample." Also, the "Basis of Acceptability," on Form Page 11 of appendix D in the Guide, which provided procedure to calculate a tolerance for "permitted values of energy efficiency" using a "Coefficient K" and required that the "actual motor efficiency value will be not less than the associated minimum value," was inconsistent with 10 CFR 431.24, "Determination of efficiency," and 10 CFR 431.42, "Energy conservation standards." Thereafter, UL submitted to the Department, under cover letters dated January 11 and January 28, 2002, a copy of the revised pages in the Guide that were in question. These included a definition for the term "sample," revised sample selection criteria, identification of UL's initial factory production visit to select the random samples, and corrections to the "Statistical Test Method" formulas and the "Basis of Acceptability" in order to be consistent with the applicable provisions in 10 CFR 431.

The Department affirms its conclusion that the above documents, as corrected by UL, are consistent with 10 CFR 431.24 and 431.42, and satisfy the criteria and procedures for the selection and sampling of electric motors to be tested for energy efficiency under 10 CFR 431.27(b)(4).

#### C. Other Matters

In a separate matter related to 10 CFR 431.82, "Labeling requirements," and section 14, "Use of licenses, certificates and marks of conformity," in the ISO/IEC Guide 65, Emerson Motor Company's comments, dated October 15, 2001, objected to any requirement to display a compliance certification labeling mark, such as the UL Mark, on an electric motor either in place of or in addition to the required Compliance Certification number supplied by the Department of Energy as provided for in 10 CFR 431.82(a)(1)(ii). Emerson Motor Company asserted that such additional marks would add significant financial burdens on motor manufacturers and

confuse the motor purchaser. Further, Emerson Motor Company asserted that the Department of Energy Compliance Certification number is the only mark allowed.

Advanced Energy's comments, dated October 12, 2001, objected to the proposed UL requirement that a manufacturer display the UL Mark. Advanced Energy asserted that there would be an added financial burden to a manufacturer because of being forced to display the UL Mark, with possible confusion to a motor purchaser attempting to distinguish between one motor with a Compliance Certification number alone and another motor with both a Compliance Certification number and the UL mark.

Section 431.82(a)(1) of 10 CFR 431 requires a manufacturer or private labeler to mark the permanent nameplate of an electric motor clearly with the motor's nominal full load efficiency and a Compliance Certification number supplied by the Department. However, 10 CFR 431.82(a)(3) permits the optional display of the encircled lowercase letters "ee" or some comparable designation or logo on either the permanent nameplate of an electric motor, a separate plate, or decalcomania. The UL Mark falls into the "optional display" category and

would be comparable to the encircled lowercase letters "ee." Therefore, display of the UL Mark would be permitted in addition to the labeling requirements set forth under section 431.82(a)(1). But, such optional display is not a replacement mark for the motor's nominal full load efficiency and the Compliance Certification number supplied by the Department. The optional logo or designation, (such as the UL Mark) may also be used in catalogs and other marketing materials according to 10 CFR 431.82(b)(2). The Department affirms its belief, set forth in the interim determination, that display of the UL Mark is a matter between UL and the manufacturer or private labeler.

### III. Final Determination

On July 5, 2002, DOE published in the **Federal Register** an interim determination to classify Underwriters Laboratories Inc.'s Energy Verification Service Program for Electric Motors as a nationally recognized certification program for electric motor efficiency. At that time, the Department solicited comments, data and information with respect to that interim determination. 67 FR 45028. The Department did not receive any comments concerning its interim determination.

In view of the UL Petition and supporting documents, the public

comments received, the Department's independent investigation, UL's corrections to its Program described above, and the fact no comments were submitted concerning the Department's interim determination, the Department concludes that the UL EVS Program for Electric Motors satisfactorily meets the criteria in 10 CFR 431.27.

Therefore, the Department's final determination is to classify the UL EVS Program for Electric Motors as nationally recognized in the United States for the purposes of section 345(c) of EPCA. This final determination is effective upon the publication of this notice in the **Federal Register**. Notwithstanding the Department's final determination, in the event that the UL EVS Program for Electric Motors fails to continue to meet the criteria in 10 CFR 431.27 for a nationally recognized certification program, the Department can withdraw recognition after following the procedural requirements in 10 CFR 431.28(g).

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