Association Of
North American Independent Laboratories
For
Protective Equipment Testing

Laboratory Accreditation Program

CRITERIA

OUR ACCREDITED LABORATORIES
SERVE ALL NORTH AMERICA

FOREWORD

A question that is frequently asked is "What is NAIL and what are the benefits to a test facility in becoming a member and possibly becoming an accredited laboratory?" The first part of the question deals with membership in NAIL itself, so let us consider that first. One of the main committees within ASTM is F-18 "Electrical Protective Equipment for Workers." The Committee was formed in 1974 as an outgrowth from Subcommittee D 11.34 of the Rubber Committee and ANSI J-6. With the coming of OSHA on the United States scene in 1970, it was felt that standards work in this part of the workplace was going to grow and that the growth needed the attention of a main committee devoted to the field. The decision was a good one; the workload grew from the five standards existing in 1974 to twenty-seven in 1997. Membership has grown from about fifty in 1974 to about two hundred men and women from Europe and North America in 1997. Concurrently, the I.E.C. Technical Committee TC-78 on "Live Working" has been actively developing many similar standards.

A number of individuals operating testing facilities handling this type of equipment were and are active in standards work. These individuals decided in 1978 to form the National Association of Independent Laboratories for Protective Equipment Testing, INC. (NAIL for PET) to sponsor an exchange of information between commercial laboratories testing protective equipment. Such equipment is utilized primarily by utility and contractor employees in the electrical and telecommunication fields and also increasingly today by manufacturers who have to handle or work on or in the proximity of electrical equipment energized at more than fifty volts. Such equipment ranges from insulating rubber gloves to insulated tools to insulating aerial lift vehicles. The Association meets annually and sponsors an educational seminar usually concurrent with one of the meetings of ASTM Committee F-18. The meetings provide for a meeting of the Board of Directors, election of officers, and other necessary business along with the educational portion.

In 1981, the Association recognized the increasing pressure from governmental agencies, public interest groups, and other interested parties to force accreditation of all testing laboratories serving the public. The Association developed a Laboratory Accreditation Program that met accepted ASTM criteria and in which qualified laboratories could participate. The criteria covered the laboratory facility, equipment, training and knowledge of staff, quality control work procedures, adequacy of management, financial responsibility, etc. Today, accreditation under the NAIL program is recognized throughout the country and Canada as an important asset to the credentials of a testing facility. The program is listed in the National Institute of Standards and Technology (NIST Publication 831) "Directory of Professional/Trade Organization Laboratory Accreditation/Designation Programs."

To maintain the independence of the Laboratory Accreditation Program and to assure that the audit of a laboratory's qualifications is unbiased, the Association retains a qualified independent firm to visit an applicant, review compliance with the Accreditation Criteria and submit a report with recommendations to the Board of Directors of the NAIL for PET. Any information supplied to or discussed with the auditor is kept confidential unless the applicant authorizes it to be released to the Board of Directors for consideration in connection with an application for accreditation.

The inspector, when visiting a laboratory, will meet with the individual responsible for the overall supervision of the laboratory, and any others that individual may wish to include, to explain the format of the inspection and to receive supporting information that may not have been submitted with the application. A review of the overall facility, including review of receiving and shipping areas and storage facilities for equipment being processed by the laboratory along with long-term storage of rubber goods, is the first item of business. He will examine the test equipment and determine that calibration is current. He will observe test procedures for each type of equipment the laboratory wishes to include in the certification. In the course of doing this he will determine the knowledge and experience of the technicians doing the work. If he observes an incorrect procedure, he will point out the error and suggest how to do the procedure correctly. He will answer any questions the personnel may raise, replying later by mail or telephone if not having the answer at the moment. A most important part of the inspection will be a review of the work procedures or quality control procedures that the laboratory has prepared. These should cover the correct procedure for receipt of each type and unit of material, recording it for movement through the different portions of the cleaning and testing process, to being shipped out to the owner, and the development of necessary reports and invoices. The inspection of a new applicant's facility usually would require one and a half days while a re-inspection can usually be done in a one day visit. At the end of an inspection, the inspector will again meet with the supervisor or owner and review the results of the visit. He will explain the follow-up work that he will have to do to prepare a report and ballot, and submit them to the NAIL Board. If no follow-up work is required from the laboratory, a certificate of accreditation will usually arrive within 4-6 weeks. The inspection firm remains a source of information to the laboratories and the inspector participates in the yearly NAIL meetings. New developments in the standards area and other pertinent information items are circulated to members.

The initial applicants were independent laboratories but, over the years, a number of utilities have applied for and received accreditation. They are treated the same as independent laboratories and, essentially, must also stand as independent facilities, following the same rules and standards as independent facilities. Currently there are approximately thirty accredited member laboratories and approximately forty NAIL for PET members.

There are several answers to the second part of the original question that have not been covered in the preceding paragraphs. Members state their business has grown since their accreditation; since they can advertise that they are a NAIL accredited laboratory. Every

laboratory is a better facility today than it was at the time of the initial inspection. Accreditation also brings a certain piece of mind to employees and customers that the work being done is quality work, meeting a known standard of excellence. The work procedures or quality control procedures can become part of what is presented to potential customers to show the detail given to the test and inspection of their equipment.

With the interest of Canadian laboratories in NAIL and the Accreditation Program, the Board of Directors and the members at the 1997 annual meeting considered a possible change in the name of the organization to recognize its continuing growth. The legal procedure was resolved and the general membership at the 1998 general meeting approved the new name "Association of NORTH AMERICAN INDEPENDENT LABORATORIES FOR PROTECTIVE EQUIPMENT TESTING, which keeps the popular "NAIL for PET" logo.

GENERAL CRITERIA

The general criteria for accreditation of a laboratory are that:

a) The person in direct charge of the laboratory and all officers having technical supervisory responsibilities in the conduct of the laboratory are properly qualified for and have had adequate experience in the testing work involved.

b) The other members of the laboratory staff are suitably qualified for the work on which they are engaged and the proportion of partially trained members is not more than that which is deemed appropriate for such a laboratory.

c) The laboratory utilizes accepted national or international consensus standards and follows them consistent with uniform practice throughout the NAIL accredited laboratories.

d) The laboratory practice, including the supervision of staff, the checking of calculations and results, and the keeping of records, is satisfactory.

e) The laboratory equipment and facilities are appropriately housed, properly maintained and adequate for the performance of the testing work.

f) The measuring and testing equipment maintained by the laboratory together with any appropriate auxiliary equipment has, at a sufficiently recent date, been calibrated or verified in terms of the relevant traceability and found satisfactory.

1. ACCREDITATION CRITERIA

In order to be accredited, a testing laboratory must meet all the following conditions:

a. General

1. Laboratories seeking accreditation must demonstrate as a part of accreditation proficiency to test according to the applicable standards at least eight product categories listed below:
Insulating Gloves – ASTM D120, F496
Insulating Sleeves – ASTM D1051, F496
Insulating Blankets – ASTM D1048, F479
Insulating Line Hose – ASTM D1050, F478
Insulating Covers – ASTM D1049, F478
Insulating Matting – ASTM D178
Hot Sticks and Live Line Tools – ASTM F711, IEEE 978
Insulating Plastic Guards – ASTM F712
Insulated Aerial Devices – ANSI A92.2
Dielectric Overshoe Footwear – ASTM F1116, F1117

Insulated By-Pass Jumpers – ASTM F2321
Insulating Hard Hats – ANSI Z89.1
In-Service Testing for Temporary Grounding Jumpers – ASTM F2249
Insulating Bucket Liners – ANSI A92.2
Insulating Rubber & PVC Shielding – ASTM F1742, F2320
Insulated Hand Tools – ASTM F1505

2. The laboratory maintains good housekeeping practices. These practices are evident in office areas, test areas, both inside and outside storage areas, and shipping and receiving areas.

3. The laboratory maintains a current organization chart of the company, showing key personnel and the relationship between administration, operation and quality control. Resumes of key personnel are required to be furnished to the accreditation inspector at the time of an inspection. If there is a change in key personnel between inspection visits, the laboratory shall forward to the inspector a revised organization chart and resumes of the new personnel.

4. The quality control structure and responsibilities of key personnel of the laboratory are described in a quality control manual (s). The manual is kept up-to-date and the procedures and requirements stated therein are complied with. The quality control manual (s) includes information with regards to receiving, handling, and shipping of products, testing procedures, calibration program, test reports, certifications, records and files, subcontracts, and the test standards files relating to the areas of accreditation.

b. Master file - The laboratory maintains a master file containing all of the relevant standards and test standards applicable to the category of products for which the accreditation is sought. It contains information that provides a historical record of changes to these standards. A procedure is maintained to control the use of the master file and to assure that it is kept up-to-date.

c. Receiving, handling, storage, and shipping controls - Controls for receiving, handling, storage, and shipping are in effect and include procedures for:

1. Visual examination of goods upon receipt for evidence of shipping damage.

2. Periodic review of capabilities of test equipment.

3. Storage of items while awaiting disposition with regard to the safety of personnel and protection to preclude the possibility of damage and deterioration, while in the laboratory.

4. Shipping and receiving data containing the date of receipt, name of customer, and other necessary data to accurately record and positively identify products as received at the laboratory.

d. Test procedures -

1. For all products for which the laboratory seeks testing accreditation the laboratory uses written test procedures. A list of these test procedures together with applicable test standards will be made available upon request to NAIL for examination and will serve as part of the laboratory evaluation by NAIL. The procedures shall be based on pertinent test standards of American National Standards Institute (ANSI), ASTM International (ASTM) , or other appropriate national consensus standards, and the specific test standard shall be identified in the application form for accreditation. For cases where a standard lists several tests for the same product NAIL may select representative tests for use in its evaluation.

2. Each test procedure includes for following information, when applicable:

i. Nomenclature and identification of the product;

ii. Characteristic and design criteria to be inspected or tested, including values for acceptance or rejection;

iii. Detailed steps and operations to be taken in sequence, including verifications to be made before proceeding;

iv. A list of measuring equipment to be used, specifying range, type, accuracy , and test in which to be used;

v. Layout and interconnection of test equipment and test items;

vi. Hazardous situations or operations;

vii. Precautions to comply with established laboratory safety requirements to ensure safety of personnel, and to prevent damage to test items and measuring equipment;

viii. Environments and other conditions to be maintained, including tolerances;

ix. Special instructions for inspection or testing (e.g. special handling of fragile test items);

x. Special instructions for nonconformances, anomalous occurrences or results; and

xi. Nomenclature and designation of applicable test standard on which the test procedure is based.

3. The test procedure shall recognize that ASTM standards and NAIL practices require that visual inspection of any protective equipment includes examination of all surfaces. This means interior and exterior surfaces of such items as gloves, sleeves, line hose and covers. Gloves and sleeves shall be inflated to facilitate inspection of surfaces but they should not be left in other than their normal shape for more than a minimum period of time.

4. The procedure for in-service testing of live-line tools (hotsticks), shall follow IEEE 978-1984 Guide For In-Service Maintenance and Electrical Testing Of Live-Line Tools (Section 5.3 High Potential AC Test Method (DC Voltage May be Used) (Wet) and comply with the OSHA 1910.269 (j)(2)(iii)(D)&(E) standard as specified under wet conditions. Test segments should be 6 or 12 inches at 37.5 or 75kV respectively. Measurement of current in the test segments is recommended.

5. When a blanket is tested at a lower voltage requirement than the class designation of the manufacturer, the blanket should have the original class identification marked out with an indelible marker. Stamp the blanket with the date of test or retest, test voltage, new class rating and if desired the maximum use voltage.

6. No repair shall be performed on any flexible rubber personal protective product including gloves, sleeves, blankets, line hose and covers.

e. Data Sheet - The laboratory maintains data sheets and test equipment lists for all inspections and tests performed, which are appropriate for the type and scope of inspection or test operation performed and sufficient in detail to provide for complete verification and evaluation of the operations and objectives. Data sheets include the following minimum information:

1. Date of test, name of test, nomenclature of test item and name of owner or customer;

2. Unusual occurrences and result of each phase of testing thoroughly explained; and

3. Signature of technician performing test.

f. Test Equipment Lists - A test equipment list is provided prior to the equipment being utilized for that test. It includes the following information:

1. The type and manufacture of the equipment;

2. The serial and or model number of the equipment; and

3. Date of last calibration.

g. Calibration Program - The laboratory has established and utilized a documented calibration program to assure the required degree of accuracy in measurements.

1. The accuracy of all measurement instrument standards are traceable to primary standards maintained by the National Bureau of Standards of the United States of America or the national physical laboratory maintaining such standards in the country in which the laboratory is located. This traceability may be maintained through appropriate reference standards whose accuracy and stability has been certified by such agencies.

2. The normal accuracy of the reference standard is at least four times as great as that of the instrument being calibrated. All equipment and reference standards are calibrated at least once a year, or in accordance with the instrument manufacturer's recommended schedules or the recommendations of the National Bureau of Standards.

3. Documented evidence of calibrated standards and test equipment is maintained by the laboratory.

i. If the laboratory utilizes an outside facility for calibration services, then the laboratory is responsible for the adequacy and quality of that service.

ii. The laboratory maintains certifications with copies of calibration data and equipment lists.

4. If equipment calibrations are performed in-house, the laboratory maintains written calibration procedures, and equipment folders containing routine maintenance information, values recorded during calibration and standards equipment utilized for the calibration.

5. Environmental factors critical to the calibration method are controlled during calibration processes and depend upon the physical property and degree of sensitivity of the instrument involved. The environmental factors may include temperature, humidity, cleanliness, vibration, voltage, radio frequency interference, and pressure. The requirement for these controlled environments is stated in each calibration procedure.

6. The calibration program also contains written requirements and controls for permissible error limits, labeling and tagging of calibrated equipment, and state of the art measurements.

h. Laboratory organizations, management, and competence.

1. The laboratory is legally constituted to perform testing and has an organizational structure that enables it to perform and satisfactorily maintain the functions for which accreditation is sought. A description of the laboratory's organization shall include:

i. The complete legal name and address of the main office or parent company if part of a larger organization;

ii. The name and location of the laboratory if different from that stated in (i).

iii. A description of the sources and manner of financial support or other evidence of financial stability;

iv. A table of organization or chart showing the titles or positions of all key management and supervisory personnel in each operating, support, and service unit in the laboratory's functional organization, and their reporting relationships relative to this accreditation request;

v. The names and resumes of the individuals assigned to each of the positions identified in (iv) or the personnel requirements for the individuals occupying those positions.

2. The laboratory can demonstrate to the Accreditation Inspector (s) a level of competence and experience in the area of testing for which it is seeking accreditation, in the following manner:

i. The technical director or the equivalent personnel of the laboratory, in conjunction with other personnel. is capable of orally presenting the laboratory's capabilities, and has a working knowledge of the applicable test standards and methods for approval of procedures for which the laboratory is seeking accreditation;

ii. The laboratory can demonstrate that it is a working laboratory which has performed testing in the field of endeavor or in a comparable field of testing, for which it is seeking accreditation; and

iii. The laboratory is prepared to submit a minimum of three customer references and three test reports.

3. The laboratory has the necessary test and inspection equipment to test the products for which it is seeking accreditation. If the laboratory utilizes a manufacturer's in-house laboratory or subcontracts for certain tests, it assumes the responsibility for the results of all testing.

i. Facilities and Equipment - The laboratory has available all facilities and test equipment relevant to the test procedure for which accreditation is being requested. Such equipment and facilities are capable of uniformly producing and controlling all the test conditions specified in the applicable test standards. A list of such facilities and equipment is made available to the NAIL auditing team. prior to the inspection of such facilities and equipment.

j. Personnel

1. The laboratory shall be staffed by an adequate number of personnel qualified by training and experience to conduct tests and analyze data to assure the accuracy, performance, and timeliness of testing and follow-up requirements. The personnel shall have a working knowledge of applicable test standards and test methods in the field of electrical testing of protective electrical equipment.

2. The laboratory shall be under the technical direction of a director who shall be responsible for program schedules, manpower control and overall supervision of all test functions and personnel, and who has at least a Bachelor of Science degree and/or five (5) years of working technical experience in the field of electrical testing of protective electrical equipment.

3. There shall be a technical supervisor who shall be responsible for the technical adequacy and quality of testing performed by the laboratory, and of the performance of technicians assigned to the work. This supervisor shall have at least a high school diploma or equivalent, and two (2) years of working technical experience in the field of electrical testing of protective electrical equipment.

4. There shall be a technical staff responsible for tasks assigned in the performance of test functions and/or for assistance to the technical supervisor. These individuals shall have at least a high school diploma or equivalent.

5. Qualification of personnel may be waived for cause by action of Board of Directors on advice of inspector.

II. ACCREDITATION CONDITIONS

The following conditions shall be part of every accreditation:

a. Evidence of accreditation - The accreditation of any testing laboratory shall be evidenced by a letter from NAIL.

b. Period of accreditation - The accreditation of a laboratory shall be valid for a period of two years, unless terminated before or renewed at the expiration of the period. At the second renewal, NAIL may extend the renewal periods to three years upon the recommendation of the inspector. The period of validity shall be stated in the letter of accreditation.

c. Maintenance of qualifying conditions - Every accredited laboratory shall continue to satisfy all the conditions specified in accreditation criteria during the period of accreditation.

d. Record keeping

1. The accredited laboratory shall maintain the following records:

i. Test reports on all products tested;

ii. All data generated during testing;

iii. Records supporting compliance with calibration program;

iv. Equipment lists;

v. Receiving and shipping records;

vi. NAIL accreditation correspondence (application, letter of accreditation, etc.);

vii. Organization chart and personnel files, including list of all personnel job responsibility descriptions;

viii. Financial records;

ix. Quality control manuals (s); and

x. A master file obtaining all standards for which accreditation has been granted.

2. The minimum period of retention for the records shall be five (5) years, except that shipping and receiving records need to be kept only for a minimum of one (1) year.

e. Inspection of laboratories

1. The accredited testing laboratory shall grant NAIL the right to conduct unscheduled inspections of the laboratory in order to assure continued compliance with the requirements for accreditation, and shall cooperate in the conduct of the inspections.

2. The laboratory upon request by NAIL shall verify, at its expense, any data that it has generated.

f. Other conditions - The accredited testing laboratory shall comply with any other term or condition stated in its letter of accreditation.

g. Accreditation approval shall be given or denied on the basis of a report submitted by the inspector along with documentation. If any proprietary information is obtained by the inspector, it shall remain confidential to the inspector unless released to the NAIL Board by applicant.

III. ACCREDITATION PROCEDURES

A. Granting of Accreditation

a. Application - Any testing laboratory seeking accreditation may file an application therefore with the Association of North American Independent Laboratories for Protective Equipment Testing, c/o Skarshaug Testing Laboratory, Inc. 505 South Bell Avenue, Ames, Iowa 50010. The application for accreditation must be made on appropriate forms from NAIL for PET.

b. Action on application

1. Defective application - If an application for accreditation does not contain sufficient information with regard to all the criteria of accreditation, NAIL may deny the application. Notice of a denial shall be given to the applicant and shall state the deficiencies of the application. A denial of an application shall be without prejudice to the submission of a new or amended application.

2. Adequate applications - If an application is not denied pursuant to paragraph (b) (1) of this section, NAIL shall acknowledge the receipt of the application and shall make arrangements for an onsite survey of the applicant's laboratory facilities at a mutually agreeable time.

3. Onsite survey - NAIL shall perform an onsite survey of the applicant's laboratory facilities for the purpose of verifying the representations of the application concerning the criteria of accreditation. NAIL shall make a complete written report of the survey and shall maintain it in an appropriate file containing the application, the report and any other writing concerning the application.

4. Decision

I. If the NAIL Board of Directors is persuaded that the applicant satisfies all the criteria of accreditation, it shall send to the applicant a letter of accreditation. The applicant shall keep the letter with the other records required by Section II (d).

II. If the NAIL Board of Directors is not persuaded that the applicant satisfies all the criteria of accreditation, it shall give the applicant written notice of a proposal to deny the application. The notice shall contain a statement of all the reasons for the proposed denial and shall notify the applicant that:

a. The proposal to deny the application is based on the information in the relative application file;

b. All the papers in the file are available to the applicant for inspection and copying;

c. The applicant may contest the NAIL Board of directors reasons for the proposed denial, by giving to NAIL prompt notice of its contentions; and

d. If a proposal to deny an application is contested NAIL shall make the arrangements necessary to disclose to the applicant all the facts and arguments on which the proposed denial of the application is based.

B. Renewal of accreditation

a. Applications - An accredited testing laboratory may renew its accreditation by filing with NAIL a completed renewal form, not less than thirty (30), not more than sixty (60), days before the expiration date of its current accreditation.

b. Effect of application - When an accredited testing laboratory has filed a timely and sufficient renewal form, its current accreditation does not expire until the renewal application has been finally determined.

c. Action on application - An application for renewal of accreditation may be granted only if NAIL is persuaded that the applicant continues to satisfy all the criteria of accreditation. As far as practicable, an application for renewal of accreditation shall be processed in accordance with Granting of Accreditation except that NAIL may waive its rights to conduct an onsite survey.

C. Modification of Accreditation

a. Termination or limitation of accreditation - An accredited testing laboratory may voluntarily terminate accreditation, either in its entirety or with respect to some of the products covered by the accreditation, by giving written notice of its intent to NAIL. The notice shall state the date on which the termination is to take effect. As of the effective date of the termination, the laboratory will no longer be recognized by NAIL as an accredited laboratory.

b. Enlargement of accreditation - An accredited testing laboratory may apply to NAIL for an enlargement of its current accreditation to cover additional products. The application shall be processed and acted on in accordance with the applicable provisions of Granting of Accreditation, except that NAIL may waive the right to conduct an onsite survey.

D. Revocation of accreditation

a. Grounds for revocation - NAIL may revoke an accreditation in case of:

1. Material misrepresentation in the application for the accreditation of its enlargement, or its renewal, or

2. Failure to comply with a condition of the accreditation.

b. Procedure for revocation

1. Except in cases of willfulness or those in which the safety of employees requires otherwise, no accreditation may be suspended or revoked unless, before the institution of revocation proceedings, the accredited laboratory has been given (1) written notice by NAIL of the facts or conduct which are believed to warrant the revocation or suspension, and (2) a reasonable opportunity to demonstrate or achieve compliance with the applicable requirements.

2. The procedure for suspension or revocation of an accreditation shall conform, to the extent practicable, to the procedure for accreditation prescribed in Granting of Accreditation.

E. Fees

Fees charged for accreditation shall be adequate to cover the expenses commensurate with the cost to perform the accreditation surveys.

F. Accreditation Files

NAIL files are confidential and not subject to the Freedom of Information Act.

QUALITY PROTECTIVE EQUIPMENT REQUIRES QUALITY TESTING