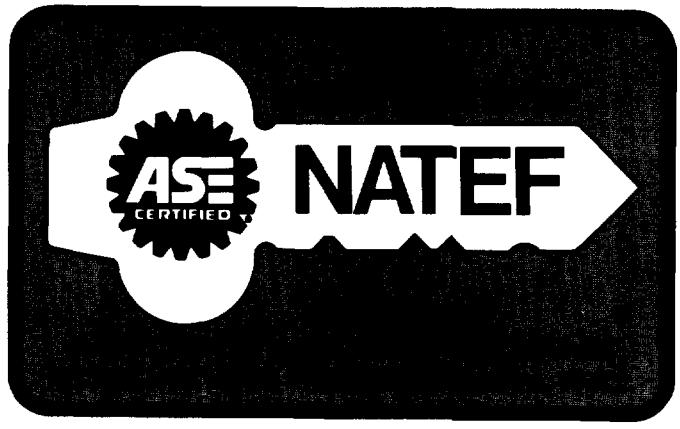
ASE CERTIFICATION
FOR
LIGHT/MEDIUM DUTY
CNG/LPG
TRAINING PROGRAMS



These CNG/LPG program standards were prepared with the support of the U.S. Department of Energy, Grant No. DE-FG36-95G010070. However, any opinions, findings, conclusions, or recommendations expressed herein are those of the author and do not necessarily reflect the views of DOE.

13505 Dulles Technology Drive, Suite # 2
Herndon, Virginia 22071-3421

ASE CERTIFICATION

FOR

LIGHT/MEDIUM DUTY

CNG/LPG TRAINING PROGRAMS

Administered By:

National Automotive Technicians Education Foundation (NATEF)
13505 Dulles Technology Drive, Suite # 2
Herndon, VA 22071-3421
(703) 713-0100

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11/95

DISCLAIMER

Facility issues related to CNG are perhaps the least known and understood by those just entering the field of training and vehicle service. There are a limited number of references and specific codes for CNG that can be used to evaluate building modifications (codes are currently under development by the National Fire Protection Association). However, there are numerous consultants (engineers, certified fire professionals, insurance providers, gas utility personnel, etc.) who are capable of evaluating facility requirements. Schools that are seeking evaluation by the National Automotive Technician Education Foundation (NATEF) and certification by the National Institute of Automotive Service Excellence (ASE) for their CNG/LPG Technician Training Programs must seek out the appropriate local authority to assist them in making facility evaluations/modification. ASE/NATEF and those designated by ASE/NATEF to evaluate training programs for ASE certification do not assume any responsibility for the appropriateness of the facilities or the safety procedures adopted by the program. Such responsibility shall remain with the school or program administrators.

REPORTING REQUIREMENT

To ensure that facilities have been evaluated by an appropriate authority, each program requesting ASE Program Certification must provide to NATEF documentation indicating that such an evaluation has been performed and all issues raised by the evaluation have been satisfactorily addressed. A letter from the Program Administrator must be included in such documentation that indicates that the school's administration or other appropriate authority accepts responsibility for the facilities utilized in CNG/LPG training.

SAFETY ISSUES FOR TRAINING AND SERVICE OF CNG AND LPG VEHICLES

The following list is intended to give an overview of concerns and issues related to working safely with CNG and LPG vehicles. The list is not all-inclusive and does not suggest that it addresses all possible issues. Programs seeking ASE certification shall retain responsibility for the appropriate evaluation of their facilities and the development and implementation of operational procedures.

* Vehicles should not be allowed indoors for training purposes until a leak check has been performed on the vehicle.

* Buildings that store CNG vehicles should be modified to eliminate ignition sources near the ceiling and anywhere along the path between where a natural gas release might occur and where it might accumulate.

* Buildings that store CNG vehicles should be modified to incorporate methane detectors to warn of dangerous build-ups of released natural gas. Electrical system shut-downs should be considered in conjunction with detection of dangerous levels of natural gas.

* The ventilation rates in buildings where training using CNG vehicles is performed should be measured and a determination should be made as to whether the rate is sufficient to cope with a worst-case scenario.

* Frost-bite can occur when attempting to fix high pressure leaks of CNG due to the Joule-Thompson cooling effect of natural gas.

* Buildings that store LPG vehicles should be modified to eliminate ignition sources near the floor.

* Since LPG is more volatile than gasoline, ground level ventilation rates should be assessed to determined whether they are high enough to prevent the formation of flammable mixtures from worst-case spills of LPG.

* LPG detectors should be installed to indicate when dangerous levels of LPG exist. The need for increased ventilation and electrical system shut-downs should be assessed in conjunction with LPG detectors.

* When vehicles are not being used for training, vehicle fuel tanks should be closed off to minimize the potential for leaks to occur.

* Thorough education about CNG and LPG properties is essential to understanding the hazards present in handling these fuels, and the leaks of these fuels in confined spaces.

* CNG cylinders should never be emptied without proper direct grounding. Plumes of natural gas must not be allowed to impinge on other vehicles or structures. Natural gas released quickly may be momentarily heavier than air, and may travel laterally considerable distances.

* Natural gas is non-toxic, but like any gas, asphyxiation is possible at high concentrations.

* Training facilities that use CNG and LPG vehicles should have a safety plan to deal with fuel releases, vehicle fires, and personal injuries.

* Buildings where training using CNG and LPG vehicles is conducted should have a risk analysis conducted by an appropriate authority.

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POLICIES

COMPRESSED NATURAL GAS (CNG) AND LIQUEFIED PETROLEUM GAS (LPG) TECHNICIAN TRAINING CERTIFICATION PROGRAM

The Board of the National Institute for Automotive Service Excellence (ASE) is the responsible body for the Light/Medium-Duty Compressed Natural Gas (CNG) and Liquefied Petroleum Gas (LPG) Technician Training Certification Program. ASE will grant certification to programs that comply with the evaluation procedure, meet established standards, and adhere to the policies in this document.

The certification program is under the direct supervision of the Board of Trustees of the National Automotive Technicians Education Foundation (NATEF) and such personnel who are designated or employed by the Foundation.

The purpose of the CNG/LPG Technician Training Certification Program is to improve the quality of training offered at the secondary and post-secondary levels. NATEF does not endorse specific curricular materials nor provide instruction to individuals, groups or institutions. It does, however, set standards for the content of instruction which includes: tasks, tools and equipment, hours, and instructor qualifications.

The program is a certification program only and it is not associated with the accreditation role of other agencies.

The cost to each program for certification will be as reasonable as possible to encourage program participation. This cost will include: self-evaluation materials, on-site team evaluation materials, and the honorarium and expenses of the Evaluation Team Leader (ETL).

The CNG/LPG areas that may be certified are:

1. Electrical/Electronic Systems
2. Engine Performance
3. LPG Diagnosis and Repair
4. LPG Maintenance
5. LPG Conversion/Installation
6. CNG Diagnosis and Repair
7. CNG Maintenance
8. CNG Conversion/Installation

Programs may certify for LPG only, CNG only, or both LPG and CNG. In any case, areas 1 - 4 are required for minimum certification of LPG programs; while areas 1, 2, 6, & 7 are required for minimum certification of CNG programs.

CNG/LPG MINIMUM PROGRAM REQUIREMENTS

1. The minimum program requirements are identical for initial certification and for recertification.

2. A program providing instruction in all of the CNG/LPG areas must have a minimum total of 730 hours of combined laboratory/shop (co-op) and classroom instruction. Tasks related to the CNG/LPG areas may be taught at different times during the course of study. Therefore, the hours for an individual area would be the sum total of all the hours of instruction related to the tasks. Individual areas must have a minimum of the following hours:

Electrical/Electronic Systems	200
Engine Performance	260
LPG Diagnosis and Repair	70
CNG Diagnosis and Repair	70
LPG Maintenance	25
CNG Maintenance	25
LPG Conversion/Installation	40
CNG Conversion/Installation	40
TOTAL HOURS	730

3. **The average rating on Standards 6, 7, 8, and 9 must be a four (4)** on the five-point scale (see Program Standards section for description of standards). The program will not be approved for an on-site evaluation if the average is less than 4 on those Standards. The program should make improvements before submitting the application to NATEF for review. **A program will be denied certification if the on-site evaluation team average on Standards 6, 7, 8, and 9 is less than four.**

4. A program may not be approved for an on-site evaluation if the average rating on Standards 1 - 5 and 10 is less than a four (4) on the five-point scale. **A program may be denied certification if the on-site evaluation team average on Standards 1 - 5 and 10 is less than four.** Approval for on-site evaluation or certification will be made by

NATEF, based on the number of Standards rated at 4 or 5 as well as the individual rating on any Standard rated below 4.

5. Instructor(s) must hold current ASE certification in the area(s) they are teaching (e.g., A-6, A-8, F-1). Currently, there is no ASE certification for LPG technicians (Oct. 1995).

6. The program Advisory Committee must conduct at least two working meetings a year and have a minimum of 5 people on the committee. Minutes of the meetings must be provided for review by the on-site evaluation team.

7. The Task List is divided into three priority areas. The following guidelines must be followed:

95% of all Priority 1 (P-1) items must be taught in the curriculum.
80% of all Priority 2 (P-2) items must be taught in the curriculum.
50% of all Priority 3 (P-3) items must be taught in the curriculum.

8. The concern for safety is paramount to the learning environment. Each program area has the following safety task requirement preceding all related tasks:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

INFORMATION ABOUT EVALUATION TEAM LEADERS (ETLs)

Evaluation Team Leaders (ETLs) are educators who have been trained by NATEF to lead the on-site evaluation. The ETL will be assigned by the NATEF office once a program has been approved for an on-site evaluation. Every effort will be made to assign an ETL located closest to the school to reduce the cost for the evaluation. Two additional team members, selected by the program and approved by the ETL, are required for a CNG/LPG program on-site evaluation. (See the following page for additional information about team members.)

Persons selected as ETLs must have:

1. a minimum of six years of combined experience as an automotive technician and automotive instructor (at least three years experience as an automotive technician is required - with one of those years including experience with LPG and/or CNG),
2. a B.A. or B.S. in Education from a college or university recognized for teacher training by the state, and
3. ASE certification in <u>all</u> automobile areas (certified master automobile technician) and F-1.

Or, if a state employs CNG/LPG instructors without the preceding requirements, the following qualifications apply:

1. six years experience as an automotive technician - with one of those years including experience with LPG and/or CNG,
2. four years automotive teaching experience at the secondary or post-secondary level,
3. ASE certification in <u>all</u> automobile areas (certified master automobile technician) and F-1.

ETL training is valid for two years. However, automatic two-year renewal is granted every time an ETL conducts an on-site evaluation. ETLs are required to attend additional training sessions if they have not conducted an on-site evaluation in two years. This additional training is required even if the individual holds current ASE certification.

Anyone interested in becoming an Evaluation Team Leader should contact the NATEF office at (703) 713-0100 or their State Trade & Industry Supervisor for more details.

INFORMATION ABOUT ON-SITE EVALUATION TEAM MEMBERS

The program requesting certification is responsible for recruiting and recommending on-site evaluation team members. The ETL must approve individuals recommended by the program. The on-site evaluation team members must be practicing automotive technicians, service managers or shop owners (with CNG/LPG experience) from businesses or fleets in the area served by the training program.

Team members must have:

1. high school diploma or the equivalent (industry or military training may be considered as the equivalent), and
2. at least seven years full-time experience as a general automotive technician.

* ASE certification is recommended but not required.

The certification evaluation team is composed of three individuals: the ETL and two team members. The two team members must be from the automotive industry.

Each program requesting initial certification or recertification must identify their choices for evaluation team members on the On-Site Evaluation Team Member List. An alternate team member choice must be identified on the On-Site Evaluation Team Member List in the event that one of the team members is unable to conduct the on-site evaluation.

Team members must not be advisory committee members, former instructors or graduates of the program within the past ten years.

TASK LIST INFORMATION

An essential element of any curriculum or training program is a valid task list. Automotive instructors need a well-developed task list that serves as a solid base for course of study outlines and facilitates communication and articulation of their training programs with other institutions in the region.

The NATEF Light/Medium-Duty CNG/LPG task lists were developed in 1995 with funding from a cooperative agreement with the U.S. Department of Energy. Between June 20 and August 10, 1995, a national committee was assembled and conducted four, three-day workshops in Herndon, Virginia to identify the standards used in the Light/Medium-Duty CNG/LPG Certification Program. The committee consisted of individuals representing automobile manufacturers, conversion equipment manufacturers, fuel suppliers, CNG/LPG conversion companies, technicians, and educators. All participants have had significant experience with CNG, LPG, or both.

The committee reviewed NATEF program standards, task list, tools and equipment list, program hours, instructor qualifications, and Evaluation Team Leader (ETL) qualifications. The committee also had the most current NATEF automobile task list, the National Institute for Automotive Service Excellence (ASE) Light Vehicle-Compressed Natural Gas task list (F-1) and the American Society for Advanced Fuels Technology (ASAFT) task list for reference purposes.

In defining the CNG/LPG task list for secondary and post-secondary CNG/LPG programs, the committee elected to allow for as much overlap as practical with the Automobile Certification Program. Although an allowance was made for automobile and CNG/LPG programs to overlap, the CNG/LPG Program Certification is a separate, stand alone, certification. Additional information on the development of the NATEF task list can be found in the Task List section.

All tasks have a Priority designation.

- **Ninety-five percent (95%) of Priority 1 (P-1) items must be taught in the curriculum.**
- **Eighty percent (80%) of Priority 2 (P-2) items must be taught in the curriculum.**
- **Fifty percent (50%) of the Priority 3 (P-3) items must be taught in the curriculum.**

TOOLS AND EQUIPMENT INFORMATION

The basic tools and equipment that must be available for use in the CNG/LPG program are listed in the Tools and Equipment section. Many tools and much of the equipment are the same for some or all of the program areas. However, some equipment is specialized and must be available for use in the selected program areas. These individual program area lists are included in the Tools and Equipment section.

The student hand tool list covers all program areas. This list indicates the tools a student will need to own to be successful in each of the specialty areas.

Although no brand names are listed, the equipment and tools must address the following programmatic issues:

1. Safety - Equipment and tools must have all shields, guards, and other safety devices in place and operable.
2. Type and Quality - The tools and equipment used in a certified program must be of the type and quality found in industry. They must also be adequate and in sufficient quantity to meet the program goals and student performance objectives.
3. Consumable Supplies - Supplies should be in sufficient quantity to assure continuous instruction. Consumable supplies, such as solvents, sand paper, etc. are not listed.
4. Maintenance - A preventative maintenance schedule should be used to minimize equipment down-time.
5. Replacement - A systematic schedule for replacement should be used to maintain up-to-date tools and equipment at industry and safety standards. Information gained from student program evaluations as well as advisory committee input should be used in the replacement process.
6. Inventory - An inventory system should be used to account for tools, equipment, parts, and supplies.
7. Parts Purchasing - A systematic parts purchasing system should be used from work order to supplier.
8. Hand Tools - Each student should be encouraged to purchase a hand tool set during the period of instruction.
9. Storage - Adequate storage of tools should be provided. Space for storage of the students' hand tools should be provided.

CNG/LPG PROGRAM EVALUATION

NATEF Standards for Initial Certification and Recertification are identical. Four items are critical for certification and are in **bold** print in the CNG/LPG Program Self-Evaluation materials. These three items are:

2.5 A
6.5 A
7.1 A
7.1 B

Programs must be able to support a yes response for 2.5 A and 6.5 A. Programs must hold at least two working meetings of the Advisory Committee each year (2.5 A). In section 6.5 A, the programs must include the required percentage of the P-1, P-2, and P-3 tasks in the areas where certification is desired. Programs must also achieve a minimum score of 4 on the 5-point scale on item 7.1 A&B. If these responses are not achieved, do not apply for certification at this time.

In addition, an on-site evaluation will not be scheduled unless the average score on Standards 6, 7, 8, and 9 is at least a 4 on the CNG/LPG Program Self-Evaluation. Please refer to the CNG/LPG Minimum Program Requirements for more information.

RECOGNITION FOR CERTIFICATION

A program approved for certification will receive a plaque that bears the ASE seal and the school's name. Individual plates will be attached to the plaque to identify the areas in which the program is certified. These will also include the expiration date of certification. A statement below the seal will read:

> "THE INSTRUCTION, COURSE OF STUDY, FACILITIES AND EQUIPMENT OF THIS INSTITUTION HAVE BEEN EVALUATED BY THE NATIONAL AUTOMOTIVE TECHNICIANS EDUCATION FOUNDATION AND MEET THE NATIONAL INSTITUTE FOR AUTOMOTIVE SERVICE EXCELLENCE STANDARDS OF QUALITY FOR THE TRAINING OF TECHNICIANS IN THE FOLLOWING AREAS:
>
> _____
>
> _____
>
> _____"

Institutions receiving ASE certification are encouraged to put on the graduate's diploma or certificate the following statement:

> "The person holding this diploma has participated in a *CNG/LPG, CNG, or LPG*, technician training program that was certified by the National Institute for Automotive Service Excellence and has completed instruction in the following areas:
>
> _____
>
> _____
>
> _____"

A screened ASE/NATEF logo may be overprinted with the above statement and placed on the graduate's diploma. A camera ready logo is provided in the promotional material a program receives upon certification.

A program approved for recertification will receive a brass plate which reads "RECERTIFIED Exp. 200__".

Certified programs will also receive a 24"x30" sign indicating that the training program is ASE certified.

APPEALS AND ACTION FOR REVOCATION

APPEALS: PROGRAMS APPLYING FOR CERTIFICATION

A complaint received from any school concerning the procedures, evaluation or certification of the CNG/LPG technicians training program must be made in writing to the ASE office in Herndon, VA. It will be immediately referred to the Grievance Examiner who will acknowledge receipt of the complaint, in writing, to the complainants. Thereafter, the Grievance Examiner will investigate the complaint and prepare a report. A copy of the report will be given to the complainants and to an Appeals Committee within thirty (30) days of the receipt of the complaint.

The Appeals Committee will review the findings and recommendations of the Grievance Examiner, together with the complaint and any data supplied in connection therewith. The Appeals Committee will be empowered to dismiss the matter or to initiate such action as they may deem appropriate.

If the complainants desire to review the Appeals Committee's evaluation, they may do so at the office of the Grievance Examiner in Herndon, VA. However, they will not be permitted to make copies of the results.

ACTION FOR REVOCATION: ASE CERTIFIED PROGRAMS

The Appeals Committee will also advise the ASE President of its judgments and recommendations for action in any cases of malpractice or misrepresentation involving the misuse of ASE certification for a CNG/LPG technician training program. Upon receipt of a complaint alleging misuse or misrepresentation by a certified program, the Grievance Examiner will be notified. The Grievance Examiner will notify, in writing, the parties against whom the complaint has been filed, indicating the alleged wrongdoing. The parties will be further advised that they may submit a written explanation concerning the circumstances of the complaint within thirty (30) days. After the Grievance Examiner has considered the complaint and received the explanation, if any, the Grievance Examiner will determine whether there is a reasonable basis for a possible wrongdoing. If the Grievance Examiner finds such a basis, the Grievance Examiner will inform the parties of the findings. At that time, the Grievance Examiner will inform the parties of their right to a hearing before the Appeals Committee. The parties will have fifteen (15) days to notify the Grievance Examiner, in writing, of their decision.

In the event the involved parties elect to be bound by the findings of the Grievance Examiner without a hearing, the Grievance Examiner will submit a written report with recommendations to the Chairman of the Appeals Committee. This report will be submitted within sixty (60) days of the receipt of the waiver of a hearing. The Chairman of the Appeals Committee will mail a copy of the Grievance Examiner's findings and recommendations to the parties.

In the event that the involved parties elect to appear at a hearing, the Chairman of the Appeals Committee will call a Board of Inquiry. This Board will consist of four ASE Board members, one from each of the following categories: Education, Public Interest, Service Employers, and Vehicle and Service Products Manufacturers. The Board of Inquiry will be convened in Herndon, VA at a date and time determined by the Chairman. The Board will notify the involved parties, in writing, regarding the time and place of the hearing.

The Grievance Examiner will be responsible for investigating and presenting all matters pertinent to the alleged wrongdoing to the Board of Inquiry. The involved parties will be entitled to be at the hearings with or without counsel. The parties will be given an opportunity to present such evidence or testimony as they deem appropriate.

The Board of Inquiry will notify the Chairman of the Appeals Committee of its findings and recommendations, in writing, ten (10) days after the hearing is completed.

The Appeals Committee will review the findings and recommendations of either the Grievance Examiner if a hearing was waived or the Board of Inquiry if a hearing was held. The Appeals Committee will determine if the record on the complaint supports a finding of conduct contrary to or in violation of reasonable practices. If two-thirds of the Appeals Committee so find, the Committee will recommend to the President of ASE appropriate sanctions or courses of action against the parties charged.

PROCEDURES FOR CERTIFICATION/RECERTIFICATION

Process Overview

NOTE: NATEF recommends that programs maintain a file containing copies of all reference and documentation materials developed during all phases of the certification process.

1. Purchase application materials

The program requesting certification must purchase self-evaluation materials from NATEF in Herndon, VA. Upon completion of the self-evaluation, the program must return four items from the evaluation materials packet. These four items are:

a. Application for Certification or Recertification
b. Self-Evaluation Summary Sheet
c. On-site Evaluation Team Member List
d. Instructor Qualifications Sheets

2. NATEF review of application

The national office will review the materials within 30 days. Following the review, the program administrator and the state Trade & Industrial Supervisor will be notified about the status of the program. The program will be identified as one of the following:

a. qualified for on-site evaluation for all the specialty areas listed on the application.
b. qualified for on-site evaluation for some but not all specialty areas listed on the application. The program administrator may proceed with the on-site evaluation for the specialty areas that qualify at that time OR make improvements and resubmit the application at a later date.
c. not qualified for an on-site evaluation at that time. NATEF will indicate specific improvements that must be made before the on-site evaluation can be scheduled.

3. Evaluation Team Leader (ETL) assigned, program coordinator makes contacts

In cooperation with state officials, NATEF will assign an Evaluation Team Leader (ETL) to a program. NATEF will also send the program the Application for On-site Evaluation. With a legitimate reason, the program coordinator can contact the NATEF office to request a different ETL. (The ETL assigned must NOT be a present or former teacher or administrator of the program to be evaluated.) The program coordinator must contact the ETL to arrange a date for the on-site evaluation.

The Application for the On-site Evaluation will be sent with instructions that outline the plans for the local administration and the costs for the ETL's services and expenses. These costs will be paid by the institution requesting certification.

4. Send on-site application, course of study, and list of on-site evaluation team members to ETL

The Application for On-site Evaluation must be sent to the ETL, signed by the program administrator. A copy of the course of study and this application must be received by the ETL at least two weeks prior to the on-site evaluation or the on-site must be rescheduled. The course of study should include the following items:

a. syllabus for each class
b. tasks to be taught under each area, specified according to High Priority designations (P-1, P-2, P-3)
c. number of contact hours for each area (Tasks may be taught at different times in the program or in more than one area. However, the hours for the tasks may be counted only once.)
d. areas and sequence of instruction to be included in the program
e. list of training materials and audio-visual materials used in training
f. sample evaluation form used to track student progress

Include the On-site Evaluation Team Member List for the ETL to review and approve. Once a date has been set and the on-site evaluation team members have been approved by the ETL, the program coordinator must contact the on-site evaluation team members to make arrangements for the evaluation day(s).

5. On-site evaluation

Initial certification requires 2 consecutive days, while students are in class, for the on-site evaluation of all the Standards. However, if more than one program is applying for certification (general automotive and a CNG/LPG program, for example), additional team members and additional days may be required to complete the on-site evaluation. The need for additional team members and/or days will be determined by the NATEF office.

Recertification requires 1-day on-site evaluation, while students are in class, and Standards 6-9 are reviewed by the on-site evaluation team. However, if the Advisory Committee average on Standards 1-5 or Standard 10 was less than 4, these Standards must be reviewed by the on-site evaluation team. The NATEF office will determine whether an additional day or additional team members will be required to complete the evaluation.

6. ETL reports results to NATEF

The ETL will submit all on-site evaluation materials and a final report to NATEF with a recommendation for or against program certification.

7. Program certification

The national office will review the final report and all additional evaluation materials to determine whether the program meets the requirements for certification and will make their recommendation to the ASE Board. The ASE President, however, will approve certification as sanctioned by the Board of Directors.

Programs that do not earn certification will be given a written report specifying improvements that must be made to qualify for certification. The decision at the national level will be final unless appealed to the ASE Board of Directors.

The program administrator and the state Trade & Industrial Supervisor will be notified of all decisions regarding the certification status of all programs applying for ASE certification.

8. Display and reporting of certification materials

A wall plaque identifying the certified areas will be forwarded from the national office to the program administrator. Schools must accurately report areas of ASE certification.

9. Certified CNG/LPG Technician Training List

The NATEF office maintains a current listing of all ASE certified programs. The list is made available upon request.

10. Compliance report

A program will be certified for five years. A compliance report is required after 2½ years. The compliance report will be used to verify that a program is maintaining its standards. NATEF will notify the program administrator of the compliance date and will send the appropriate compliance review forms at that time. The program administrator must complete the forms and return them to the NATEF office.

11. Recertification

The NATEF office will contact the program coordinator six (6) months prior to the certification expiration date. The program must formally request recertification materials and follow the process outlined above.

On-site Evaluation Cost Sheet
Effective April 1, 1995 *

CNG/LPG

	CERTIFICATION	RECERTIFICATION
Certification Manuals	$60.00	$50.00
On-site Evaluation Team Manuals (minimum of 3 sets for initial cert. and 3 sets for recert. @ $40 each.)	$120.00	$120.00
Honorarium for Evaluation Team Leader (ETL) @ $175/day	$350.00	$175.00
Estimated mileage, hotel and meal expenses for the ETL	$150.00	$100.00
ESTIMATED TOTAL COSTS	$680.00	$445.00

NOTE: It is anticipated that team members recruited from local independent repair facilities and dealerships will serve without charge to the institution.

* Cost of certification/recertification subject to change. Contact the NATEF office for current information.

CNG/LPG PROGRAM STANDARDS

STANDARD 1 - PURPOSE

THE CNG/LPG TECHNICIAN TRAINING PROGRAM SHOULD HAVE CLEARLY STATED PROGRAM GOALS, RELATED TO THE NEEDS OF THE STUDENTS AND EMPLOYERS SERVED.

Standard 1.1 - Employment Potential

The employment potential for CNG/LPG technicians, trained to the level for the specialty or general areas outlined in the program goals, should exist in the geographic area served by the program. (Geographic area served includes regions of recruitment and placement of students.)

Standard 1.2 - Program Description/Goals

The written description/goals of the program should be shared with potential students and must include admission requirements, employment potential, area(s) of specialty training offered, and the cost of all tuition and fees. Technical qualifications of the faculty should also be included.

STANDARD 2 - ADMINISTRATION

PROGRAM ADMINISTRATION SHOULD ENSURE THAT INSTRUCTIONAL ACTIVITIES SUPPORT AND PROMOTE THE GOALS OF THE PROGRAM.

Standard 2.1 - Student Competency Certification

The certificate or diploma a student receives upon program completion should clearly specify the area(s) of demonstrated competency.

Standard 2.2 - Chain of Command

An organizational chart should be used to indicate the responsibilities for instruction, administration, and support services.

Standard 2.3 - Administrative Support

Positive administrative support from institutional and local governing bodies should be demonstrated. Indicators of administrative support would include: support for staff in-service training; provision of appropriate facilities; up-to-date tools, equipment, and training support materials.

Standard 2.4 - Written Policies

Written policies should be adopted by the administration and policy board for use in decision-making situations and to provide guidance in achieving the program goals. Policies regarding safety, liability, and lab/shop operation should be written and prominently displayed as well as provided to all students and instructors.

Standard 2.5 - Advisory Committee

An Advisory Committee must convene at least two times a year and be utilized to provide counsel, assistance, and information from the community served by the training program. This Committee should be broadly based and include former students, employed technicians, employers, and representatives for consumer's interests.

Standard 2.6 - Public/Community Relations

An organized plan should be used to provide the community at large information regarding the training program, its graduates, its plans, and any services provided to the community.

Standard 2.7 - Live Work

A systematic method of collecting, documenting, and disbursing live work repair receipts should be used. Instructional staff should not be required to collect payment for live work repairs.

STANDARD 3 - LEARNING RESOURCES

SUPPORT MATERIAL, CONSISTENT WITH BOTH PROGRAM GOALS AND PERFORMANCE OBJECTIVES, SHOULD BE AVAILABLE TO STAFF AND STUDENTS.

Standard 3.1 - Service Information

Service information with current manufacturer's service procedures and specification data for vehicles manufactured within the last ten (10) years should be available. This information should be accessible to students while working in the lab/shop area.

Standard 3.2 - Multimedia

Appropriate up-to-date multimedia materials such as video equipment, transparencies, etc. should be readily available and utilized in the training process.

Standard 3.3 - Instructional Development Services

The service of professional instructional development personnel should be used when available. At a minimum, equipment and supplies should be available for duplication or copying printed materials and transparencies. Instructional development personnel should conduct in-service and/or training in curriculum and media development.

Standard 3.4 - Periodicals

Current general and technical automobile, CNG, and LPG magazines and newspapers should be available for student and instructor use.

Standard 3.5 - Student Materials

Necessary instructional texts or pertinent material should be available for each student to satisfy the objectives of the mode of instruction used. Basic textbooks should have copyright dates that are not over six (6) years old; specialized textbooks should have copyright dates that are not over six (6) years old.

STANDARD 4 - FINANCES

FUNDING SHOULD BE PROVIDED TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

Standard 4.1 - Program Training Cost

The enrollment in the program or program area should be sufficient to keep the per-student training costs to a realistic figure.

Standard 4.2 - Budget

An adequate annual budget should be developed, allocated, and used for the operation of the program.

Standard 4.3 - Budget Preparation

The budget should be prepared by the institutional administration in conjunction with the program faculty.

Standard 4.4 - Status Reports

Budget status reports should be made available to program staff, at least quarterly.

STANDARD 5 - STUDENT SERVICES

SYSTEMATIC PRE-ADMISSION TESTING, INTERVIEWS, COUNSELING SERVICES, PLACEMENT, AND FOLLOW-UP PROCEDURES SHOULD BE USED.

Standard 5.1 - Pretesting

A formal pretesting program should be used to assess a student's abilities in reading, mathematics, and mechanical aptitude to evaluate and assure the student a reasonable probability of success as a CNG/LPG technician. Testing procedures and how the tests results will be used (e.g., placement, assessment of student's developmental needs, etc.) should be stated in program explanatory material.

Standard 5.2 - Pre-admission Interviews

Prior to program admission, a student should be interviewed and approved for admission.

Standard 5.3 - Student Records

Permanent records of all students, former and current, should be available, preferably in one central location, and kept confidential.

Standard 5.4 - Placement

A systematic student placement system should be used to assist program graduates to obtain employment in the automotive/CNG/LPG industry.

Standard 5.5 - Follow-up

A follow-up system should be used to determine students' employment location and for feedback regarding the efficiency, effectiveness, and appropriateness of training. The follow-up procedure should be designed to assure feedback regarding needed additions or deletions to the training curriculum, program, and tools and equipment. Follow-up of graduates employed outside of the CNG/LPG industry should indicate reasons for non-CNG/LPG employment. When applicable, this information should be used to modify the training quality and/or content.

Standard 5.6 - Legal Requirements

The training program should meet all applicable local, state, and federal requirements.

STANDARD 6 - INSTRUCTION

INSTRUCTION MUST BE SYSTEMATIC AND REFLECT PROGRAM GOALS. A TASK LIST AND SPECIFIC PERFORMANCE OBJECTIVES WITH CRITERION REFERENCED MEASURES MUST BE USED.

Standard 6.1 - Program Plan

The training plan should progress in logical steps, provide for alternate sequences, where applicable, and be made available to each student.

Standard 6.2 - Student Training Plan

A training plan for each student should be used, indicating the student's training goal(s) and specific steps needed to meet that goal. Students should be given a copy of their training plan.

Standard 6.3 - Preparation Time

Adequate time should be provided for teacher preparation and program development.

Standard 6.4 - Teaching Load

The instructor/student ratio and class contact hours should allow time for interaction on a one-to-one basis.

Standard 6.5 - Curriculum

All tasks have been given a priority rating. Ninety-five percent (95%) of the tasks designated as Priority 1 (P-1) must be taught in the curriculum. Eighty percent (80%) of the

tasks designated as Priority 2 (P-2) must be taught in the curriculum. Fifty percent (50%) of the tasks designated as Priority 3 (P-3) must be taught in the curriculum. Additional tasks may be included to meet the needs of local employers. All additional tasks should be approved by the Advisory Committee.

Instruction on the legal aspects and responsibilities of the CNG/LPG technician in areas such as Environmental Protection Agency regulations, safety regulations, OSHA regulations, and other appropriate requirements should be included in the curriculum. Instruction and practice in filling out work order forms, ordering parts, and basic record keeping should be a part of the training program.

Tools and equipment must be available to perform the tasks in each of the areas for which certification is requested.

Standard 6.6 - Student Progress

A record of each student's progress should be maintained through the use of a progress chart or other recording device. The record should indicate tasks required for mastery in the area and those tasks the student has mastered.

Standard 6.7 - Performance Standards

All instruction should be performance based, with an acceptable performance standard stated for each task. These standards should be shared with students and potential employers. Students should demonstrate "hands-on competency" or "mastery" of a task before the instructor verifies a student's performance.

Standard 6.8 - Safety Standards

Safety instruction should be given prior to lab/shop work and be an integral part of the training program. A safety test should be included in the training program. Students and instructors should comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals while in the lab/shop area.

Standard 6.9 - Personal Characteristics

All training activities and instructional material should emphasize the importance of maintaining high personal standards.

Standard 6.10 - Work Habits/Ethics

The training program should be organized in such a manner that work habits and ethical practices required on the job are an integral part of the instruction.

Standard 6.11 - Provision for Individual Differences

The training program should be structured in such a manner that students with different levels of cognitive and psychomotor skills can be accommodated.

Standard 6.12 - Related Instruction

Instruction in related mathematics, communication, and interpersonal relations should be provided and coordinated with ongoing instruction in the training program. This instruction should be provided by a qualified instructor.

Standard 6.13 - Testing

Both written and performance based tests should be used to validate student competency. Students should be encouraged to take certification tests that are publicly recognized indicators of capabilities.

Standard 6.14 - Evaluation of Instruction

Instructional procedures should be evaluated in a systematic manner. This evaluation should be through regular reviews by students and the administration. Self-evaluation of instruction should also be utilized on a systematic and regular basis. This system should include input from former students and the Advisory Committee members. Instructional procedures should show a responsiveness to the feedback from these evaluations.

Standard 6.15 - Live Work

Live work should be scheduled to benefit the student and supplement ongoing instruction on items specified in the NATEF task list. A student should have had instruction and practice on a specific repair task before live work requiring that task is assigned. Donated vehicles by the manufacturers or other sources, customer-owned vehicles, and other training vehicles may be used as the primary source of live work. CNG/LPG training program student-owned vehicles, school buses, and other vehicles owned and operated by the governing body of the school should not be the primary source of live work vehicles. All vehicles in the lab/shop should have a completed industry-type work order attached to or on the vehicle.

Standard 6.16 - Articulation

Agreements between programs with equivalent competencies should be used to eliminate unnecessary duplication of instruction.

STANDARD 7 - EQUIPMENT

EQUIPMENT AND TOOLS USED IN THE CNG/LPG TECHNICIAN TRAINING PROGRAM MUST BE OF THE TYPE AND QUALITY FOUND IN THE REPAIR INDUSTRY AND MUST ALSO BE THE TYPE NEEDED TO PROVIDE TRAINING TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

Standard 7.1 - Safety

Equipment and tools used in the training program must have all shields, guards, and other safety devices in place, operable, and used.

Standard 7.2 - Quantity and Quality

The tools and equipment used in the training program should reflect the program goals and performance objectives. Sufficient tools and equipment should be available for the training offered. The tools and equipment should meet industry quality standards.

Standard 7.3 - Consumable Supplies

Sufficient consumable supplies should be readily available to assure continuous instruction.

Standard 7.4 - Maintenance

A preventive maintenance schedule should be used to minimize equipment down-time.

Standard 7.5 - Replacement

A systematic schedule for replacement should be used to maintain up-to-date tools and equipment at industry and safety standards. Student follow-up and Advisory Committee input should be used in this system.

Standard 7.6 - Inventory

An inventory system should be used to account for tools, equipment, parts, and supplies.

Standard 7.7 - Parts Purchasing

A systematic parts purchasing system, from work order to parts specialist to jobber, should be used. Task performance should not be unreasonably delayed due to lack of replacement parts.

Standard 7.8 - Hand Tools

Each student should have a basic hand tool set comparable to tools required for employment. The students should be encouraged to purchase a hand tool set during the period of instruction, appropriate to the CNG/LPG specialty area(s) in which they are receiving training.

STANDARD 8 - FACILITIES

THE PHYSICAL FACILITIES MUST BE ADEQUATE TO PERMIT ACHIEVEMENT OF THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

Standard 8.1 - Training Stations

Training stations (bench and live work) should be available in the type and number required for the performance of tasks outlined in the program goals and performance objectives.

Standard 8.2 - Safety

The facilities should meet all applicable safety standards and an emergency plan should be in place and posted in all classrooms and lab/shop areas.

Standard 8.3 - Maintenance

A regular facilities maintenance program should be used to ensure facilities are suitable when required for instruction.

Standard 8.4 - Housekeeping

The classroom(s), lab/shop, and support area(s) should be kept clean and orderly.

Standard 8.5 - Office Space

An area separate from the lab/shop should be available and convenient for use as an office by the instructor(s).

Standard 8.6 - Instructional Area

A classroom convenient to, but separate from, the lab/shop area should be available for instruction and other non-lab/shop activities.

Standard 8.7 - Storage

Storage areas for tools, parts, supplies, and vehicles should be sufficient to support the activities outlined in the program goals and performance objectives. Security should be provided to prevent pilferage and vandalism.

Standard 8.8 - Support Facilities

Restrooms, clean-up areas, and lockers should be provided for both male and female students and be convenient to the instructional area.

Standard 8.9 - Ventilation

An adequate exhaust fume removal system should be in place and operational. When appropriate, heating and cooling systems should be used to provide sufficient comfort for learning.

Standard 8.10 - First Aid

A first aid kit should be in place and comply with local regulations.

Standard 8.11 - Facility Evaluation

The Advisory Committee should conduct an annual evaluation of the facilities to assure adequacy to meet program goals.

STANDARD 9 - INSTRUCTIONAL STAFF

THE INSTRUCTIONAL STAFF MUST HAVE TECHNICAL COMPETENCY AND MEET ALL STATE AND LOCAL REQUIREMENTS FOR CERTIFICATION.

Standard 9.1 - Technical Competency

The instructor(s) must hold current ASE certification(s) in the specialty area(s) they teach. (Currently there is no LPG certification test. 10/1995)

Standard 9.2 - Instructional Competency/Certification

Instructors should meet all state certifying requirements.

Standard 9.3 - Technical Updating

Faculty members should be provided technical materials required to maintain their competency. An opportunity should be provided for instructors to return to industry on a regular basis for in-service and skill upgrading.

Standard 9.4 - First Aid

The program should have a written policy, approved by the administrator of the school, on First Aid procedures. Emergency procedures should be posted.

Standard 9.5 - Substitutes

A systematic method of obtaining "substitute" instructors should be used to assure instructional continuity. An orientation session for substitutes should be held on a regular basis. The substitute should be a competent automobile and/or CNG/LPG instructor.

STANDARD 10 - COOPERATIVE AGREEMENTS

WRITTEN POLICIES AND PROCEDURES SHOULD BE USED FOR COOPERATIVE AND APPRENTICESHIP TRAINING PROGRAMS.

Standard 10.1 - Standards

Student performance standards should be developed and coordinated by the supervising instructor.

Standard 10.2 - Agreements

All agreements should be written and legally binding.

Standard 10.3 - Supervision

A supervising CNG/LPG instructor should be assigned responsibility, authority, and time to coordinate and monitor cooperative/apprenticeship CNG/LPG programs.

TASK LIST AND ASSUMPTIONS

The NATEF CNG and LPG task list was developed in 1995 with funding from a cooperative agreement with the U.S. Department of Energy. Between June 20 and August 10, 1995, a national committee was assembled and conducted four, three-day workshops in Herndon, Virginia to identify the standards used in the Light/Medium-Duty CNG and LPG certification programs. The committee consisted of individuals representing the major automobile manufacturers, conversion equipment manufacturers, fuel suppliers, CNG and LPG conversion companies, technicians, and educators. All participants have had significant experience with CNG, LPG, or both.

The committee reviewed NATEF program standards, task list, tools and equipment list, program hours, instructor qualifications, and Evaluation Team Leader (ETL) qualifications. The committee also had the most current NATEF automobile task list, the National Institute for Automotive Service Excellence (ASE) Light Vehicle-Compressed Natural Gas task list (F-1) and the American Society for Advanced Fuels Technology (ASAFT) task list for reference purposes.

In defining the CNG and LPG task lists for secondary and post-secondary CNG/LPG programs, the committee elected to allow for as much overlap as practical with the Automobile Certification Program. Although an allowance was made for automobile and CNG/LPG programs to overlap, the CNG/LPG Program Certification is a separate, stand alone, certification.

All the tasks are assigned a priority number: P-1, P-2, or P-3. Please refer to the Task List Information in the Policies section for additional information on the requirements for instruction on tasks.

Theory instruction and hands-on performance of all the basic tasks will provide initial training for employment in the CNG/LPG service field. Competency in the tasks will indicate to employers that the graduate is skilled in that area.

GENERAL ASSUMPTIONS

1. It is assumed that:

* in all areas, appropriate theory, safety, and support instruction will be required for performing each task;
* the instruction has included identification and use of appropriate tools and testing and measurement equipment required to accomplish certain tasks;
* the student has received the necessary training to locate and use current reference and training materials from accepted industry publications.

2. It is assumed that:

* all diagnostic and repair tasks described in this document are to be accomplished in accordance with manufacturer's recommended procedures as published.

3. It is assumed that:

* individual training programs being evaluated for certification should have written and detailed performance standards for each task taught in the curriculum;
* learning progress of students will be monitored and evaluated against these performance standards;
* a system is in place which informs all students of their individual progress through all phases of the training program.

4. It is assumed that:

* individual courses of study will differ across CNG/LPG technician training programs;
* development of appropriate learning delivery systems and tests which monitor student progress will be the responsibility of the individual training program.

5. It is assumed that:

* all students will receive instruction in the storage, handling, and use of Hazardous Materials as required in Hazard Communication Title 29 Code of Federal Regulation Part 1910.1200, "Right to Know Law".

STATUS OF THE CNG/LPG INDUSTRY

The CNG/LPG conversion industry is currently in a period of transition. In the past, it had been common practice for the conversions to be configured on site by a technician. Although this is still being done by some conversion companies, the industry is growing more concerned about the issues of emissions compliance and the liability implication as it relates to their modifications of the base vehicle. Therefore, many conversions are performed using kits/systems that have been configured and certified for a specific vehicle or engine family.

Although kits are now being configured for specific engine families and chassis types, many kit configurations do not specify the exact location for many components such as tanks and regulators. Currently, kit configurations primarily are concerned with how the CNG or LPG system will interact with the base vehicle's engine performance and emissions compliance.

CNG/LPG PROGRAM ASSUMPTIONS:

The following assumptions were developed by the workshop members to define the boundaries by which the tasks statements were to be written.

1. It is assumed that:

   * as part of the standards by which training programs are measured, students will not be expected to make engineering judgments (Such judgments can not be satisfactorily validated in the field or by an AFV technician.);
   * where engineering judgments must be made on equipment installation locations, it is assumed that such decisions will be made by the management and/or engineering staff of the conversion company.

2. It is assumed that:

   * students will be expected to use manufacturer's specifications and procedures when such information is provided;
   * students will be expected to use/reference all applicable industry accepted standards where the directions or specifications are not provided by the manufacturer;
   * students will be able to use/reference all current applicable industry and government regulations/accepted practices and have knowledge of these agencies.

3. It is assumed that:

   * the CNG/LPG training program will include instruction on: fuel characteristics, differences between gasoline/diesel and alternative fuels, safety implications of these characteristics/differences, appropriate technical terminology, and potential environmental and economic costs/benefits.

DEFINITIONS

ADD - To increase fluid or pressure to the correct level or amount.

ADJUST - To bring components to specified operational settings.

AIR TEST - To use air pressure to determine proper action of components.

ALIGN - To bring to precise alignment or relative position of components.

ANALYZE - To examine the relationship of components of an operation.

ASSEMBLE (REASSEMBLE) - To fit together the components of a device.

BALANCE - To establish correct linear, rotational or weight relationship.

BLEED - To allow air/fluids to enter or exit a closed system.

CHARGE - To bring to "full" state; e.g., battery or air conditioning system.

CHECK - To verify condition by performing an operational or comparative examination.

CLEAN - To rid component of extraneous matter for the purpose of reconditioning, repairing, measuring or reassembling.

DETERMINE - To establish the procedure to be used to effect the necessary repair.

DIAGNOSE - To locate the cause or nature of a problem by using the specified procedure.

DISASSEMBLE - To separate a component's parts as a preparation for cleaning, inspection or service.

DISCHARGE - To empty a storage device or system.

DRAIN - To use gravity to empty a container.

EVACUATE - To remove air, fluid or vapor from a closed system by use of a vacuum pump.

FILL (REFILL) - To bring fluid level to specified point or volume.

FIND - To locate a particular problem, e.g., shorts, grounds or opens in an electrical circuit.

FLUSH - To use a fluid to clean an internal system.

HONE - To restore or resize or bore by using rotating cutting stones.

IDENTIFY - To establish the identity of a vehicle or component prior to service; to determine the nature or degree of a problem.

INSPECT - (SEE CHECK)

INSTALL (REINSTALL) - To place a component in its proper position in a system.

JUMP START - To use an auxiliary power supply, i.e., battery, battery charger, etc. to assist a vehicle's battery to crank an engine.

LEAK TEST - To locate the source of leaks in a component or system.

LISTEN - To use audible clues in the diagnostic process; to hear the customer's description of a particular problem.

LUBRICATE - To employ the correct procedures and materials in performing the prescribed lubrication service.

MEASURE - To compare existing dimensions to specified dimensions by the use of calibrated instruments and gauges.

MOUNT - To attach or place tool or component in proper position.

PRESSURE TEST - To use air or fluid pressure to determine the condition or operation of a component or system.

PERFORM - To accomplish a procedure in accordance with established methods.

PURGE - To eliminate an undesired air or fluid from a closed system.

READY - To prepare a system or component for service, installation or operation.

REASSEMBLE - (SEE ASSEMBLE)

REFILL - (SEE FILL)

REINSTALL - (SEE INSTALL)

REMOVE - To disconnect and separate a component from a system.

REPAIR - To restore a malfunctioning component or system to operating condition.

REPLACE - To exchange an unserviceable component with a new or rebuilt component; to reinstall a component.

RESET (SET) - To adjust a variable component to a given, usually initial, specification.

SELECT - To choose the correct part or setting during assembly or adjustment.

SERVICE - To perform a specified procedure when called for in the owner's or service manual.

TEST - To verify condition through the use of meters, gauges or instruments.

TRIM - (SEE ADJUST)

TORQUE - To tighten a fastener to specified degree or tightness (in a given order or pattern if multiple fasteners are involved on a single component).

VACUUM TEST - To determine the integrity and operation of a vacuum operated component and/or system.

VERIFY - To establish that a problem exists after hearing the customer's complaint and performing a preliminary diagnosis.

NATEF TASK LIST

CNG/LPG ELECTRICAL/ELECTRONIC SYSTEMS

For every task in Electrical/Electronic Systems, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

Note: The CNG/LPG Electrical/Electronic area is basically a sub-set of the Automobile Electrical/Electronic area. Not all of the Automobile tasks are required in the CNG or LPG task list. Task areas that do not apply to the CNG/LPG program are indicated with an "N/A" in the priority column. Tasks that have been modified significantly in content or priority rating have been marked with "*" under the priority rating.

I. ELECTRICAL/ELECTRONIC SYSTEMS

A. General Electrical System Diagnosis

1.	Use wiring diagrams during diagnosis of electrical circuit problems.	P-1
2.	Check electrical circuits with a test light; determine needed repairs.	P-2
3.	Check voltages and voltage drops in electrical/electronic circuits using a digital multimeter (DMM); determine needed repairs.	P-1
4.	Check current flow in electrical/electronic circuits and components using an ammeter; determine needed repairs.	P-2
5.	Check electrical circuits using jumper wires; determine needed repairs.	P-2
6.	Find shorts, grounds, opens, and high resistance problems in electrical/electronic circuits; determine needed repairs.	P-1
7.	Measure and diagnose the cause(s) of abnormal key-off battery drain; determine needed repairs.	P-1
8.	Inspect and test fusible links, circuit breakers, and fuses; replace as needed.	P-1
9.	Inspect and test switches, connectors, and wires of electrical/electronic circuits; repair or replace as needed.	P-1

I. ELECTRICAL/ELECTRONIC SYSTEMS

B. Battery Diagnosis and Service

1.	Perform battery state-of-charge test; determine needed service.	P-2
2.	Perform battery capacity (load, high-rate discharge) test; determine needed service.	P-2
3.	Maintain or restore electronic memory functions.	P-2
4.	Inspect, clean, fill or replace battery.	P-2
5.	Perform slow/fast battery charge.	P-2
6.	Inspect and clean battery cables, connectors, clamps, and hold-downs; repair or replace as needed.	P-2
7.	Start a vehicle using jumper cables and a battery or auxiliary power supply.	P-2

I. ELECTRICAL/ELECTRONIC SYSTEMS

C. Starting System Diagnosis and Repair

1.	Perform starter current draw and circuit voltage drop test; determine needed repairs.	P-1
2.	Inspect and test starter relays and solenoids; replace as needed.	P-2
3.	Remove and replace/reinstall starter.	P-2
4.	Perform starter free-running (bench) tests; determine needed repairs.	P-2

I. ELECTRICAL/ELECTRONIC SYSTEMS

D. Charging System Diagnosis and Repair

1.	Diagnose charging system problems that cause an undercharge, a no-charge or an overcharge condition.	P-2
2.	Inspect and adjust alternator drive belts; replace as needed.	P-2

3.	Inspect and test voltage regulator; replace as needed.	P-2
4.	Remove, inspect, and replace/reinstall alternator.	P-2
5.	Disassemble, clean, inspect. and test alternator components; replace as needed.	P-2

I. ELECTRICAL/ELECTRONIC SYSTEMS

E. Lighting Systems Diagnosis and Repair N/A

I. ELECTRICAL/ELECTRONIC SYSTEMS

F. Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair

1.	Diagnose the cause of intermittent, high, low or no gauge readings.	P-2
2.	Test gauge circuit voltage regulators (limiters); replace as needed.	P-3
3.	Inspect and test gauges and gauge sending units; replace as needed.	P-2
4.	Inspect and test connectors, wires, and printed circuit boards of gauge circuits; repair or replace as needed.	P-3
5.	Diagnose the cause of constant, intermittent or no warning light and driver information system operation.	P-2
6.	Diagnose the cause(s) of intermittent, high, low or no readings on electronic digital instrument clusters.	P-3
7.	Inspect and test sensors, sending units, connectors, and wires of electronic digital instrument circuits; repair or replace as needed.	P-3

I. ELECTRICAL/ELECTRONIC SYSTEMS

G. Horn and Wiper/Washer Diagnosis and Repair N/A

I. ELECTRICAL/ELECTRONIC SYSTEMS

H. Accessories Diagnosis and Repair N/A

ENGINE PERFORMANCE

For every task in Engine Performance, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

Note: The CNG/LPG Engine Performance area is basically a sub-set of the Automobile Engine Performance area. Not all of the Automobile tasks are required in the CNG or LPG task list. Task areas that do not apply to the CNG/LPG program are indicated with an "N/A" in the priority column. Tasks that have been modified significantly in content or priority rating have been marked with "*" under the priority rating.

II. ENGINE PERFORMANCE

A. General Engine Diagnosis

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Inspect engine assembly for fuel, oil, coolant, and other leaks; determine needed repairs.	P-2
3.	Diagnose the cause of unusual engine noise or vibration problems; determine needed repairs.	P-2
4.	Diagnose the cause of unusual exhaust color, odor, and sound; determine needed action.	P-2
5.	Perform engine absolute (vacuum/boost) manifold pressure tests; determine needed repairs.	P-2
6.	Perform cylinder power balance test; determine needed action.	P-2
7.	Perform cylinder compression test; determine needed action.	P-2
8.	Perform cylinder leakage test; determine needed action.	P-2
9.	Diagnose engine mechanical, electrical, electronic, fuel, and ignition problems with an oscilloscope and engine diagnostic equipment; determine needed action.	P-2

10.	Prepare 4 or 5 gas analyzer, inspect and prepare vehicle for test and obtain exhaust readings; interpret readings and determine needed action.	P-1

II. ENGINE PERFORMANCE

B. Computerized Engine Controls Diagnosis and Repair

1.	Diagnose the causes of emissions problems resulting from failure of computerized engine controls.	P-2
2.	Perform analytic/diagnostic procedures on vehicles with on-board diagnostic computer systems; determine needed action.	P-2
3.	Inspect and test sensors, controls, and actuator components and circuits of computerized engine control systems; adjust or replace as needed.	P-2
4.	Obtain and interpret digital multimeter (DMM) readings.	P-1
5.	Read and interpret technical information.	P-1
6.	Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels and calibration decals).	P-1
7.	Inspect and test power and ground circuits and connections; service or replace as needed.	P-2
8.	Practice recommended precautions when handling static sensitive devices.	P-2
9.	Inspect, test, service, disassemble and assemble wire harness connectors and wire taps, using manufacturer's specifications.	P-2

II. ENGINE PERFORMANCE

C. Ignition System Diagnosis and Repair

1.	Diagnose no-starting, hard starting, engine misfire, poor driveability, spark knock, power loss, poor mileage, and emissions problems on vehicles with electronic ignition systems; determine needed repairs.	P-2
2.	Inspect and test ignition primary circuit wiring and components; repair or replace as needed.	P-2

3.	Inspect and test distributor; service as needed.	P-2
4.	Inspect and test ignition system secondary circuit wiring and components; replace as needed.	P-2
5.	Inspect and test ignition coil(s); replace as needed.	P-2
6.	Check and adjust (where applicable) ignition system timing and timing advance/retard.	P-2
7.	Inspect and test ignition wiring harness and connectors; replace as needed.	P-2
8.	Inspect and test ignition system pick-up sensor or triggering devices; replace as needed.	P-2
9.	Inspect and test ignition control module; replace as needed.	P-2

II. ENGINE PERFORMANCE

D. Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair

1.	Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with carburetor-type fuel systems; determine needed action.	P-3 *
2.	Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with injection-type fuel systems; determine needed action.	P-3 *
3.	Inspect and replace fuel tank, fuel cap, fuel lines, fittings, and hoses.	P-2
4.	Check fuel for contaminants and quality.	P-3
5.	Inspect and test mechanical and electrical fuel pumps and pump control systems; replace as needed.	P-2
6.	Replace fuel filters.	P-2

7.	Inspect and test fuel pressure regulation system and components of injection type fuel systems; adjust or replace as needed.	P-2
8.	Inspect and test cold enrichment system components; adjust or replace as needed.	P-2
9.	Remove, clean, and reinstall throttle body; adjust related linkages.	P-2
10.	Inspect and test fuel injectors; clean or replace as needed.	P-2
11.	Inspect throttle body mounting plates, air induction and filtration system, intake manifold, and gaskets; clean or replace as needed.	P-2
12.	Check/adjust idle speed and fuel mixture where applicable.	P-2
13.	Remove, inspect, and test vacuum and electrical components and connections of fuel system; repair or replace as needed.	P-2
14.	Inspect exhaust manifold, exhaust pipes, mufflers, resonators, tail pipes, and heat shields; repair or replace as needed.	P-2

II. ENGINE PERFORMANCE

E. Emissions Control Systems Diagnosis and Repair

1. Positive Crankcase Ventilation

1.	Diagnose the cause(s) of emissions problems resulting from failure of the positive crankcase ventilation system.	P-2
2.	Inspect and test positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses; service or replace as needed.	P-2

2. Spark Timing Controls

1.	Diagnose the cause(s) of emissions problems resulting from failure of the spark timing control system.	P-2
2.	Inspect and test circuits of spark timing control systems; replace as needed.	P-2

3. Idle and Deceleration Speed Controls

1.	Diagnose the cause(s) of emissions problems resulting from failure of the idle and deceleration speed control system.	P-2
2.	Inspect and test wiring, hoses, and components of idle speed control systems; adjust or replace as needed.	P-2
3.	Inspect and test electrical components, circuits, vacuum components, and hoses of deceleration controls; adjust or replace as needed.	P-2

4. Exhaust Gas Recirculation

1.	Diagnose the cause(s) of emissions problems caused by failure of the exhaust gas recirculation (EGR) system.	P-2
2.	Inspect and test valve, valve manifold, and exhaust passages of exhaust gas recirculation (EGR) systems; service or replace as needed.	P-2
3.	Inspect and test vacuum/pressure controls, filters, and hoses of exhaust gas recirculation (EGR) systems; service or replace as needed.	P-2
4.	Inspect and test electrical/electronic sensors, controls, and wiring of exhaust gas recirculation (EGR) systems; repair or replace as needed.	P-2

5. Exhaust Gas Treatment

1.	Diagnose the cause(s) of emissions problems resulting from failure of the air injection or catalytic converter systems.	P-2
2.	Inspect and test mechanical components of air injection systems; service or replace as needed.	P-2
3.	Inspect and test electrical/electronically operated components and circuits of air injection systems; replace as needed.	P-2
4.	Inspect and test components of catalytic converter systems; replace as needed.	P-2

6. Intake Air Temperature Controls

1.	Diagnose the cause(s) of emissions problems resulting from failure of the intake air temperature control systems.	P-2
2.	Inspect and test components of inlet air temperature control systems; replace as needed.	P-2

7. Early Fuel Evaporation (Intake Manifold Temperature) Controls

1.	Diagnose the cause(s) of emissions problems resulting from failure of early fuel evaporation control systems.	P-2
2.	Inspect and test components of early fuel evaporation control systems; service or replace as needed.	P-2

8. Evaporative Emissions Controls

1.	Diagnose the cause(s) of emissions problems resulting from failure of evaporative emissions control system.	P-2
2.	Inspect and test components and hoses of evaporative emissions control systems; replace as needed.	P-2

II. ENGINE PERFORMANCE

F. Engine Related Service

1.	Adjust valves on engines with mechanical or hydraulic lifters.	P-2
2.	Verify correct camshaft timing; determine needed action.	P-2
3.	Verify engine operating temperature; determine needed action.	P-2
4.	Perform cooling system pressure tests; check coolant condition; inspect and test radiator, pressure cap, coolant recovery tank, and hoses; service or replace as needed.	P-2
5.	Inspect and test thermostat, by-pass, and housing; replace as needed.	P-2
6.	Inspect and test mechanical/electrical fans, fan clutch, fan shroud/ducting, and fan control devices; service or replace as needed.	P-2

LPG DIAGNOSIS AND REPAIR

For every task in LPG Diagnosis and Repair, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

III. LPG DIAGNOSIS AND REPAIR

A. Diagnose & Repair Supplemental Systems

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Analyze symptoms and perform diagnostic procedures on vehicles with supplemental on-board diagnostic computer support systems.	P-2
3.	Diagnose and repair no starting, hard starting, engine misfire, poor driveability, power loss, poor mileage, and emissions problems on vehicle's OEM and supplemental sensors (e.g., manifold skin temperature, intake air temperature, etc.).	P-2
4.	Diagnose and repair no-starting, hard starting, engine misfire, poor driveability, power loss, poor mileage, and emissions problems on vehicles with supplemental computer support systems (e.g., timing modification devices, ignition interrupt).	P-2
5.	Diagnose and repair intermittent or complete failure of electric, electronic or mechanical devices (e.g., hour meters, fuel level indicators, fuel selection devices).	P-2

B. LPG Fuel Storage and Delivery

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Check all fuel system components to include fuel lock-off, valves, solenoids, manual shutoff, connections, fittings, hoses and tubing for leaks, wear, installation and proper operation; repair or replace as needed.	P-1
3.	Diagnose the cause of abnormal fuel flow through fuel carrying component.	P-2

4.	Diagnose the cause of fuel odor or fuel loss by inspecting or testing the fuel supply system components such as valves, fuel supply container, pressure relief device (PRD), tubing and hoses; repair or replace as needed.	P-2
5.	Diagnose the cause of inaccurate fuel level indicator reading; service, adjust, repair or replace as needed.	P-3

C. LPG A/F Management

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, and lean or rich mixture problems on vehicles with variable or fixed venturi type fuel systems; determine needed repairs.	P-2
3.	Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, and lean or rich mixture problems on vehicles with fumigation or injection type fuel systems; determine needed repairs.	P-2
4.	Inspect and test cold enrichment system components; adjust or replace as needed.	P-2
5.	Inspect and test fuel injectors; service or replace as needed.	P-3
6.	Inspect and test vacuum and electrical components and connections of fuel system; repair or replace as needed.	P-3
7.	Perform diagnostic procedures on vehicles with on-board computer/electronic fuel system support.	P-2

LPG MAINTENANCE

For every task in LPG Maintenance, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

IV. LPG MAINTENANCE

A. General

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Follow manufacturer's maintenance schedule to ensure fluids and lubricants are at proper levels and serviced with recommended products.	P-2
3.	Identify the process of recertification or replacement of fuel supply container(s) according to most current regulations (e.g., DOT); complete documentation; remove and replace fuel supply container, if required.	P-2
4.	Inspect fuel supply container(s) and brackets as it relates to certification: data plate, working pressures, fuel supply container damage, valves, bolts, torque specifications, and all sealing and venting equipment.	P-1
5.	Inspect air filters and fuel filter; service or replace as needed.	P-2
6.	Inspect and ensure that all required emission control devices are present and functional.	P-1

B. LPG Fuel Storage and Delivery

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Inspect, adjust, and test manual shut-off valve, service valve, check-valves, and solenoid valves; repair or replace as needed.	P-2

3.	Empty fuel supply container according to manufacturer's procedures and all local, state and federal regulations. (Local procedures will vary and extreme care must be exercised.)	P-1
4.	Inspect and test fuel selection system components; repair or replace as needed.	P-2
5.	Select and install flare, NPT, and other fittings using required sealants for LPG according to manufacturer's specifications.	P-1

C. LPG A/F Management

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Check for fuel system problems caused by fuel contamination.	P-3
3.	Check air/fuel system integrity (e.g., fuel leaks, air leaks, components compatibility/application); determine needed repairs.	P-2
4.	Inspect and test fuel pressure regulation system components; adjust, repair or replace as needed.	P-2
5.	Remove, clean, and reinstall throttle assemblies; adjust related linkages as needed.	P-3
6.	Check/adjust idle speed and fuel mixtures according to manufacturer's procedures.	P-2

D. LPG Fuel Storage and Handling

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Perform safe fueling procedures and determine fuel level.	P-1
3.	Identify working pressures and demonstrate an understanding of fuel characteristics as they relate to temperature and fill procedures.	P-1
4.	Empty fuel system using industry practices or manufacturer's procedures and all local, state and federal regulations. (Local procedures will vary and extreme care must be exercised.)	P-1

LPG CONVERSION/INSTALLATION

For every task in LPG Conversion/Installation, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

V. LPG CONVERSION/INSTALLATION

1.	Inspect the vehicle for pre-existing conditions that may adversely affect the performance of the vehicle.	P-2
2.	Document pre-conversion conditions and complete all necessary reports.	P-2
3.	Prepare vehicle for conversion according to manufacturer's directions.	P-3
4.	Install fuel supply container with mounting hardware, valving, shielding, fuel level indicator, and remote fill assembly as needed, using manufacturer's specifications and required local, state and federal regulations.	P-1
5.	Install pressure relief device (PRD) and venting system.	P-1
6.	Select and install flare, NPT, and other fittings using required sealants for LPG according to manufacturer's specifications.	P-1
7.	Install gas tight enclosure around valves and fittings, vent to the outside of vehicle as required.	P-1
8.	Determine routing and protection of fuel line components according to industry standards.	P-1
9.	Prepare tubing using proper techniques for cutting, deburring, cleaning, and bending.	P-1
10.	Install tubing, piping, hose, and valves using appropriate chafing protection, mounting hardware, and protective shields, according to industry safety standards.	P-1

11.	Determine appropriate location and mounting of the converter/regulator; install the converter/regulator using mounting brackets, fuel lock, fittings, starting aids, control valves, cooling lines, and thermostat as required and according to manufacturer's specifications.	P-1
12.	Install fuel injection/carburetion or other fuel control components according to manufacturer's instructions.	P-1
13.	Install electrical/electronic components using OEM or manufacturer's wire connections and wiring diagrams, applying all safety precautions.	P-1
14.	Determine location of electrical components considering safety, serviceability, function, component protection, and esthetics according to manufacturer's specifications (when available).	P-1
15.	Inspect and test each installed component to ensure it is connected and positioned in a safe and effective manner.	P-1
16.	Purge and pressurize fuel system and check for system integrity through its maximum working pressure (leak test).	P-1
17.	Perform system setup procedures according to manufacturer's specifications.	P-2
18.	Fabricate brackets, shields, and braces according to accepted industry standards.	P-2
19.	Complete and affix required safety/information labels.	P-1
20.	Test vehicle for acceptable driveability and operation (on each fuel for dual fuel vehicles).	P-3
21.	Inspect and ensure that all required emissions control devices are present and functional; confirm that the vehicle emissions meet applicable local, state, and federal requirements.	P-1
22.	Perform pre and post conversion emissions evaluation.	P-3

CNG DIAGNOSIS AND REPAIR

For every task in CNG Diagnosis and Repair, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

VI. CNG DIAGNOSIS AND REPAIR

A. Diagnose & Repair Supplemental Systems

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Analyze symptoms and perform diagnostic procedures on vehicles with supplemental on-board diagnostic computer support systems.	P-2
3.	Diagnose and repair no starting, hard starting, engine misfire, poor driveability, power loss, poor mileage, and emissions problems on vehicle's OEM and supplemental sensors (e.g., manifold skin temperature, intake air temperature, natural gas tank temperature).	P-2
4.	Diagnose and repair no-starting, hard starting, engine misfire, poor driveability, power loss, poor mileage, and emissions problems on vehicles with supplemental computer support systems (e.g., timing modification devices, ignition interrupt).	P-2
5.	Diagnose and repair intermittent or complete failure of electric, electronic or mechanical devices (e.g., hour meters, fuel level indicators, fuel selection devices).	P-2

B. Fuel Storage and Delivery

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Check all fuel system components to include fuel lock-off, valves, solenoids, manual shutoff, connections, fittings, hoses, and tubing for leaks, wear, installation and proper operation; repair or replace as needed.	P-1
3.	Diagnose the cause of abnormal fuel flow through fuel carrying component.	P-2

4.	Diagnose the cause of fuel odor or fuel loss by inspecting or testing the fuel supply system components such as valves, fuel supply container, pressure relief device (PRD), tubing and hoses; repair or replace as needed.	P-2
5.	Diagnose the cause of inaccurate fuel level indicator reading; service, adjust, repair or replace as needed.	P-3

C. A/F Management

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, and lean or rich mixture problems on vehicles with variable or fixed venturi type fuel systems; determine needed repairs.	P-2
3.	Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, and lean or rich mixture problems on vehicles with fumigation or injection type fuel systems; determine needed repairs.	P-2
4.	Inspect and test cold enrichment system components; adjust or replace as needed.	P-2
5.	Inspect and test fuel injectors; service or replace as needed.	P-3
6.	Inspect and test vacuum and electrical components and connections of fuel system; repair or replace as needed.	P-3
7.	Perform diagnostic procedures on vehicles with on-board computer/electronic fuel system support.	P-2

CNG MAINTENANCE

For every task in CNG Maintenance, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

VII. CNG MAINTENANCE

A. General

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Follow manufacturer's maintenance schedule to ensure fluids and lubricants are at proper levels and serviced with recommended products.	P-2
3.	Identify the process of recertification or replacement of fuel supply container(s) according to most current regulations (e.g., NGV-2, DOT); complete documentation; remove and replace fuel supply container, if required.	P-2
4.	Inspect fuel supply container(s) and brackets as it relates to certification: data plate, working pressures, fuel supply container damage, valves, bolts, torque specifications, and all sealing and venting equipment.	P-1
5.	Inspect air filters and fuel filter; service or replace as needed.	P-2
6.	Inspect and ensure that all required emission control devices are present and functional.	P-1

B. CNG Fuel Storage and Delivery

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Inspect, adjust, and test manual shut-off valve, service valve, check-valves, and solenoid valves; repair or replace as needed.	P-2

3.	Empty fuel supply container according to manufacturer's procedures and all local, state and federal regulations. (Local procedures will vary and extreme care must be exercised if using actual fuel. Use of inert gas is recommended for this task.)	P-1
4.	Inspect and test fuel selection system components; repair or replace as needed.	P-2
5.	Select and install swage, compression, flare, captive O-ring, NPT, and other fittings using manufacturer's recommended sealants when required.	P-1

C. CNG A/F Management

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Check for fuel system problems caused by fuel contamination.	P-3
3.	Check air/fuel system integrity (e.g., fuel leaks, air leaks, components compatibility/application); determine needed repairs.	P-2
4.	Inspect and test fuel pressure regulation system components; adjust, repair or replace as needed.	P-2
5.	Remove, clean, and reinstall throttle assemblies; adjust related linkages as needed.	P-3
6.	Check/adjust idle speed and fuel mixtures according to manufacturer's procedures.	P-2

D. CNG Fuel Storage and Handling

1.	Interpret and verify complaint; determine needed repairs.	P-2
2.	Perform safe fueling procedures and determine fuel level.	P-1
3.	Identify working pressures and demonstrate an understanding of fuel characteristics as they relate to temperature and fill procedures.	P-1
4.	Empty fuel system using industry practices or manufacturer's procedures and all local, state and federal regulations. (Local procedures will vary and extreme care must be exercised if using actual fuel. Use of inert gas is recommended for this task.)	P-1

CNG CONVERSION/INSTALLATION

For every task in CNG Conversion/Installation, the following safety requirement must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage and disposal of chemicals in accordance with local, state, and federal safety and environmental regulations.

VIII. CNG CONVERSION/INSTALLATION

1.	Inspect the vehicle for pre-existing conditions that may adversely affect the performance of the vehicle.	P-2
2.	Document pre-conversion conditions and complete all necessary reports.	P-2
3.	Prepare vehicle for conversion according to manufacturer's directions.	P-3
4.	Install fuel supply container with mounting hardware, valving, shielding, fuel level indicator, and remote fill assembly, as needed, using manufacturer's specifications and required local, state and federal regulations.	P-1
5.	Install pressure relief device (PRD) and venting system.	P-1
6.	Select and install swage, compression, flare, captive O-ring, NPT, and other fittings using manufacturer's recommended sealants when required.	P-1
7.	Install gas tight enclosure around valves and fittings, vent to the outside of vehicle as required.	P-1
8.	Determine routing and protection of fuel line components according to industry standards.	P-1
9.	Prepare tubing using proper techniques for cutting, deburring, cleaning, and bending.	P-1

10.	Install tubing, piping, hose, and valves using appropriate chafing protection, mounting hardware, and protective shields, according to industry safety standards.	P-1
11.	Determine appropriate location and mounting of the regulators; install the regulators using mounting brackets, fuel lock, fittings, starting aids, control valves, cooling lines, and thermostat as required and according to manufacturer's specifications.	P-1
12.	Install fuel injection/carburetion or other fuel control components according to manufacturer's instructions.	P-1
13.	Install electrical/electronic components using OEM or manufacturer's wire connections and wiring diagrams, applying all safety precautions.	P-1
14.	Determine location of electrical components considering safety, serviceability, function, component protection, and esthetics according to manufacturer's specifications (when available).	P-1
15.	Inspect and test each installed component to ensure it is connected and positioned in a safe and effective manner.	P-1
16.	Purge and pressurize fuel system and check for system integrity through its maximum working pressure (leak test).	P-1
17.	Perform system setup procedures according to manufacturer's specifications.	P-2
18.	Fabricate brackets, shields, and braces according to accepted industry standards.	P-2
19.	Complete and affix required safety/information labels.	P-1
20.	Test vehicle for acceptable driveability and operation (on each fuel for dual fuel vehicles).	P-3
21.	Inspect and ensure that all required emissions control devices are present and functional; confirm that the vehicle emissions meet applicable local, state, and federal requirements.	P-1
22.	Perform pre and post conversion emissions evaluation.	P-3

CNG/LPG PROGRAM TOOLS & EQUIPMENT

Local employment opportunities and the availability of funds are key factors for determining the program's structure and operation. This section was developed with the understanding that many programs will not teach 100% of the tasks. Therefore, the basic philosophy is this: for the tasks which are taught, the training should be as thorough as possible with the tools and equipment necessary for those tasks.

The basic tools and equipment that must be available to the students for training in any given specialty area are included in this section. Obviously, there are duplications of tools and equipment for some or all of the specialty areas. No specific brand names are identified because they will vary in each local situation.

The student hand tool list covers all areas, and indicate the tools a student will need to be successful in each of the specialty areas. Most employers require that a candidate for employment provide his/her own basic hand tool set in order to be hired as an entry level technician.

A significant overlap exists between the tool/equipment list for general automobile programs and CNG/LPG programs.

HAND TOOLS
CONTAINED IN INDIVIDUAL SETS OR TOOL CRIB
(IN SUFFICIENT QUANTITIES TO PERMIT EFFICIENT INSTRUCTION)

Adjustable Wrench - 6" and 12"
Air Blow Gun (meeting OSHA standards)
Allen Wrench Set - Standard (.050" - 3/8")
Allen Wrench Set - Metric (2mm - 7mm)
Battery Post Cleaner
Battery Terminal Pliers
Battery Terminal Puller
Chisels:
- Cape 5/16"
- Cold 3/8", 3/4"

Claw Type Pickup Tool
Combination Wrenches:
- Standard (1/4" - 1")
- Metric (7mm - 19mm)

Continuity Test Light (12V)
Crowfoot Wrench Set (Metric)
Crowfoot Wrench Set (Standard)
Feeler Gauge (Blade Type):
- .002" - .040"
- .006mm - .070mm

Files:
- Coarse 6" and 12"
- Fine 6" and 12"
- Half Round 12"
- Round 6" and 12"

Flare Nut (tubing) Wrenches:
- Standard (3/8" - 3/4")
- Metric (10mm - 17mm)

Flashlight
Hack Saw
Hammers:
- 16 oz. Ball Peen
- Brass
- Dead Blow Plastic Mallet
- Plastic Tip

Ignition Wrench Set - Standard and Metric
Inspection Mirror
Jumper Wire Set (with various adapters)
Magnetic Pickup Tool

Pliers:
- Combination 6"
- Hose Clamp
- Locking Jaw
- Needle Nose 6"
- Side Cutting
- Slip Joint (Water Pump)

Pry Bars:
- Rolling Head
- Straight

Punches:
- Center
- Brass Drift
- Pin - 1/8", 3/16", 1/4", 5/16"
- Taper - 3/8", 1/2", 5/8"

Safety Glasses

Scraper:
- Carbon 1"
- Gasket 1"

Screwdriver - Blade Type:
- Stubby
- 6", 9", 12"
- Offset

Screwdriver - Phillips:
- Stubby #1, #2
- 6" #1, #2
- 12" #3
- Offset #2

Screwdriver - Posidrive Set: #1, #2, #3, #4

Screw Starter:
- Phillips
- Slotted

Socket Set - 1/4" Drive:
- 1/4" - 1/2" Shallow Depth
- 1/4" - 1/2" Deep
- 6mm - 12mm Shallow Depth
- 6mm - 12mm Deep
- Flex/Universal Type
- 3", 6" Extensions
- Ratchet

Socket Set - 3/8" Drive:
- 5/16" - 3/4" Shallow Depth (6 point)
- 3/8" - 3/4" Deep (6 point)
- 9mm - 19mm Shallow Depth
- 9mm - 19mm Deep
- 3", 6", 12", 18" Extensions
- Flexhead Ratchet
- Air Ratchet
- Impact Socket Sets (Standard and Metric)
- Impact Wrench
- Ratchet
- Spark Plug Sockets 5/8", 13/16"
- Speed Handle
- Universal Joint
- Flexible Socket Set 3/8" - 3/4"
- Flexible Socket Set 9mm - 19mm

Socket Set - 1/2" Drive:
- 7/16" - 1 1/8" Shallow Depth
- 7/16" - 1 1/8" Deep
- 10mm - 25mm Shallow Depth
- 10mm - 25mm Deep
- 3", 6", 12" Extensions
- Flex Handle (Breaker Bar)
- Impact Sockets 7/16" - 1 1/8"
- Impact Sockets 12mm - 32mm
- Impact Wrench
- Ratchet

Spark Plug Feeler Gauge (Gap Tool)
Tape Measure
Tire Pressure Gauge
Torque Wrench:
- 3/8" Drive (30 - 250 lb. in.)
- 3/8" Drive (5 - 75 lb. ft.)
- 1/2" Drive (50 - 250 lb. ft.)

Torx® Set
Wire Brush

GENERAL LAB/SHOP EQUIPMENT

The tools and equipment on this list are used in general lab/shop work but are not generally considered to be individual hand tools. A well equipped, certified program should have all of these general tools and equipment readily available and in sufficient quantity to provide quality instruction.

Air Chisel Set (various bits)
Air Compressor and Hoses
Axle Stands (Safety Stands)
Battery Charger
Belt Tension Gauge
Bench or Pedestal Grinder
Compression Tester
Computer Scan Tool (hand held) or Personal Computer (PC) with interface capability for on-board diagnostics (OBD II compliant recommended)
Cooling System Pressure Tester
Creeper
Cylinder Leakage Tester
Digital Multi-meter with various leadsets
Drain Pans
Drill - 3/8" variable speed, reversible
Drill - 1/2" variable speed, reversible
Engine Coolant Recovery/Recycler or Contract Service
Extension Cords
Fender Covers
Floor Jack (1½ Ton Minimum)
Fuel Reclaimer/Storage Unit; Gasoline/Diesel (strongly recommended)
Hand Held Vacuum Pump
Heat Gun or Equivalent
Hoist(s)
Jumper Cables
Oil Can - Pump Type
Oil Filter Wrench
Parts Cleaning Tank
Remote Starter Switch
Screw Extractor Set
Seat Covers
Snap Ring Pliers Set - external
Snap Ring Pliers Set - internal
Soldering Gun
Soldering Iron (25 Watt Pencil Tip)
Spark Plug Boot Puller

Steel Top Workbenches (with vises)
Tach/Dwell Meter
Tap and Die Set - Standard
Tap and Die Set - Metric
Thread Repair Insert Kit
Tire Inflator Chuck
Trouble/Work Lights (Fluorescent Preferred)
Tube Quick Disconnect Tool Set
Tubing Cutter/Flaring Set
Twist Drill Set - 1/64" - 1/2"
Valve Core Removing Tool
Waste Oil Receptacle (with extension neck and funnel)

SPECIALTY TOOLS AND EQUIPMENT

This section covers the tools and equipment a lab/shop should have for training in any given specialty area. This equipment is specialized and it must be available in the lab/shop. No specific type or brand names are identified because they will vary in each local situation.

ENGINE PERFORMANCE

Antifreeze Tester
Battery/Starter/Charging System Tester
Carburetor Plug and Angle Gauge Set
Computer Carburetor Tools
Cylinder Leakage Tester
Dual Trace Lab Scope - (strongly recommended)
Engine Analyzer - with scope (lab scope capability recommended)
Four Gas Exhaust Analyzer
Fuel Injector Cleaning Equipment
Fuel Pressure Gauge Set with adapters
Injector Pulse Tester
Logic Probe
Oxygen Sensor Socket
Sending Unit Socket
Spark Plug Thread Tap
Static Strap
Timing/Advance Light
Vacuum/Pressure Gauge

ELECTRICAL/ELECTRONIC SYSTEMS

Alternator Service Tools
Battery/Starter/Charging System Tester
Connector Pick Tool Set
Wire and Terminal Repair Kit (includes weather proof connectors)

CNG/LPG MAINTENANCE, DIAGNOSIS AND REPAIR

Drill Press (Recommended)
Grounding Straps/Cables
Hole Saws *
High Pressure Gauges:
    500 psi
    5,000 psi (CNG programs only)
Manometer:
    0-5"H2O
    0-25"H2O
Methane Detector - Portable
Oxyacetylene Torch (Recommended)
Notebook Computer (PC)
Tubing Benders
Tubing Deburring Tools
Welding Equipment * (Recommended)
Wire Cutter/Stripper

* Only for programs seeking certification in CNG or LPG Conversion/Installation.

INSTRUCTIONS FOR EVALUATION

Self-Evaluation - Initial Certification

1. Review all materials and requirements for certification.

2. Identify an individual to coordinate the program evaluation. The person responsible for coordinating the program evaluation should meet with 3-4 others interested in conducting the self-evaluation (instructors or Advisory Committee members).

3. The group may choose to divide the responsibilities for reviewing the standards. Refer to the Program Standards section for detailed information on each standard.

4. Observe the program's operations, curriculum, facilities and equipment, and hold discussions with staff and administration.

5. When completing the CNG/LPG Program Self-Evaluation, responses should be rated based on the 1-5 point scale (except for the items which request a percent, a number or a yes/no response). When rating items, document the location of the information used to justify the score (brochure, faculty handbook, Advisory Committee meeting minutes, budget reports, etc.) on the lines marked Reference Materials.

6. After completing the CNG/LPG Program Self-Evaluation, the group should meet to discuss their individual ratings. The scores of each item should be averaged by adding all the circled numbers on each item and dividing by the number of responses. The results should be recorded on the CNG/LPG Self-Evaluation Summary Sheet.

7. Average the score on each standard by adding the average scores on each item (step 5) and dividing by the number of items in each standard (indicated on the Self-Evaluation Summary Sheet).

8. Send the following four items to the NATEF office:

    a. Application for Certification
    b. Self-Evaluation Summary Sheet
    c. On-Site Evaluation Team Member List
    d. Instructor Qualification Sheets

9. To the extent possible, assemble copies of all the materials cited as Reference Materials and compile notebook files on each of the 10 standards. This information and documentation will be used by the on-site evaluation team to validate the averages and the individual ratings given by the program's self-evaluation group as well as to conduct their own evaluation of the program.

Please review the Process Overview located in the Procedures section for additional information.

On-Site Evaluation - Initial Certification

In their review, the on-site evaluation team for Initial Certification will rate the identical items as on the CNG/LPG Program Self-Evaluation. Please refer to the Process Overview in the Procedures section and the CNG/LPG Program Requirements in the Policies section for additional information.

ETLs are valuable assets to programs seeking certification. They provide a link between the program and the NATEF office. Once an ETL is assigned to a program, the program coordinator should contact the ETL. In addition to arranging dates for the on-site evaluation, the ETL should be consulted prior to the evaluation for guidance on preparation, space requirements, etc. that will facilitate the process. Most importantly, the ETL should be viewed as a resource, prepared to assist programs in the certification process.

It is essential that the team members have access to all the information and reference materials necessary to complete the evaluation of each standard. It is highly recommended that reference materials are organized and labeled according to each standard.

The on-site evaluation must be conducted while classes are in session. The ETL and team members will tour classrooms and the lab/shop areas during instructional periods. They will need to evaluate the curriculum, tools and equipment, space, storage areas, etc. The on-site team will make every effort to conduct their evaluation with as little disruption to classroom and lab/shop activities as possible.

In addition, the on-site evaluation team will conduct a survey of employers of program graduates. Please prepare a list of six individuals who have completed the program within the last three years and are employed locally at different automotive repair facilities. Include the name of the graduate, their supervisor, and the address and phone number of the place of employment. The ETL will select a minimum of three employers to survey during the evaluation.

Upon completion of the on-site evaluation, the ETL will share with you general strengths and recommendations for improvement. The ETL will not be able to indicate whether or not the program will be certified. The NATEF office will notify the program administrator and the state T & I Supervisor after all evaluation materials have been reviewed and a determination on certification has been made by ASE.

CNG/LPG PROGRAM SELF-EVALUATION

Please complete the following self-evaluation form. For all items requiring responses on a 5 point scale, use the following to rate your responses:

1	2	3	4	5
not at all	very little	somewhat, needs improvement	average, adequate	exceptional, above average

STANDARD 1 - PURPOSE

THE CNG/LPG TECHNICIAN TRAINING PROGRAM SHOULD HAVE CLEARLY STATED PROGRAM GOALS, RELATED TO THE NEEDS OF THE STUDENTS AND EMPLOYERS SERVED.

1.1 EMPLOYMENT POTENTIAL 1.1

A. What percentage of those who complete the program obtain employment in the automotive industry within 6 months of program completion? _____

B. Rate the administration and use of an annual survey of employers to determine the needs of their potential employees. 1 2 3 4 5

REFERENCE MATERIALS:_____
_____

1.2 PROGRAM DESCRIPTION/GOALS 1.2

A. Rate the program material(s) available (brochure or catalog) on the inclusion of the following:

1. admission requirements 1 2 3 4 5
2. employment potential 1 2 3 4 5
3. areas of specialty training offered 1 2 3 4 5
4. cost of tuition and fees 1 2 3 4 5
5. technical qualifications of the instructional staff 1 2 3 4 5
6. overall goals of the program 1 2 3 4 5

B. Rate the availability of program materials for students prior to enrollment. 1 2 3 4 5

REFERENCE MATERIALS:_____
_____

Standard 1 Average Score____ (8 items)

STANDARD 2 - ADMINISTRATION

PROGRAM ADMINISTRATION SHOULD ENSURE THAT INSTRUCTIONAL ACTIVITIES SUPPORT AND PROMOTE THE GOALS OF THE PROGRAM.

2.1 STUDENT COMPETENCY CERTIFICATION 2.1

A. Rate the certificate or diploma a student receives upon program completion on clearly specifying the area(s) of demonstrated competency. 1 2 3 4 5

REFERENCE MATERIALS:_____

2.2 CHAIN OF COMMAND 2.2

A. Rate the organizational chart on the clarity of designating the responsibilities and authorities of program personnel. 1 2 3 4 5

REFERENCE MATERIALS:_____

2.3 ADMINISTRATIVE SUPPORT 2.3

A. Rate the provisions made for instructors to return to industry for planned in-service and update training on a regular basis. 1 2 3 4 5

B. Rate the training stations available in terms of the type and number required for specialty areas described in the program goals. 1 2 3 4 5

C. Rate the availability of tools and equipment needed for training in the lab/shop area. 1 2 3 4 5

D. Rate the quantity of tools and equipment in terms of efficient and effective instruction. 1 2 3 4 5

E. Rate the tools and equipment used in the training program in terms of meeting industry standards. 1 2 3 4 5

F. Rate the current general and technical automotive magazines and papers available for student and instructor use. 1 2 3 4 5

G. Rate the extent to which the annual budget is prepared by the program faculty in conjunction with the institution administration. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

2.4 WRITTEN POLICIES

A. Rate the extent to which written policies regarding student and institutional responsibilities have been approved by the administrative and/or policy board. 1 2 3 4 5

B. Rate the written policies regarding safety, liability, and lab/shop operation in terms of being prominently displayed in the lab/shop area. 1 2 3 4 5

C. Rate the policies in terms of being provided to each student and instructor. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

2.5 ADVISORY COMMITTEE

A. Does the Advisory Committee convene a minimum of two working meetings per year? Yes or No

B. Rate the input of committee members as indicated in the minutes. 1 2 3 4 5

C. How many members are on the committee? _____

D. Rate the number of committee members in terms of being representative of the following groups:

1. CNG/LPG technicians 1 2 3 4 5
2. local employers 1 2 3 4 5
3. consumer groups 1 2 3 4 5
4. former students 1 2 3 4 5
5. others (automotive instructors, parents etc., please specify) 1 2 3 4 5

_____

REFERENCE MATERIALS:_____

_____

2.6 PUBLIC/COMMUNITY RELATIONS 2.6

A. Rate the distribution of public relations materials on a regular basis. 1 2 3 4 5

REFERENCE MATERIALS:_____

2.7 LIVE WORK ACCOUNTING 2.7

A. Rate the system used to collect, document and disburse live work repair receipts. 1 2 3 4 5

B. Rate the use of support staff to collect payment for live work repairs. (N/A if no money is ever exchanged). 1 2 3 4 5 N/A

REFERENCE MATERIALS:_____

Standard 2
Average Score____
(21 items)

STANDARD 3 - LEARNING RESOURCES

SUPPORT MATERIAL, CONSISTENT WITH BOTH PROGRAM GOALS AND PERFORMANCE OBJECTIVES, SHOULD BE AVAILABLE TO STAFF AND STUDENTS.

3.1 SERVICE INFORMATION 3.1

A. Rate the availability of service information with procedures and specifications for vehicles manufactured within the last 10 years by the major manufacturers. 1 2 3 4 5

B. Rate the availability of the manufacturer's specification data in terms of location to the lab/shop area. 1 2 3 4 5

REFERENCE MATERIALS:_____
_____

3.2 MULTIMEDIA 3.2

A. Rate the use of appropriate, up-to-date multimedia materials such as video equipment, transparencies, etc. in the training process. 1 2 3 4 5

B. Rate the availability of multimedia materials for instructional purposes. 1 2 3 4 5

REFERENCE MATERIALS:_____
_____

3.3 INSTRUCTIONAL DEVELOPMENT SERVICES 3.3

A. Rate the use of specialists to provide media development services for instructional staff. 1 2 3 4 5

B. Rate the availability of equipment and supplies for faculty use in duplicating materials and producing overhead transparency materials, etc. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

3.4 PERIODICALS 3.4

A. Rate the general and technical automotive magazines and newspapers available for student and instructor use in terms of being current. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

3.5 STUDENT MATERIALS 3.5

A. Rate the instructional texts or pertinent material available for each student in terms of satisfying the objectives of the mode of instruction used. 1 2 3 4 5

B. Rate the specialty textbooks in terms of having copyright dates no more than 6 years old. 1 2 3 4 5

C. Rate the basic textbooks in terms of having copyright dates no more than 6 years old. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

Standard 3
Average Score____
(10 items)

STANDARD 4 - FINANCES

FUNDING SHOULD BE PROVIDED TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

4.1 PROGRAM TRAINING COST 4.1

A. Rate the per-student training cost in terms of realistically achieving instructional goals. 1 2 3 4 5

REFERENCE MATERIALS:_____

4.2 BUDGET 4.2

A. Rate the development of an annual budget for program operation. 1 2 3 4 5

B. Rate the budgeted funds allocated to and used by the program. 1 2 3 4 5

C. Rate the funding in terms of being adequate for program operation. 1 2 3 4 5

REFERENCE MATERIALS:_____

4.3 BUDGET PREPARATION 4.3

A. Rate the annual budget in terms of being prepared by the institutional administration in conjunction with the program staff. 1 2 3 4 5

REFERENCE MATERIALS:_____

4.4 STATUS REPORTS 4.4

A. Rate budget status reports provided to instructional staff. 1 2 3 4 5

REFERENCE MATERIALS:_____

Standard 4
Average Score____
(6 items)

STANDARD 5 - STUDENT SERVICES

SYSTEMATIC PRE-ADMISSION TESTING, INTERVIEWS, COUNSELING SERVICES, PLACEMENT, AND FOLLOW-UP PROCEDURES SHOULD BE USED.

5.1 PRETESTING 5.1

A. Rate the use of a pretest in the following areas prior to student enrollment.
   1. reading 1 2 3 4 5
   2. mathematics and science 1 2 3 4 5
   3. mechanical aptitude 1 2 3 4 5

B. Rate the documentation of testing procedures in the program explanatory material and its availability to all interested parties. 1 2 3 4 5

C. Rate the availability of written justification for all requirements. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

5.2 PRE-ADMISSION INTERVIEWS 5.2

A. Rate the use of student interviews and acceptance to the program prior to program admission. 1 2 3 4 5

REFERENCE MATERIALS:_____

5.3 STUDENT RECORDS 5.3

A. Rate the system used to maintain the permanent records of current and former students. 1 2 3 4 5

REFERENCE MATERIALS:_____

5.4 PLACEMENT 5.4

A. Rate the student placement system used to assist in obtaining employment in the automotive industry upon graduation. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

5.5 FOLLOW-UP 5.5

A. Rate the formal follow-up system used to determine students' employment location. 1 2 3 4 5

B. Rate the follow-up procedure used to obtain student assessment of the efficiency and effectiveness of their training. 1 2 3 4 5

C. Rate the follow-up procedure in terms of obtaining feedback regarding needed additions or deletions to the training:
   1. curriculum 1 2 3 4 5
   2. program 1 2 3 4 5
   3. tools and equipment 1 2 3 4 5

D. Rate the follow-up system used to obtain information from program graduates who are employed outside of the automotive industry. 1 2 3 4 5

E. Rate the use of the information from follow-up procedures to modify the training program. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

5.6 LEGAL REQUIREMENTS 5.6

A. Rate the training program in terms of compliance with applicable local, state, and federal requirements. 1 2 3 4 5

REFERENCE MATERIALS:_____

Standard 5
Average Score____
(16 items)

STANDARD 6 - INSTRUCTION

INSTRUCTION MUST BE SYSTEMATIC AND REFLECT PROGRAM GOALS. A TASK LIST AND SPECIFIC PERFORMANCE OBJECTIVES WITH CRITERION REFERENCED MEASURES MUST BE USED.

6.1 PROGRAM PLAN 6.1

A. Rate the training program in terms of being logically sequenced. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

6.2 STUDENT TRAINING PLAN 6.2

A. Rate the specific training plan used for each student in terms of stating the student goals and steps needed to meet those goals. 1 2 3 4 5

B. Rate the emphasis placed on giving students a copy of their training plan. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

6.3 PREPARATION TIME 6.3

A. Rate the instructor's schedule in terms of providing adequate time for planning. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.4 TEACHING LOAD 6.4

A. Rate the current instructor/student ratio in terms of being educationally sound. 1 2 3 4 5

B. Rate the average instructor/student ratio for the past year in terms of being educationally sound. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

A. Do the following areas provide theory and "hands- on" training for 95% of the P-1, 80% of the P-2, and 50% of the P-3 tasks: *	**95% P-1**	**80% P-2**	**50% P-3**
1. Electrical/Electronic Systems	**Y/N**	**Y/N**	**Y/N**
2. Engine Performance	**Y/N**	**Y/N**	**Y/N**
3. LPG Diagnosis and Repair	**Y/N**	**Y/N**	**Y/N**
4. LPG Maintenance	**Y/N**	**Y/N**	**Y/N**
5. LPG Conversion/Installation	**Y/N**	**Y/N**	**Y/N**
6. CNG Diagnosis and Repair	**Y/N**	**Y/N**	**Y/N**
7. CNG Maintenance	**Y/N**	**Y/N**	**Y/N**
8. CNG Conversion/Installation	**Y/N**	**Y/N**	**Y/N**

*** Rate only those areas in which you are applying for certification at this time.**

B. Rate the tools and equipment available for each program area. *					
1. Electrical/Electronic Systems	1	2	3	4	5
2. Engine Performance	1	2	3	4	5
3. LPG Diagnosis and Repair	1	2	3	4	5
4. LPG Maintenance	1	2	3	4	5
5. LPG Conversion/Installation	1	2	3	4	5
6. CNG Diagnosis and Repair	1	2	3	4	5
7. CNG Maintenance	1	2	3	4	5
8. CNG Conversion/Installation	1	2	3	4	5

*** Rate only those areas in which you are applying for certification at this time.**

C. Rate the use of the Advisory Committee to review and approve additional tasks.	1	2	3	4	5

D. Rate the curriculum in terms of including instruction on:					
1. OSHA regulations the student may encounter upon employment,	1	2	3	4	5
2. legal responsibilities of the technician regarding Environmental Protection Agency regulations,	1	2	3	4	5
3. other appropriate requirements which may affect their on-the-job activities,	1	2	3	4	5
4. identification and use of appropriate tools and test and measurements equipment,	1	2	3	4	5
5. use of current service information and industry publications	1	2	3	4	5
6. knowledge and use of all current applicable industry and government regulations/accepted practices and their agencies,	1	2	3	4	5

7. fuel characteristics, differences between gasoline/diesel and alternative fuels, safety implications of these characteristics/differences, appropriate technical terminology, and the potential environmental and economic costs/benefits. 1 2 3 4 5

E. Rate the inclusion of competency in filling out work order forms, ordering parts, and recording the time spent on task in the curriculum. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

6.6 STUDENT PROGRESS 6.6

A. Rate the use of a progress chart or other record keeping tool (with specific tasks) to indicate students' progress. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.7 PERFORMANCE STANDARDS 6.7

A. Rate the use of a stated performance level required for each task. 1 2 3 4 5

B. Rate the availability of standards given to students and potential employers. 1 2 3 4 5

C. Rate the requirement for students to demonstrate "hands-on" competency or "mastery" of a task before the instructor verifies a student's performance. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.8 SAFETY STANDARDS 6.8

A. Rate the safety instruction given prior to lab/shop work. 1 2 3 4 5

B. Rate the importance placed on safety instruction as a part of the training program. 1 2 3 4 5

C. Rate the importance of including safety tests in the training program. 1 2 3 4 5

D. Rate the emphasis placed on complying with safety practices in the lab/shop area. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.9 PERSONAL STANDARDS 6.9

A. Rate the emphasis placed on the following in all training activities and instructional materials:

1. the importance of maintaining good relationships with fellow employees, 1 2 3 4 5
2. respect for fellow students' tools and other property, 1 2 3 4 5
3. the development of good customer relations, 1 2 3 4 5
4. appropriate clothing similar to that found in local shops, 1 2 3 4 5
5. student cleanliness to ensure seats, steering wheels, etc. are not greasy or damaged after the job is complete, 1 2 3 4 5
6. the use of fender covers. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.10 WORK HABITS/ETHICS 6.10

A. Rate the degree to which the training program is organized so that appropriate work habits developed in the training program are similar to work habits required on the job. 1 2 3 4 5

B. Rate the emphasis placed upon ethical practices. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

6.11 PROVISIONS FOR INDIVIDUAL DIFFERENCES 6.11

A. Rate the structure of the training program to accommodate students with different levels of cognitive and psychomotor ability. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.12 RELATED INSTRUCTION 6.12

A. Rate the degree to which related mathematics, science, communications, and interpersonal relations instruction are coordinated with on-going instruction in the training program. 1 2 3 4 5

B. Rate the use of qualified instructors for related instruction. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.13 TESTING 6.13

A. Rate the use of written tests to evaluate task performance. 1 2 3 4 5

B. Rate the use of performance tests to evaluate task performance. 1 2 3 4 5

C. Rate the use of go-no go level of performance in performance tests. 1 2 3 4 5

D. Rate the degree to which students are encouraged to take certification tests that are publicly recognized indicators of capabilities. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.14 EVALUATION OF INSTRUCTION 6.14

A. Rate the use of a systematic program evaluation system to make decisions about program efficiency, effectiveness, and content. 1 2 3 4 5

B. Rate the use of student input in the evaluation process. 1 2 3 4 5

C. Rate the use of instructor(s) evaluations in the evaluation process. 1 2 3 4 5

D. Rate the use of self-evaluation of instruction on a regular basis in the evaluation process. 1 2 3 4 5

E. Rate the use of student follow-up data in the evaluation process. 1 2 3 4 5

F. Rate the use of the Advisory Committee review in the evaluation process. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

6.15 LIVE WORK 6.15

A. Rate the degree to which all live work benefits the student and supplements on-going instruction. 1 2 3 4 5

B. Rate the degree to which a student had instruction and practice on a specific repair task before a live work job requiring this task is assigned. 1 2 3 4 5

C. Rate the degree to which the program policies do not allow the following as the primary source of live work projects:
   1. students in the CNG/LPG technician training program working on their own vehicles, 1 2 3 4 5
   2. school buses or other vehicles owned and operated by the governing body of the school. 1 2 3 4 5

(NOTE: VEHICLES DONATED BY MANUFACTURERS OR OTHER SOURCES ARE ACCEPTABLE AS THE PRIMARY SOURCE OF LIVE WORK PROJECTS.)

D. Rate the use of a written, industry type work order attached to or placed inside the vehicle. 1 2 3 4 5

REFERENCE MATERIALS:_____

6.16 ARTICULATION 6.16

A. Rate the articulation agreements used between programs with equivalent competencies to eliminate unnecessary duplication of instruction. 1 2 3 4 5

REFERENCE MATERIALS:_____

Standard 6
Average Score____
(as many as 58 items)

STANDARD 7 - EQUIPMENT

EQUIPMENT AND TOOLS USED IN THE CNG/LPG TECHNICIAN TRAINING PROGRAM MUST BE OF THE TYPE AND QUALITY FOUND IN THE REPAIR INDUSTRY AND MUST ALSO BE THE TYPE NEEDED TO PROVIDE TRAINING TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

7.1 SAFETY 7.1

A. **Rate the degree to which all shields, guards, and other safety devices are in place, operable and used.** 1 2 3 4 5

B. **Rate the degree to which all students, instructors, and visitors wear safety glasses in the lab/shop area while lab is in session.** 1 2 3 4 5

REFERENCE MATERIALS:_____

7.2 QUANTITY AND QUALITY 7.2

A. Rate the availability of the tools and equipment needed for instruction in the lab/shop area. 1 2 3 4 5

B. Rate the tools and equipment in terms of the quantity needed for efficient and effective instruction. 1 2 3 4 5

C. Rate the tools and equipment used in terms of meeting industry quality standards. 1 2 3 4 5

REFERENCE MATERIALS:_____

7.3 CONSUMABLE SUPPLIES 7.3

A. Rate the consumable supplies in terms of availability to assure continuous instruction. 1 2 3 4 5

REFERENCE MATERIALS:_____

7.4 MAINTENANCE 7.4

A. Rate the use of a preventive maintenance program to minimize equipment down-time. 1 2 3 4 5

REFERENCE MATERIALS:_____

7.5 REPLACEMENT 7.5

A. Rate the use of a systematic replacement schedule to maintain up-to-date tools and equipment at industry and safety standards. 1 2 3 4 5

B. Rate the use of student follow-up information and local Advisory Committee input in the replacement schedule. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

7.6 INVENTORY 7.6

A. Rate the use of an inventory system to account for tools, equipment, parts, and supplies. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

7.7 PARTS PURCHASING 7.7

A. Rate the use of a systematic parts purchasing system - from work order to parts specialist to jobber. 1 2 3 4 5

B. Rate the impact of a lack of parts in delaying task performance. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

7.8 HAND TOOLS 7.8

A. Rate the availability of hand tool sets for students, comparable to the tools that will be required for employment. 1 2 3 4 5

B. Rate the emphasis placed on encouraging students to purchase a hand tool set (during the period of instruction) which is appropriate to the specialty area(s) in which they are being trained. 1 2 3 4 5

C. Rate the quantity of hand tools (not sets) available for student use during lab/shop instruction. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

Standard 7
Average Score____
(15 items)

STANDARD 8 - FACILITIES

THE PHYSICAL FACILITIES MUST BE ADEQUATE TO PERMIT ACHIEVEMENT OF THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

8.1 TRAINING STATIONS 8.1

A. Rate the training stations available in the type and number required for task performance as outlined in the program goals and performance objectives in terms of:
   1. adequate bench space, 1 2 3 4 5
   2. adequate lab/shop space. 1 2 3 4 5

REFERENCE MATERIALS:_____

8.2 SAFETY 8.2

A. Rate the identification of hazardous areas (painting, welding, etc.) with signs. 1 2 3 4 5

B. Rate the fire extinguishers in terms of having regular, current inspection tags attached and meeting fire codes for different types of fires. 1 2 3 4 5

C. Rate the availability of an electrical disconnect system to shut down all outlets in case of an emergency. 1 2 3 4 5

D. Rate the lighting in terms of being adequate for task performance and safety. 1 2 3 4 5

E. Rate safety inspections in terms of being regularly held. 1 2 3 4 5

F. Rate the degree to which all other applicable safety standards are met. 1 2 3 4 5

G. Rate the identification of vehicle traffic areas. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

8.3 MAINTENANCE

A. Rate the use of a regular facilities maintenance program to ensure that facilities are suitable for instruction. 1 2 3 4 5

REFERENCE MATERIALS:_____

8.4 HOUSEKEEPING 8.4

A. Rate the classroom and lab/shop area for being kept clean and orderly. 1 2 3 4 5

B. Rate the parking and storage areas for being kept clean and orderly. 1 2 3 4 5

REFERENCE MATERIALS:_____

8.5 OFFICE SPACE

A. Rate the availability of an area separate from the lab/shop for the instructor's use as an office. 1 2 3 4 5

REFERENCE MATERIALS:_____

8.6 INSTRUCTIONAL AREA

A. Rate the availability of an area convenient to but separate from the lab/shop for theory instruction and other non-lab/shop activities. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

8.7 STORAGE 8.7

A. Rate the storage area for specialized tools in terms of being adequate to support the activities outlined in the program goals and objectives. 1 2 3 4 5

B. Rate the storage area for parts and supplies in terms of being adequate to support the activities outlined in the program goals and performance objectives. 1 2 3 4 5

C. Rate the storage area for vehicles in terms of being adequate to support the activities outlined in the program goals and performance objectives. 1 2 3 4 5

D. Rate the storage area in terms of being provided for student tool boxes. 1 2 3 4 5

E. Rate the security from pilferage and vandalism of the storage areas. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

8.8 SUPPORT FACILITIES 8.8

A. Rate the area provided for clean-up after lab/shop activities in terms of being conveniently located. 1 2 3 4 5

B. Rate the lockers in terms of being conveniently located. 1 2 3 4 5

C. Rate the restrooms in terms of being conveniently located. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

8.9 VENTILATION 8.9

A. Rate the exhaust fume removal system in terms of being in place and operable. 1 2 3 4 5

B. Rate the heating and cooling systems in terms of providing sufficient comfort for learning. 1 2 3 4 5

REFERENCE MATERIALS:_____

_____

8.10 FIRST AID 8.10

A. Rate the availability of a first aid kit for the program. 1 2 3 4 5

B. Rate the first aid kit in terms of being clearly identified. 1 2 3 4 5

C. Rate it in terms of being equipped with basic, up-to-date first aid supplies. 1 2 3 4 5

REFERENCE MATERIALS:_____

8.11 FACILITY EVALUATION

8.11

A. Rate the use of the Advisory Committee to conduct an annual evaluation of the facilities to assure adequacy in meeting program needs.

1 2 3 4 5

REFERENCE MATERIALS:_____

_____

Standard 8
Average Score____
(28 items)

STANDARD 9 - INSTRUCTIONAL STAFF

THE INSTRUCTIONAL STAFF MUST HAVE TECHNICAL COMPETENCY AND MEET ALL STATE AND LOCAL REQUIREMENTS FOR CERTIFICATION/CREDENTIALS.

9.1 TECHNICAL COMPETENCY (rate each instructor in the program)

9.1
INSTRUCTOR
A B C D E

A. Number of years full-time work experience as a general automotive technician. — — — — —

B. Number of years work experience as an automotive technician in the specialty area(s) taught. — — — — —

C. Number of years of education (or degrees earned) beyond high school that have been completed by the instructor. — — — — —

D. Do instructors hold current ASE certification in the specialty area(s) they teach? Y/N Y/N Y/N Y/N Y/N

REFERENCE MATERIALS:_____

_____

9.2 INSTRUCTIONAL COMPETENCY/CERTIFICATION

9.2

A. Rate the degree to which all instructors meet all state certifying requirements.

1 2 3 4 5

REFERENCE MATERIALS:_____

9.3 TECHNICAL UPDATING 9.3

A. Rate the availability of automotive trade publications, service bulletins, and other materials needed to maintain technical competence for the instructional staff. 1 2 3 4 5

B. Rate the opportunities provided for instructors to return to industry for planned in-service and skill upgrading on a regular basis. 1 2 3 4 5

REFERENCE MATERIALS:_____

9.4 FIRST AID 9.4

A. Rate the availability of a written policy approved by the school administration on First Aid administration and procedures. 1 2 3 4 5

REFERENCE MATERIALS:_____

9.5 SUBSTITUTE

A. Rate the use of a systematic method to obtain "substitute" or "supply" instructors. 1 2 3 4 5

B. Rate the use of an orientation session for substitutes on a regular basis. 1 2 3 4 5

C. Rate the use of substitutes who are competent in automotive instruction. 1 2 3 4 5

REFERENCE MATERIALS:_____

Standard 9
Average Score___
(7 items)

STANDARD 10 - COOPERATIVE AGREEMENTS

WRITTEN POLICIES AND PROCEDURES SHOULD BE USED FOR COOPERATIVE AND APPRENTICESHIP TRAINING PROGRAMS.

10.1 STANDARDS 10.1

A. Rate the use of performance standards a student will be expected to meet in terms of being developed and coordinated by the supervising instructor. 1 2 3 4 5 N/A

REFERENCE MATERIALS:_____
_____

10.2 AGREEMENTS 10.2

A. Rate the use of all agreements between the institution and the work location in terms of being written and legally binding. 1 2 3 4 5 N/A

REFERENCE MATERIALS:_____

10.3 SUPERVISION 10.3

A. Rate the use of a supervising automotive instructor assigned the responsibility, authority, and time to coordinate and monitor cooperative automotive programs. 1 2 3 4 5 N/A

REFERENCE MATERIALS:_____
_____

Standard 10
Average Score____
(3 items)

APPLICATION FOR INITIAL CERTIFICATION

CNG/LPG - LIGHT/MEDIUM DUTY

NOTE: A separate Application for Certification must be completed for each program requesting certification.

INSTITUTION:

_____
Name

_____
Program

_____
Street

_____
City State ZIP

Telephone Number ( )_____

ADMINISTRATOR OF THE INSTITUTION:

_____
Name

Telephone Number ( )_____

PERSON RESPONSIBLE FOR COORDINATION OF SELF-EVALUATION:

_____
Name

Telephone Number ( )_____

LEVEL OF PROGRAM BEING EVALUATED:

_____ Secondary
_____ Post-secondary
_____ Both secondary and post-secondary

PROGRAM HOURS

Record the number of hours of instruction in the laboratory or shop and in the classroom. Add the two numbers to record the total program hours for the specialty areas requesting certification.

** Complete the information only for the areas requesting certification.

AREA	LAB/SHOP CO-OP	+ CLASSROOM =	PROGRAM TOTAL
Electrical/Electronic Systems	_____	_____	_____
Engine Performance	_____	_____	_____
LPG Diagnosis and Repair	_____	_____	_____
LPG Maintenance	_____	_____	_____
LPG Conversion/Installation	_____	_____	_____
CNG Diagnosis and Repair	_____	_____	_____
CNG Maintenance	_____	_____	_____
CNG Conversion/Installation	_____	_____	_____

PREFERRED ON-SITE EVALUATION DATES:_____

**** IT IS UNDERSTOOD THAT ALL EXPENDITURES INCURRED FOR THE ON-SITE EVALUATION WILL BE PAID BY THE CNG/LPG PROGRAM OR INSTITUTION REQUESTING CERTIFICATION. ****

_____

Institutional Administrator - Signature Date

_____

Institutional Administrator - Name and Title (print or type)

_____

Program Instructor - Signature Date

_____

Program Instructor - Name and Title (print or type)

CNG/LPG SELF-EVALUATION SUMMARY SHEET

STANDARD 1 - PURPOSE

1.1 Employment Potential
A. _____
B. 1 2 3 4 5

1.2 Program Description/Goals
A. (1) 1 2 3 4 5
(2) 1 2 3 4 5
(3) 1 2 3 4 5
(4) 1 2 3 4 5
(5) 1 2 3 4 5
(6) 1 2 3 4 5
B. 1 2 3 4 5

STANDARD 1 AVERAGE SCORE _____
(8 items)

STANDARD 2 - ADMINISTRATION

2.1 Student Competency Certification
A. 1 2 3 4 5

2.2 Chain of Command
A. 1 2 3 4 5

2.3 Administrative Support
A 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5
D. 1 2 3 4 5
E. 1 2 3 4 5
F. 1 2 3 4 5
G. 1 2 3 4 5

2.4 Written Policies
A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

2.5 Advisory Committee
A. Yes No
B. 1 2 3 4 5
C. _____
D. (1) 1 2 3 4 5
(2) 1 2 3 4 5
(3) 1 2 3 4 5
(4) 1 2 3 4 5
(5) 1 2 3 4 5

2.6 Public/Community Relations
A. 1 2 3 4 5

2.7 Live Work Accounting
A. 1 2 3 4 5
B. 1 2 3 4 5 N/A

STANDARD 2 AVERAGE SCORE _____
(21 items)

STANDARD 3 - LEARNING RESOURCES

3.1 Service Information
A. 1 2 3 4 5
B. 1 2 3 4 5

3.2 Multimedia
A. 1 2 3 4 5
B. 1 2 3 4 5

3.3 Instructional Development
A. 1 2 3 4 5
B. 1 2 3 4 5

3.4 Periodicals
A. 1 2 3 4 5

3.5 Student Materials
A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

STANDARD 3 AVERAGE SCORE _____
(10 items)

STANDARD 4 - FINANCES

4.1 Program Training Cost
A. 1 2 3 4 5

4.2 Budget
A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

4.3 Budget Preparation
A. 1 2 3 4 5

4.4 Status Reports

A. 1 2 3 4 5

STANDARD 4 AVERAGE SCORE ____

(6 items)

STANDARD 5 - STUDENT SERVICES

5.1 Pretesting

A. (1) 1 2 3 4 5
(2) 1 2 3 4 5
(3) 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

5.2 Pre-admission Interviews

A. 1 2 3 4 5

5.3 Student Records

A. 1 2 3 4 5

5.4 Placement

A. 1 2 3 4 5

5.5 Follow-up

A. 1 2 3 4 5
B. 1 2 3 4 5
C. (1) 1 2 3 4 5
(2) 1 2 3 4 5
(3) 1 2 3 4 5
D. 1 2 3 4 5
E. 1 2 3 4 5

5.6 Legal Requirements

A. 1 2 3 4 5

STANDARD 5 AVERAGE SCORE ____

(16 items)

STANDARD 6 - INSTRUCTION

6.1 Program Plan

A. 1 2 3 4 5

6.2 Student Training Plan

A. 1 2 3 4 5
B. 1 2 3 4 5

6.3 Preparation Time

A. 1 2 3 4 5

6.4 Teaching Load

A. 1 2 3 4 5
B. 1 2 3 4 5

6.5 Curriculum

A.	95% P-1	80% P-2	50% P-3
(1)	Y/N	Y/N	Y/N
(2)	Y/N	Y/N	Y/N
(3)	Y/N	Y/N	Y/N
(4)	Y/N	Y/N	Y/N
(5)	Y/N	Y/N	Y/N
(6)	Y/N	Y/N	Y/N
(7)	Y/N	Y/N	Y/N
(8)	Y/N	Y/N	Y/N

B. (1) 1 2 3 4 5
(2) 1 2 3 4 5
(3) 1 2 3 4 5
(4) 1 2 3 4 5
(5) 1 2 3 4 5
(6) 1 2 3 4 5
(7) 1 2 3 4 5
(8) 1 2 3 4 5
C. 1 2 3 4 5
D. (1) 1 2 3 4 5
(2) 1 2 3 4 5
(3) 1 2 3 4 5
(4) 1 2 3 4 5
(5) 1 2 3 4 5
(6) 1 2 3 4 5
(7) 1 2 3 4 5
E.. 1 2 3 4 5

6.6 Student Progress

A. 1 2 3 4 5

6.7 Performance Standards

A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

6.8 Safety Standards

A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5
D. 1 2 3 4 5

6.9 Personal Standards

A. (1) 1 2 3 4 5
(2) 1 2 3 4 5
(3) 1 2 3 4 5
(4) 1 2 3 4 5
(5) 1 2 3 4 5
(6) 1 2 3 4 5

6.10 Work Habits/Ethics

A. 1 2 3 4 5
B. 1 2 3 4 5

6.11 Provisions for Individual Differences

A. 1 2 3 4 5

6.12 Related Instruction

A. 1 2 3 4 5
B. 1 2 3 4 5

6.13 Testing

A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5
D. 1 2 3 4 5

6.14 Evaluation of Instruction

A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5
D. 1 2 3 4 5
E. 1 2 3 4 5
F. 1 2 3 4 5

6.15 Live Work

A. 1 2 3 4 5
B. 1 2 3 4 5
C. (1) 1 2 3 4 5
(2) 1 2 3 4 5
D. 1 2 3 4 5

6.16 Articulation

A. 1 2 3 4 5

STANDARD 6 AVERAGE SCORE ____
(as many as 58 items)

STANDARD 7 - EQUIPMENT

7.1 Safety

A. 1 2 3 4 5
B. 1 2 3 4 5

7.2 Quantity and Quality

A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

7.3 Consumable Supplies

A. 1 2 3 4 5

7.4 Maintenance

A. 1 2 3 4 5

7.5 Replacement

A. 1 2 3 4 5
B. 1 2 3 4 5

7.6 Inventory

A. 1 2 3 4 5

7.7 Parts Purchasing

A. 1 2 3 4 5
B. 1 2 3 4 5

7.8 Hand Tools

A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

STANDARD 7 AVERAGE SCORE ____
(15 items)

STANDARD 8 - FACILITIES

8.1 Training Stations

A. (1) 1 2 3 4 5
(2) 1 2 3 4 5

8.2 Safety

A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5
D. 1 2 3 4 5
E. 1 2 3 4 5
F. 1 2 3 4 5
G. 1 2 3 4 5

8.3 Maintenance
A. 1 2 3 4 5

8.4 Housekeeping
A. 1 2 3 4 5
B. 1 2 3 4 5

8.5 Office Space
A. 1 2 3 4 5

8.6 Instructional Area
A. 1 2 3 4 5

8.7 Storage
A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5
D. 1 2 3 4 5
E. 1 2 3 4 5

8.8 Support Facilities
A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

8.9 Ventilation
A. 1 2 3 4 5
B. 1 2 3 4 5

8.10 First Aid
A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

8.11 Facility Evaluation
A. 1 2 3 4 5

STANDARD 8 AVERAGE SCORE ____
(28 items)

STANDARD 9 - INSTRUCTIONAL STAFF

9.1 Technical Competency Instructor

	A	B	C	D	E
A.	___	___	___	___	___
B.	___	___	___	___	___
C.	___	___	___	___	___
D.	Y/N	Y/N	Y/N	Y/N	Y/N

9.2 Instructional Competency/Certification
A. 1 2 3 4 5

9.3 Technical Updating
A. 1 2 3 4 5
B. 1 2 3 4 5

9.4 First Aid
A. 1 2 3 4 5

9.5 Substitute
A. 1 2 3 4 5
B. 1 2 3 4 5
C. 1 2 3 4 5

STANDARD 9 AVERAGE SCORE ____
(7 items)

STANDARD 10 - COOPERATIVE AGREEMENTS

10.1 Standards
A. 1 2 3 4 5 N/A

10.2 Agreements
A. 1 2 3 4 5 N/A

10.3 Supervision
A. 1 2 3 4 5 N/A

STANDARD 10 AVERAGE SCORE ____
(3 items)

ON-SITE EVALUATION TEAM MEMBER LIST

CNG/LPG Initial Certification

NOTE: There must be two evaluation team members and one alternate member who are practicing automotive technicians with CNG/LPG experience. See the "Information About On-site Evaluation Team Members", in the Policies section for selection criteria.

1. TEAM MEMBER #1:

_____
Name

_____
Position

_____
Work Address

_____

_____

Years of hands-on experience: Total Automotive _____ CNG _____ LPG _____

High school graduate or equivalent: YES NO

ASE Automotive Certifications: _____

2. TEAM MEMBER #2:

_____
Name

_____
Position

_____
Work Address

_____

_____

Years of hands-on experience: Total Automotive _____ CNG _____ LPG _____

High school graduate or equivalent: YES NO

ASE Automotive Certifications: _____

3. ALTERNATE TEAM MEMBER

_____
Name

_____
Position

_____
Work Address

_____

_____

Years of hands-on experience: Total Automotive _____ CNG _____ LPG _____

High school graduate or equivalent: YES NO

ASE Automotive Certifications: _____

CNG/LPG INSTRUCTOR QUALIFICATION SHEET

Instructor _____ **SS#** _____
(please print or type)

Current ASE Certifications:

Certification Area	Valid Until
1. Electrical/Electronics Systems (A6)	_____
2. Engine Performance (A8)	_____
3. Light Vehicle - Compressed Natural Gas (F1)	_____

Please indicate the areas taught by this instructor:

Electrical/Electronics.Systems..... _____

Engine Performance..... _____

LPG Diagnosis and Repair..... _____

LPG Maintenance..... _____

LPG Conversion/Installation..... _____

CNG Diagnosis and Repair..... _____

CNG Maintenance..... _____

CNG Conversion/Installation..... _____

*** NOTE: This form will be sent to programs after they have been approved for an On-Site Evaluation. ***

APPLICATION FOR ON-SITE EVALUATION

CNG/LPG INITIAL CERTIFICATION

INSTITUTION:

_____
Name

_____
Program

_____
Street

_____
City State ZIP

Telephone Number ( )_____

ADMINISTRATOR OF THE INSTITUTION:

_____
Name

Telephone Number ( )_____

PROGRAM INSTRUCTOR:

_____
Name

Telephone Number ( )_____

EVALUATION TEAM LEADER (assigned by NATEF):

_____
Name

DATE(S) OF ON-SITE EVALUATION: _____

PROJECTED ON-SITE EVALUATION EXPENDITURES:

Honorarium for ETL ($175 per day)	_____
Expenses for ETL	_____
On-site Evaluation Team Member Packets (Minimum 3 sets @ $40 each)	_____*
TOTAL	_____

SEND THE FOLLOWING MATERIALS TO THE ETL:

1. **APPLICATION FOR ON-SITE EVALUATION (THIS COMPLETE FORM)**
2. **COURSE OF STUDY**
3. **ON-SITE EVALUATION TEAM MEMBERS LIST**

_____

Institutional Administrator - Signature Date

_____

Institutional Administrator - Name and Title (print or type)

_____

Program Instructor - Signature Date

_____

Program Instructor - Name and Title (print or type)

I have reviewed this application and found it to be complete.

_____

Evaluation Team Leader - Signature Date

INSTRUCTIONS FOR EVALUATION

Self-Evaluation - Recertification

The Self-Evaluation required for Recertification is different from the Self-Evaluation used for Initial Certification. One significant difference is the requirement for a minimum of four program Advisory Committee members to participate in the Self-Evaluation. The Self-Evaluation rating sheets are also different than those used for Initial Certification.

1. An individual from the program should be identified to coordinate the recertification process. This person should meet with at least four (4) Advisory Committee members to review the program standards and recertification materials.

2. The Advisory Committee should observe the program's operations, curriculum, facilities and equipment, and hold discussions with staff and administration.

3. When completing the CNG/LPG Program Recertification Self-Evaluation, the Advisory Committee should rate their responses based on the 1-5 point scale. For recertification, each standard is given an overall rating. Standards 6, 7, and 8 require additional information or individual program area ratings in addition to the overall rating on the standard.

4. After completing the Recertification Self-Evaluation, the Advisory Committee should meet to discuss their individual responses. The scores of the four evaluators should be averaged and recorded on the Recertification Summary Sheet. Each Advisory Committee member must sign the Recertification Summary Sheet.

5. Send the following four items to the NATEF office:

   a. Application for Recertification
   b. Recertification Summary Sheet
   c. On-Site Evaluation Team Member List
   d. Instructor Qualification Sheets

6. The on-site evaluation team will use an evaluation form that is similar to the form used in the initial certification. Therefore, they will need information and documentation (as in the initial self-evaluation) to conduct their review and to validate the averages and individual ratings given by the Advisory Committee during the self-evaluation. Please refer to item 9 in the Instructions for Evaluation - Initial Certification and to the CNG/LPG Program Self-Evaluation for detailed information.

Please review the Process Overview located in the Procedures section for additional information.

On-Site Evaluation - Recertification

For Recertification, the on-site evaluation team will only rate Standards 6, 7, 8, and 9 unless the self-evaluation average by the Advisory Committee on one or more of Standards 1 - 5 and 10 was less than 4. Please refer to the Process Overview in the Procedures section and the CNG/LPG Program Requirements in the Policies section for additional information.

ETLs are valuable assets to programs seeking certification. They provide a link between the program and the NATEF office. Once an ETL is assigned to a program, the program coordinator should contact the ETL. In addition to arranging dates for the on-site evaluation, the ETL should be consulted prior to the evaluation for guidance on preparation, space requirements, etc. that will facilitate the process. Most importantly, the ETL should be viewed as a resource, prepared to assist programs in the certification process.

It is essential that team members have access to all the information and reference materials necessary to complete the evaluation of each standard. It is highly recommended that reference materials are organized and labeled according to each standard.

The on-site evaluation must be conducted while classes are in session. The ETL and team members will tour classrooms and the lab/shop areas during instructional periods. They will need to evaluate the curriculum, tools and equipment, space, storage areas, etc. The on-site team will make every effort to conduct their evaluation with as little disruption to classroom and lab/shop activities as possible.

In addition, the on-site evaluation team will conduct a survey of employers of program graduates. Please prepare a list of six individuals who have completed the program within the last three years and are employed locally at different automotive repair facilities. Include the name of the graduate, their supervisor, the address and phone number of the place of employment. The ETL will select a minimum of three employers to survey during the evaluation.

Upon completion of the on-site evaluation, the ETL will share with you general strengths and recommendations for improvement. The ETL will not be able to indicate whether or not the program will be recertified. The NATEF office will notify the program administrator and the state T & I Supervisor after all evaluation materials have been reviewed and a determination on recertification has been made by ASE.

CNG/LPG PROGRAM RECERTIFICATION

ADVISORY COMMITTEE SELF-EVALUATION

The items listed on the attached form are to be rated by the program Advisory Committee members. A minimum of four (4) Advisory Committee members must participate in the program review and self-evaluation.

Directions to the Advisory Committee members:

1. Please use the following scale to rate each of the program standards:

Rating	Definition
5	Exceptional; Above average
4	Average; Adequate
3	Somewhat; Needs improvement
2	Very little
1	Not at all

In Standard 6, please record the number of hours in the curriculum for each of the specialty areas in which certification is desired. Also, record the percent of the High Priority (P-1, P-2, P-3) tasks taught in the curriculum in each specialty area. In Standards 7 and 8, rate the individual program area according to the 1 - 5 rating scale above in addition to giving an overall rating of the Standard.

2. Make your individual assessment of the program based on the information and documentation given to you by the program evaluation coordinator, by touring the facility, etc.

3. Meet with the other Advisory Committee members and the program evaluation coordinator to discuss your ratings and obtain an average rating on each of the program standards. The average for each of the standards should be recorded on the Recertification Summary Sheet.

4. Sign the Recertification Summary Sheet to verify your participation in the review.

RECERTIFICATION SELF-EVALUATION

The NATEF Program Standards section has descriptive information on each of the ten standards. Please refer to that section when completing this evaluation.

STANDARD **RATING**

STANDARD 1 - PURPOSE ____%

The CNG/LPG technician training program should have clearly stated program goals, related to the needs of the students and employers served. What percentage of those students who complete the program are employed in the automotive industry within 6 months of program completion?

STANDARD 2 - ADMINISTRATION ____

Program administration should ensure that instructional activities support and promote the goals of the program.

STANDARD 3 - LEARNING RESOURCES ____

Support materials, consistent with both program goals and performance objectives, should be available to staff and students.

STANDARD 4 - FINANCES ____

Funding should be provided to meet the program goals and performance objectives.

STANDARD 5 - STUDENT SERVICES ____

Systematic pre-admission testing, interviews, counseling services, placement, and follow-up procedures should be used.

STANDARD **RATING**

STANDARD 6 - INSTRUCTION _____

Instruction must be systematic and reflect program goals. A task list and specific performance objectives with criterion referenced measures must be used.

CNG/LPG Area	# of Hours	% P-1	% P-2	% P-3
Electrical/Electronic Systems	_____	_____	_____	_____
Engine Performance	_____	_____	_____	_____
LPG Diagnosis and Repair	_____	_____	_____	_____
LPG Maintenance	_____	_____	_____	_____
LPG Conversion/Installation	_____	_____	_____	_____
CNG Diagnosis and Repair	_____	_____	_____	_____
CNG Maintenance	_____	_____	_____	_____
CNG Conversion/Installation	_____	_____	_____	_____

STANDARD 7 - EQUIPMENT _____

Equipment and tools used in the CNG/LPG technician training program must be of the type and quality found in the repair industry and must also be the type needed to provide training to meet the program goals and performance objectives.

CNG/LPG Area	Area Rating
Electrical/Electronic Systems	_____
Engine Performance	_____
LPG Diagnosis and Repair	_____
LPG Maintenance	_____
LPG Conversion/Installation	_____
CNG Diagnosis and Repair	_____
CNG Maintenance	_____
CNG Conversion/Installation	_____

STANDARD	RATING

STANDARD 8 - FACILITIES _____

The physical facilities must be adequate to permit achievement of the program goals and performance objectives.

CNG/LPG Area	Area Rating
Electrical/Electronic Systems	_____
Engine Performance	_____
LPG Diagnosis and Repair	_____
LPG Maintenance	_____
LPG Conversion/Installation	_____
CNG Diagnosis and Repair	_____
CNG Maintenance	_____
CNG Conversion/Installation	_____

STANDARD 9 - INSTRUCTIONAL STAFF _____

The instructional staff must have technical competency and meet all state and local requirements for certification.

STANDARD 10 - COOPERATIVE AGREEMENTS _____

Written policies and procedures should be used for cooperative and apprenticeship training programs.

APPLICATION FOR RECERTIFICATION

CNG/LPG - LIGHT/MEDIUM DUTY

NOTE: A separate Application for Recertification must be completed for each program requesting certification.

INSTITUTION:

_____
Name

_____
Program

_____
Street

_____
City State ZIP

Telephone Number ( )_____

ADMINISTRATOR OF THE INSTITUTION:

_____
Name

Telephone Number ( )_____

PERSON RESPONSIBLE FOR COORDINATION OF SELF-EVALUATION:

_____
Name

Telephone Number ( )_____

LEVEL OF PROGRAM BEING EVALUATED:

_____ Secondary
_____ Post-secondary
_____ Both secondary and post-secondary

PROGRAM HOURS

Record the number of hours of instruction in the laboratory or shop and in the classroom. Add the two numbers to record the total program hours for the specialty areas requesting certification.

** Complete the information only for the areas requesting certification.

AREA	LAB/SHOP CO-OP	+ CLASSROOM =	PROGRAM TOTAL
Electrical/Electronic Systems	_____	_____	_____
Engine Performance	_____	_____	_____
LPG Diagnosis and Repair	_____	_____	_____
LPG Maintenance	_____	_____	_____
LPG Conversion/Installation	_____	_____	_____
CNG Diagnosis and Repair	_____	_____	_____
CNG Maintenance	_____	_____	_____
CNG Conversion/Installation	_____	_____	_____

PREFERRED ON-SITE EVALUATION DATES:_____

**** IT IS UNDERSTOOD THAT ALL EXPENDITURES INCURRED FOR THE ON-SITE EVALUATION WILL BE PAID BY THE CNG/LPG PROGRAM OR INSTITUTION REQUESTING CERTIFICATION. ****

_____

Institutional Administrator - Signature Date

_____

Institutional Administrator - Name and Title (print or type)

_____

Program Instructor - Signature Date

_____

Program Instructor - Name and Title (print or type)

RECERTIFICATION SUMMARY SHEET

STANDARD	RATING
STANDARD 1 - PURPOSE	____%

The CNG/LPG technician training program should have clearly stated program goals, related to the needs of the students and employers served. What percentage of those students who complete the program are employed in the automotive industry within 6 months of completion?

STANDARD 2 - ADMINISTRATION ____

Program administration should ensure that instructional activities support and promote the goals of the program.

STANDARD 3 - LEARNING RESOURCES ____

Support materials, consistent with both program goals and performance objectives, should be available to staff and students.

STANDARD 4 - FINANCES ____

Funding should be provided to meet the program goals and performance objectives.

STANDARD 5 - STUDENT SERVICES ____

Systematic pre-admission testing, interviews, counseling services, placement and follow-up procedures should be used.

STANDARD 6 - INSTRUCTION ____

Instruction must be systematic and reflect program goals. A task list and specific performance objectives with criterion referenced measures must be used.

CNG/LPG Area	# of Hours	% P-1	% P-2	% P-3
Electrical/Electronic Systems	____	____	____	____
Engine Performance	____	____	____	____
LPG Diagnosis and Repair	____	____	____	____
LPG Maintenance	____	____	____	____
LPG Conversion/Installation	____	____	____	____
CNG Diagnosis and Repair	____	____	____	____
CNG Maintenance	____	____	____	____
CNG Conversion/Installation	____	____	____	____

STANDARD 7 - EQUIPMENT ____

Equipment and tools used in the CNG/LPG technician training program must be of the type and quality found in the repair industry and must also be the type needed to provide training to meet the program goals and performance objectives.

CNG/LPG Area	Area Rating
Electrical/Electronic Systems	____
Engine Performance	____
LPG Diagnosis and Repair	____
LPG Maintenance	____
LPG Conversion/Installation	____
CNG Diagnosis and Repair	____
CNG Maintenance	____
CNG Conversion/Installation	____

STANDARD	RATING

STANDARD 8 - FACILITIES _____

The physical facilities must be adequate to permit achievement of the program goals and performance objectives.

CNG/LPG Area	Area Rating
Electrical/Electronic Systems	_____
Engine Performance	_____
LPG Diagnosis and Repair	_____
LPG Maintenance	_____
LPG Conversion/Installation	_____
CNG Diagnosis and Repair	_____
CNG Maintenance	_____
CNG Conversion/Installation	_____

STANDARD 9 - INSTRUCTIONAL STAFF _____

The instructional staff must have technical competency and meet all state and local requirements for certification.

STANDARD 10 - COOPERATIVE AGREEMENTS _____

Written policies and procedures should be used for cooperative and apprenticeship training programs.

Advisory Committee members who conducted the CNG/LPG program review and self-evaluation (minimum of 4):

1. _____ 4. _____

2. _____ 5. _____

3. _____ 6. _____

I PARTICIPATED IN THE RECERTIFICATION SELF-EVALUATION AND APPROVE THE RECERTIFICATION SUMMARY REPORT AS EVIDENCED BY MY SIGNATURE BELOW.

1._____

2._____

3._____

4._____

5._____

6._____

ON-SITE EVALUATION TEAM MEMBER LIST

CNG/LPG RECERTIFICATION

CNG/LPG Recertification

NOTE: There must be two evaluation team members and one alternate member who are practicing automotive technicians with CNG/LPG experience. See the "Information About On-site Evaluation Team Members", in the Policies section for selection criteria.

1. **TEAM MEMBER #1:**

_____
Name

_____
Position

_____
Work Address

_____

_____

Years of hands-on experience: Total Automotive _____ CNG _____ LPG _____

High school graduate or equivalent: YES NO

ASE Automotive Certifications: _____

2. **TEAM MEMBER #2:**

_____
Name

_____
Position

_____
Work Address

_____

_____

Years of hands-on experience: Total Automotive _____ CNG _____ LPG _____

High school graduate or equivalent: YES NO

ASE Automotive Certifications: _____

3. ALTERNATE TEAM MEMBER

_____

Name

_____

Position

_____

Work Address

_____

_____

Years of hands-on experience: Total Automotive _____ CNG _____ LPG _____

High school graduate or equivalent: YES NO

ASE Automotive Certifications: _____

CNG/LPG INSTRUCTOR QUALIFICATION SHEET

Instructor _____ **SS#** _____
(please print or type)

Current ASE Certifications:

Certification Area	Valid Until
1. Electrical/Electronics Systems (A6)	_____
2. Engine Performance (A8)	_____
3. Light Vehicle - Compressed Natural Gas (F1)	_____

Please indicate the areas taught by this instructor:

Electrical/Electronics.Systems..... _____

Engine Performance..... _____

LPG Diagnosis and Repair..... _____

LPG Maintenance..... _____

LPG Conversion/Installation..... _____

CNG Diagnosis and Repair..... _____

CNG Maintenance..... _____

CNG Conversion/Installation..... _____

*** NOTE: This form will be sent to programs after they have been approved for an On-Site Evaluation. ***

APPLICATION FOR ON-SITE EVALUATION

CNG/LPG RECERTIFICATION

INSTITUTION:

_____
Name

_____
Program

_____
Street

_____
City State ZIP

Telephone Number ( )_____

ADMINISTRATOR OF THE INSTITUTION:

_____
Name

Telephone Number ( )_____

PROGRAM INSTRUCTOR:

_____
Name

Telephone Number ( )_____

EVALUATION TEAM LEADER (assigned by NATEF):

_____
Name

DATE(S) OF ON-SITE EVALUATION: _____

PROJECTED ON-SITE EVALUATION EXPENDITURES:

Honorarium for ETL ($175 per day)	_____
Expenses for ETL	_____
On-site Evaluation Team Member Packets (Minimum 3 sets @ $40 each)	_____*
TOTAL	_____

SEND THE FOLLOWING MATERIALS TO THE ETL:

1. **APPLICATION FOR ON-SITE EVALUATION (THIS COMPLETE FORM)**
2. **COURSE OF STUDY**
3. **ON-SITE EVALUATION TEAM MEMBERS LIST**

_____

Institutional Administrator - Signature Date

_____

Institutional Administrator - Name and Title (print or type)

_____

Program Instructor - Signature Date

_____

Program Instructor - Name and Title (print or type)

I have reviewed this application and found it to be complete.

_____

Evaluation Team Leader - Signature Date

APPENDIX A

APPLICATION FOR INITIAL CERTIFICATION

CNG/LPG - LIGHT/MEDIUM DUTY

NOTE: A separate Application for Certification must be completed for each program requesting certification.

INSTITUTION:

XYZ Vo-Tech
Name

CNG/LPG Training Program
Program

1000 Virginia Avenue
Street

Annandale VA 00000
City State ZIP

Telephone Number ( ) 703 555 1212

ADMINISTRATOR OF THE INSTITUTION:

John Smith
Name

Telephone Number ( ) 703 555 2121

PERSON RESPONSIBLE FOR COORDINATION OF SELF-EVALUATION:

John Smith
Name

Telephone Number ( ) 703 555 1212 ext. 250

LEVEL OF PROGRAM BEING EVALUATED:

_____ Secondary
__X__ Post-secondary
_____ Both secondary and post-secondary

PROGRAM HOURS

Record the number of hours of instruction in the laboratory or shop and in the classroom. Add the two numbers to record the total program hours for the specialty areas requesting certification.

** Complete the information only for the areas requesting certification.

AREA	LAB/SHOP CO-OP	+ CLASSROOM =	PROGRAM TOTAL
Electrical/Electronic Systems	100	100	200
Engine Performance	150	120	270
LPG Diagnosis and Repair	40	30	70
LPG Maintenance	20	10	30
LPG Conversion/Installation	40	5	45
CNG Diagnosis and Repair	40	40	80
CNG Maintenance	20	10	30
CNG Conversion/Installation	40	5	45

PREFERRED ON-SITE EVALUATION DATES: April 10 - 11, 1996

**** IT IS UNDERSTOOD THAT ALL EXPENDITURES INCURRED FOR THE ON- SITE EVALUATION WILL BE PAID BY THE CNG/LPG PROGRAM OR INSTITUTION REQUESTING CERTIFICATION. ****

John Smith

Institutional Administrator - Signature Date

John Smith Administrator

Institutional Administrator - Name and Title (print or type)

Russell Parks

Program Instructor - Signature Date

Russell Parks Instructor

Program Instructor - Name and Title (print or type)

ON-SITE EVALUATION TEAM MEMBER LIST

CNG/LPG Initial Certification

NOTE: There must be two evaluation team members and one alternate member who are practicing automotive technicians with CNG/LPG experience. See the "Information About On-site Evaluation Team Members", in the Policies section for selection criteria.

1. TEAM MEMBER #1:

Roger Smith
Name

Technician
Position

Smith's Garage
Work Address

100 Main Street

Fairfax, VA 00000

Years of hands-on experience: Total Automotive 10 CNG 1 LPG 1

High school graduate or equivalent: (YES) NO

ASE Automotive Certifications: A-6, A-7, & F-1

2. TEAM MEMBER #2:

Diane Doe
Name

Technician/Supervisor
Position

Eastern Gas & Electric
Work Address

100 Smith Avenue

Silver Spring, MD 00000

Years of hands-on experience: Total Automotive 15 CNG 5 LPG 1/2

High school graduate or equivalent: (YES) NO

ASE Automotive Certifications: Master Auto, F-1, & L-1

3. **ALTERNATE TEAM MEMBER**

Bob Brown

Name

Brown's Conversions

Position

Owner/Manager

Work Address

100 49th Street

Alexandria, VA 00000

Years of hands-on experience: Total Automotive 12 CNG 10 LPG 10

High school graduate or equivalent: (YES) NO

ASE Automotive Certifications: None

CNG/LPG PROGRAM SELF-EVALUATION

Please complete the following self-evaluation form. For all items requiring responses on a 5 point scale, use the following to rate your responses:

1	2	3	4	5
not at all	very little	somewhat, needs improvement	average, adequate	exceptional, above average

STANDARD 1 - PURPOSE

THE CNG/LPG TECHNICIAN TRAINING PROGRAM SHOULD HAVE CLEARLY STATED PROGRAM GOALS, RELATED TO THE NEEDS OF THE STUDENTS AND EMPLOYERS SERVED.

1.1 EMPLOYMENT POTENTIAL

1.1

A. What percentage of those who complete the program obtain employment in the automotive industry within 6 months of program completion? — 50 %

B. Rate the administration and use of an annual survey of employers to determine the needs of their potential employees. — 1 2 3 4 (5)

REFERENCE MATERIALS: (File 1.1), 1994 report from Office of Institutional Research

1.2 PROGRAM DESCRIPTION/GOALS

1.2

A. Rate the program material(s) available (brochure or catalog) on the inclusion of the following:

1. admission requirements — 1 2 3 4 (5)
2. employment potential — 1 2 3 (4) 5
3. areas of specialty training offered — 1 2 3 4 (5)
4. cost of tuition and fees — 1 2 3 4 (5)
5. technical qualifications of the instructional staff — 1 2 3 4 (5)
6. overall goals of the program — 1 2 3 4 (5)

B. Rate the availability of program materials for students prior to enrollment. — 1 2 3 (4) 5

REFERENCE MATERIALS: (File 1.2) student brochure

Standard 1
Average Score 4.75
(8 items)

CNG/LPG SELF-EVALUATION SUMMARY SHEET

STANDARD 1 - PURPOSE

1.1 Employment Potential
A. 50
B. 1 2 3 4 (5)

1.2 Program Description/Goals
A. (1) 1 2 3 4 (5)
(2) 1 2 3 (4) 5
(3) 1 2 3 4 (5)
(4) 1 2 3 4 (5)
(5) 1 2 3 4 (5)
(6) 1 2 3 (4) 5
B. 1 2 3 4 (5)

STANDARD 1 AVERAGE SCORE 4.75
(8 items)

STANDARD 2 - ADMINISTRATION

2.1 Student Competency Certification
A. 1 2 3 (4) 5

2.2 Chain of Command
A. 1 2 3 4 (5)

2.3 Administrative Support
A 1 2 3 (4) 5
B. 1 2 3 (4) 5
C. 1 2 3 4 (5)
D. 1 2 3 (4) 5
E. 1 2 3 (4) 5
F. 1 2 3 4 (5)
G. 1 2 3 (4) 5

2.4 Written Policies
A. 1 2 3 4 (5)
B. 1 2 3 4 (5)
C. 1 2 3 (4) 5

2.5 Advisory Committee
A. (Yes) No
B. 1 2 3 (4) 5
C. 12
D. (1) 1 2 3 (4) 5
(2) 1 2 3 4 (5)
(3) 1 2 3 (4) 5
(4) 1 2 3 (4) 5
(5) 1 2 3 (4) 5

2.6 Public/Community Relations
A. 1 2 3 (4) 5

2.7 Live Work Accounting
A. 1 2 3 (4) 5
B. 1 2 3 4 5 (N/A)

STANDARD 2 AVERAGE SCORE 4.3
(21 items)

STANDARD 3 - LEARNING RESOURCES

3.1 Service Information
A. 1 2 3 4 (5)
B. 1 2 3 4 (5)

3.2 Multimedia
A. 1 2 3 (4) 5
B. 1 2 3 4 (5)

3.3 Instructional Development
A. 1 2 3 (4) 5
B. 1 2 3 4 (5)

3.4 Periodicals
A. 1 2 3 4 (5)

3.5 Student Materials
A. 1 2 3 4 (5)
B. 1 2 3 (4) 5
C. 1 2 3 4 (5)

STANDARD 3 AVERAGE SCORE 4.7
(10 items)

STANDARD 4 - FINANCES

4.1 Program Training Cost
A. 1 2 3 (4) 5

4.2 Budget
A. 1 2 3 (4) 5
B. 1 2 3 4 (5)
C. 1 2 3 (4) 5

4.3 Budget Preparation
A. 1 2 3 4 (5)

CNG/LPG INSTRUCTOR QUALIFICATION SHEET

Instructor Russell Banks **SS#** 111-00-2222
(please print or type)

Current ASE Certifications:

Certification Area	Valid Until
1. Electrical/Electronics Systems (A6)	7/98
2. Engine Performance (A8)	7/98
3. Light Vehicle - Compressed Natural Gas (F1)	7/2000

Please indicate the areas taught by this instructor:

Electrical/Electronics Systems.....	x
Engine Performance.....	x
LPG Diagnosis and Repair.....	
LPG Maintenance.....	
LPG Conversion/Installation.....	
CNG Diagnosis and Repair.....	x
CNG Maintenance.....	x
CNG Conversion/Installation.....	x

***** NOTE: This form will be sent to programs <u>after</u> they have been approved for an On-Site Evaluation. *****

APPLICATION FOR ON-SITE EVALUATION

CNG/LPG INITIAL CERTIFICATION

INSTITUTION:

XYZ Vo-Tech
Name

CNG/LPG Training Program
Program

1000 Virginia Avenue
Street

Annandale VA 00000
City State ZIP

Telephone Number ( ) 703 555 1212

ADMINISTRATOR OF THE INSTITUTION:

John Smith
Name

Telephone Number ( ) 703 555-2121

PROGRAM INSTRUCTOR:

Russell Parks
Name

Telephone Number ( ) 703 555 1212 ext. 001

EVALUATION TEAM LEADER (assigned by NATEF):

James Lighthouse
Name

DATE(S) OF ON-SITE EVALUATION: April 20 - 21, 1996

PROJECTED ON-SITE EVALUATION EXPENDITURES:

Honorarium for ETL ($175 per day)	350.00
Expenses for ETL	100.00
On-site Evaluation Team Member Packets (Minimum 3 sets @ $40 each)	120.00 *
TOTAL	570.00

SEND THE FOLLOWING MATERIALS TO THE ETL:

1. **APPLICATION FOR ON-SITE EVALUATION (THIS COMPLETE FORM)**
2. **COURSE OF STUDY**
3. **ON-SITE EVALUATION TEAM MEMBERS LIST**

John Smith
Institutional Administrator - Signature Date

John Smith Administrator
Institutional Administrator - Name and Title (print or type)

Russell Parks
Program Instructor - Signature Date

Russell Parks Instructor
Program Instructor - Name and Title (print or type)

I have reviewed this application and found it to be complete.

James Lighthouse
Evaluation Team Leader - Signature Date

RECERTIFICATION SUMMARY SHEET

STANDARD	RATING
STANDARD 1 - PURPOSE	80 %

The CNG/LPG technician training program should have clearly stated program goals, related to the needs of the students and employers served. What percentage of those students who complete the program are employed in the automotive industry within 6 months of completion?

STANDARD 2 - ADMINISTRATION	5

Program administration should ensure that instructional activities support and promote the goals of the program.

STANDARD 3 - LEARNING RESOURCES	5

Support materials, consistent with both program goals and performance objectives, should be available to staff and students.

STANDARD 4 - FINANCES	4

Funding should be provided to meet the program goals and performance objectives.

STANDARD 5 - STUDENT SERVICES	4.5

Systematic pre-admission testing, interviews, counseling services, placement and follow-up procedures should be used.

STANDARD **RATING**

STANDARD 6 - INSTRUCTION 5

Instruction must be systematic and reflect program goals. A task list and specific performance objectives with criterion referenced measures must be used.

CNG/LPG Area	# of Hours	% P-1	% P-2	% P-3
Electrical/Electronic Systems	200	100	90	50
Engine Performance	270	100	100	75
LPG Diagnosis and Repair	70	100	100	75
LPG Maintenance	30	100	90	75
LPG Conversion/Installation	45	100	100	100
CNG Diagnosis and Repair	80	100	100	75
CNG Maintenance	30	100	100	50
CNG Conversion/Installation	45	100	100	80

STANDARD 7 - EQUIPMENT 4.5

Equipment and tools used in the CNG/LPG technician training program must be of the type and quality found in the repair industry and must also be the type needed to provide training to meet the program goals and performance objectives.

CNG/LPG Area	Area Rating
Electrical/Electronic Systems	4
Engine Performance	5
LPG Diagnosis and Repair	4
LPG Maintenance	4
LPG Conversion/Installation	4
CNG Diagnosis and Repair	5
CNG Maintenance	5
CNG Conversion/Installation	5

STANDARD	RATING
STANDARD 8 - FACILITIES	4.75

The physical facilities must be adequate to permit achievement of the program goals and performance objectives.

CNG/LPG Area	Area Rating
Electrical/Electronic Systems	4
Engine Performance	4
LPG Diagnosis and Repair	5
LPG Maintenance	5
LPG Conversion/Installation	5
CNG Diagnosis and Repair	5
CNG Maintenance	5
CNG Conversion/Installation	5

STANDARD 9 - INSTRUCTIONAL STAFF 5

The instructional staff must have technical competency and meet all state and local requirements for certification.

STANDARD 10 - COOPERATIVE AGREEMENTS 5

Written policies and procedures should be used for cooperative and apprenticeship training programs.

Advisory Committee members who conducted the CNG/LPG program review and self-evaluation (minimum of 4):

1. Robert Jones
2. Billy Owens
3. Harold Williams
4. James Redfeather
5. John Bowen
6. _____

I PARTICIPATED IN THE RECERTIFICATION SELF-EVALUATION AND APPROVE THE RECERTIFICATION SUMMARY REPORT AS EVIDENCED BY MY SIGNATURE BELOW.

1. _____
2. Billy Owens
3. Harold Williams
4. _____
5. _____
6. _____

APPENDIX B

GLOSSARY OF TERMS

AREA(S): Relates to one or more of the following eight areas: (1)Electrical/Electronic Systems, (2) Engine Performance, (3) LPG Diagnosis and Repair, (4) LPG Maintenance, (5) LPG Conversion/Installation, (6) CNG Diagnosis and Repair, (7) CNG Maintenance, and (8) CNG Conversion/Installation.

CURRICULUM: All the objectives, content, and learning activities arranged in a sequence for a particular instructional area. An orderly arrangement of integrated subjects, activities, time allocations, and experiences which students pursue for the attainment of a specific education goal.

COMPETENCY: (Hands On) - Performance of task to the level or degree specified in the performance standard for the task.

CRITERION REFERENCED MEASURE(S): An exercise based on a performance objective for a task, and designed to measure attainment of that objective. (Also called performance test(s) or criterion referenced test.)

GOAL: A statement of the intended outcome of participation in the training program.

LIVE WORK: The processing, assignment and student performance of the appropriate diagnosis, repair, rebuild or replacement tasks on vehicles donated by manufacturers or other sources, customer-owned, and other training vehicles.

MASTERY: (See Competency - Hands On)

OBJECTIVE PERFORMANCE: A written statement describing an intended outcome (competent task performance) in terms of student performance. (Also called "behavioral" objective or instructional objective) R.F. Mager Associates, 13245 Rhoda Drive, Los Altos Hill, California.

PERSONAL CHARACTERISTIC: Attributes which are not readily measurable, and are generally in the affective or cognitive domains.

STANDARD: "...Something established for use as a rule or basis of comparison in measuring or judging capacity quantity, content, extent, value, quality, etc." Webster's New World Dictionary (1991)

STANDARD - PERFORMANCE: A written specification of the results of acceptable task performance.

STANDARD - PERSONAL: An attribute or characteristic of an individual which facilitates entry into and advancement in an occupation.

STANDARD - PROGRAM: A specific quality or desired characteristic or a training program designed to prepare individuals for employment.

TASK: A task (statement) describes a unit of work activity which has an identifiable beginning and ending point in its accomplishment, and consists of two or more observable steps.

TRAINING STATION: An area with appropriate tools and equipment, large enough to allow safety and competency development in task performance.

****

Must or shall is an imperative need, duty or requirement; an essential or indispensable item; mandatory.

Should is used to express a recommendation, not mandatory but attainment would increase program quality.

May or could expresses freedom to follow a suggested alternative.

CNG/LPG GLOSSARY ADDITIONS

ALTERNATE FUEL: As defined pursuant to the EPACT, methanol, denatured ethanol and other alcohols, separately or in mixtures of 85% by volume or more (but not less than 70% as determined by DOE rule) with gasoline or other fuels, CNG, LNG, LPG, hydrogen, "coal-derived liquid fuels," fuels "other than alcohol" derived from "biological materials," electricity or any other fuel determined to be "substantially not petroleum" and yielding "substantial energy security benefits and substantial environmental benefits."

ALTERNATIVE FUEL VEHICLE (AFV): A vehicle that runs on an alternative fuel.

AUTO STOP VALVE: A valve used on an LPG vehicle to prevent the overfill of the fuel supply container.

BI - FUEL: A vehicle with two separate fuel systems designed to run on either an alternative fuel or conventional gasoline, using only one fuel at a time. These vehicles are referred to as "dual-fuel" in the CAAA and EPACT.

CALIFORNIA AIR RESOURCES BOARD (CARB): A State agency that regulates the air quality in California.

CLEAN AIR ACT AMENDMENT OF 1990 (CAAA): The original Clean Air Act was signed into law in 1963 and was amended several times, most recently in 1990 (P.L. 101-549). For transportation, the Act sets motor vehicle emission standards and includes provisions for the use of reformulated and oxygenated gasoline. The regulation also requires certain fleet operators to use clean fuel vehicles in 22 cities.

CLOCKING: Positioning of an installed component (e.g. position of LPG fuel supply container).

COMPRESSED NATURAL GAS (CNG): Natural gas that has been compressed to high pressures, typically between 2000 and 3600 psi, held in a container.

CONVERTED VEHICLE: A vehicle originally designed to operate on gasoline or diesel that has been modified or altered to run on an alternative fuel.

CONVERTER/REGULATOR: A device used in the fuel system to regulate the pressure of the fuel. In some systems, it may also control the rate of conversion of the fuel from a liquid to a vapor.

DEDICATED FUEL VEHICLE: A vehicle that is capable of operating on only one type of fuel.

DETERMINE LOCATION: "Determine the proper location" assumes that the most appropriate resource (s) will be used. Manufacturers' specific instructions on component location (when available) will generally be considered the primary resource. Industry practices/guidelines will be used when the manufacturer does not provide specific instruction for a particular application.

DUAL-FUEL VEHICLE:

EPACT Definition - Vehicle designed to operate on a combination of an alternative fuel and a conventional fuel. This includes: a) vehicles using a mixture of gasoline or diesel and an alternative fuel in one tank, commonly called flexible-fueled vehicles; and b) vehicles capable of operating on either an alternative fuel, a conventional fuel or both, using two fuel systems.

CAAA Definition - Vehicle with two separate fuel systems designed to run on either an alternative fuel or conventional gasoline, using only one fuel at a time.

ENERGY POLICY ACT OF 1992 (EPACT): (P.L. 102-486) A broad-ranging act signed into law on Oct. 24, 1992. Tittles III, IV, XV and XIX of EPACT deal with alternative transportation fuels.

FLEXIBLE-FUEL VEHICLES: Passenger cars designed to run on blends of unleaded gasoline with either ethanol or methanol.

FUEL SUPPLY CONTAINER: Device used to store fuel on-board the vehicle. Includes all high/low pressure, and cryogenic fuel containers

INERT GAS: Any gas that exhibits great stability and extremely low reaction rates (e.g., argon, nitrogen) - also called a noble gas.

INJECTOR: A device for delivering metered pressurized fuel to the intake system or the cylinder.

LIGHT-DUTY VEHICLE: Vehicle weighing up to 8,500 pounds.

LIQUEFIED PETROLEUM GAS (LPG): A hydrocarbon and colorless gas, primarily propane, found in natural gas and produced from crude oil.

LIQUEFIED NATURAL GAS (LNG): Natural Gas that has been condensed to a liquid - typically by cryogenically cooling the gas.

MANIFOLD SKIN TEMPERATURE SENSOR (MST): Device used to determine the surface (skin) temperature of the intake manifold.

MEDIUM-DUTY VEHICLE: Vehicle weighing between 8,500 and 14,000 pounds.

NATURAL GAS: A mixture of gaseous hydrocarbons, primarily methane, occurring naturally in the earth.

NATURAL GAS TANK TEMPERATURE (NGTT): Device used to measure the temperature of the natural gas fuel supply container.

NPT: National Pipe Thread.

SUPPLEMENTAL COMPUTER SUPPORT: A device used to assist or modify input or output signals to/from the original equipment computer (e.g., timing and O2 fixes).

SUPPLEMENTAL ON-BOARD DIAGNOSTICS: On-board diagnostics of a supplemental computer - non Original Equipment computers.

VALVES: General description - any device in a passageway that regulates the flow of whatever is in the conduit, by means of a flap, lid, plug, etc. acting to open or block passages.

APPENDIX C

Task List Priority Item Totals (by area)

I. Electrical/Electronic Systems

P-1 = 7
P-2 = 21
P-3 = 4

II. Engine Performance

P-1 = 4
P-2 = 62
P-3 = 3

III. LPG Diagnosis and Repair

P-1 = 1
P-2 = 13
P-3 = 3

IV. LPG Maintenance

P-1 = 7
P-2 = 12
P-3 = 2

V. LPG Conversion/Installation

P-1 = 15
P-2 = 4
P-3 = 3

VI. CNG Diagnosis and Repair

P-1 = 1
P-2 = 13
P-3 = 3

VII. CNG Maintenance

P-1 = 7
P-2 = 12
P-3 = 2

VIII. CNG Conversion/Installation

P-1 = 15
P-2 = 4
P-3 = 2