

Buenos Aires, December 12, 2002

PURSUANT TO File ENARGAS Nr. 7787, Law 24076, its Regulatory Decree Nr. 1738/92 and Resolution ENARGAS Nr. 138/95, and

WHEREAS:

Section 52 of Law 24076 assigns ENARGAS the role and power to issue regulations as regards safety, standards and technical procedures, also related to compressed natural gas, that must be complied with by the individuals and legal entities specified in said Law.

Section 86 of that Law stipulates that the Technical Standards Classification of Gas del Estado Sociedad del Estado (Revision 1991) and their supplementary provisions shall be fully in force until ENARGAS approves new technical standards to supersede the present ones.

Various filling stations have made individual or joint presentations requesting clarifications or modifications to the requirements provided in the respective standards as regards the useful life of compressed natural gas dispenser hoses.

The standards related to the installation, use and maintenance of CNG dispenser hoses are GE-N1-118 "Technical and safety standards and specifications for compressed natural gas compression, storage and dispensing installations" and GE-N1-141 "Standard for compression equipment for compressed natural gas filling stations" included in the abovementioned Classification.

The first standard stipulates disposal of hoses by the end of their service life limited to the "supplier's guaranteed term provided in the certificate".

The other standard states that the service life of the hoses shall be limited by the condition of the external protection, meshes and terminals.

In one of those presentations, it is stated that by the year 2000 hose suppliers began to register a one year warranty term in their certificates.

Other submissions received by ENARGAS stated the concerns related to the requirement of annual replacement of hoses, mentioning that based on experience and without neglecting safety, said replacement period would not be necessary since they consider it excessively short and inconvenient due to the present high cost of acquisition of imported inputs.

Upon consultation, hose suppliers referred to their interpretation and interrelation of standards used in our country as well as those in force in the manufacturing country.

Said manufacturing standards were ANSI/IAS NGV 4.2-1999 CSA 12.52-M99 "Standard for Hoses for Natural Gas Vehicles and Dispensing Systems" and SAE J-517 "High-Pressure Thermoplastic Hydraulic Hose (SAE 100R8)".

Hose ageing is determined by the intensity of its use which depends on the number of filling cycles and which may be accelerated due to inadequate operation or assembly conditions.

On this basis, the service life criterion of CNG hoses – that should be established by the manufacturer as stated in standard GE-N1-118 – must depend on its use; which for this aim is defined as the number of working cycles under the installation, operation and control conditions set forth by the hose manufacturer or importer.

The analysis of the conditions that the different tests must comply with, according to the standards currently used for manufacturing hoses and based on their real use, lead us to understand that hoses constitute a safety factor.

Deterioration of hoses is a gradual process. This enables the control of the process eliminating the fears of a sudden accident provided that their assembly, operation and inspections are carried out periodically according to the manufacturer's recommendations and that acceptability remains within safety limits.

Conclusions of the previous paragraph are strengthened by the additional safety provided by the excess flow valves, metallic mesh and hose design.

Results arising from the use of hoses in our country during these years are consistent with the previous considerations.

It is appropriate to update the regulatory basis for hose approval through the issuance – within the nature of what is set forth in Resolution ENARGAS Nr. 138/95 - of an "ad hoc" document regulating it, developed according to the abovementioned specific standard for CNG hoses, ANSI/IAS NGV 4.2

For a better understanding and compatibility of the standards intended by this document, it is convenient to differentiate the responsibilities of hose manufacturers or importers, of filling stations and their technical representatives and of Distribution Licensees.

ENARGAS Board of Directors is empowered to issue this document based on the stipulations of Sections 52 subsection b) and 86 of Law 24076 and its Regulatory Decree Nr. 1738/92.

Therefore

THE ENTE NACIONAL REGULADOR DEL GAS BOARD OF
DIRECTORS

RESOLVES:

Section 1 - To render ineffective the fifth paragraph of section c) "Hoses", item 3-1 of Chapter "Specifications for periodic methods of re-qualification" of standard GE-N1-118 "Standards and technical and safety specifications for compressed natural gas compression, storage and dispensing stations" that states: "The hoses shall be assigned a shelf life according to the term guaranteed by the supplier in the certificate".

Section 2 – To render ineffective item 2.19 of Annex 1 of standard GE-N1-141 "Compression equipment for CNG filling stations" which states: "Hose service life shall be limited by the condition of the external protection, meshes or terminals, according to GAS DEL ESTADO's criteria".

Section 3 – To determine that the service life of hoses for vehicle compressed natural gas dispensers shall be settled based on the number of cycles of use under pressure which can be safely resisted, provided the installation, operation, control and storage conditions are complied with, all in accordance with the stipulations of the Annex made a part hereof.

Section 4 – To set forth that hose manufacturers and importers provide Distribution Licensees and filling stations Technical Representatives requiring it the necessary training for hose assembly, use and control.

Section 5 – To set forth that hose manufacturers and importers, solely or jointly, shall submit before ENARGAS, through a Certification Organization, not later than one hundred and twenty (120) running days as of the date in which this Resolution is published, a project of an "ad-hoc" regulatory document for the approval of CNG dispenser hoses, developed according to the regulations in force, the specific standard ANSI/IAS NGV 4.2 and this Resolution.

Section 6 – To differentiate the responsibilities of hose manufacturers and importers, filling stations and Distribution Licensees as shown in this Resolution annex, notwithstanding the stipulations contained in sections 4 and 5 hereof.

Section 7 – Communicate, publish, deliver to the National Bureau of Official Registry, and file.

RESOLUTION ENARGAS Nr. 2767

ANNEX

DIFFERENTIATION OF THE RESPONSIBILITIES CORRESPONDING TO THE FOLLOWING INDIVIDUALS AND LEGAL ENTITIES.

Manufacturers or importers:

1. State the service life based on use cycles under the installation, operation, control and storage conditions defined according to 2 to 6. Use cycles will comply with the standards adopted by the manufacturers regarding the necessary amount of cycling tests and required conditions.
2. State controls to be performed – frequency, type and location - providing acceptability limits for possible failures which may be detected and periodicity variables for the different controls.
3. Specify the safe assembly conditions.
4. Specify the safe usage conditions.
5. State guidelines for the storage of new and used out-of-service hoses.
6. State differentiating requirements for hoses which were (in a permanent or alternative way) out of use.
7. Deliver a technical document with each hose sold. Said document shall be approved by the Certification Organization and contain the stipulations of previous items 2 to 6 and the requirements stated in 1.

Filling Station and its Technical Representative, jointly and severally responsible for compliance with the previous items.

- Instruct the corresponding Filling Station personnel, based on their present and potential tasks, as regards compliance with previous items 2 to 6, and keep a record of the training provided.
- Develop a procedure for performing each task in respect of the training received.

- Check compliance of those tasks performance by the personnel and carry them "per se" as corresponds.
- Keep updated follow up sheets of the cycles of each installed hose so as to control its service life using the following formula:

$$vu(m) \equiv \frac{vucu}{30pccd}$$

where: *vu(m)* is the service life, in months

vucu is the service life in number of use cycles, according to 1

pccd is the average of the daily filling cycles;

- Replace each hose which has completed its service life according to the abovementioned formula or that shows signs of deterioration according to what is stated in 2.
- Replace each hose section comprised between the filling nozzle and the three-way valve after at least twelve (12) months of use, even when the formula result is higher, notwithstanding compliance with acceptance limits arising from the stipulations of 2.

Area **Distribution Licensee**

- Ensure effective compliance of the previous stipulations through audits, checking at least:
 - personnel training, through records and availability of the abovementioned procedures;
 - compliance of required assembly conditions;
 - validity of hose service life through sheets of usage frequency and of the section between the filling nozzle and the three-way valve; and
 - possible deteriorations, as indicated in 2, requiring hose replacement.