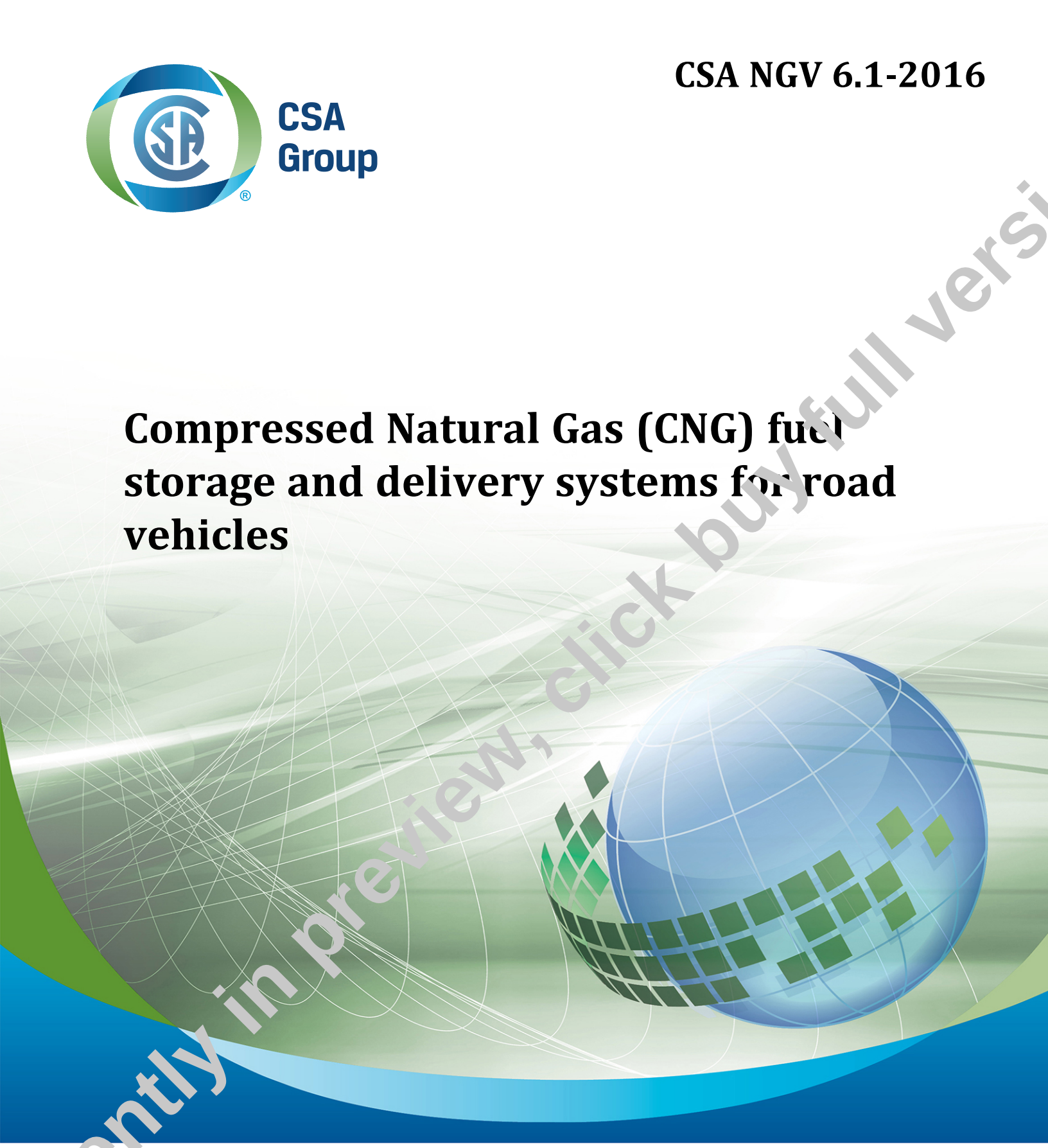
CSA NGV 6.1-2016

Compressed Natural Gas (CNG) fuel storage and delivery systems for road vehicles



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J. Cairns	CSA Group, Cleveland, Ohio, USA	*Project Manager*

Preface

This is the first edition of CSA NGV 6.1, *Compressed Natural Gas (CNG) fuel storage and delivery systems for road vehicles*. Although this Recommended Practice provides recommended standard practices, it has been written in mandatory language to accommodate its adoption by anyone wishing to do so. This Recommended Practice was prepared by the NGV 6.1 Subcommittee on Compressed Natural Gas (CNG) Fuel Systems, under the jurisdiction of the Technical Committee on Natural Gas Powered Vehicles and Fuelling and the Joint Automotive Technical Committee.

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

2) *Although the intended primary application of this Recommended Practice is stated in its Scope, it is important to note that it remains the responsibility of the users of the Recommended Practice to judge its suitability for their particular purpose.*

3) *This publication was developed by consensus, which is defined by CSA Policy governing standardization –* Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity." It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.*

4) *To submit a request for interpretation of this Recommended Practice, please send the following information to* ***inquiries@csagroup.org*** *and include "Request for interpretation" in the subject line:*

a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
b) *provide an explanation of circumstances surrounding the actual field condition; and*
c) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the* Current Standards Activities *page at standardsactivities.csa.ca.*

5) *This Recommended Practice is subject to review at least every five years; suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line:*

a) *Recommended Practice designation (number);*
b) *relevant clause, table, and/or figure number;*
c) *wording of the proposed change; and*
d) *rationale for the change.*

CSA NGV 6.1-2016
Compressed Natural Gas (CNG) fuel storage and delivery systems for road vehicles

1 Scope

1.1

This Recommended Practice applies to the design, installation, inspection, repair, and maintenance of a fuel storage and delivery system installed in an on road vehicle for use with compressed natural gas (CNG). This includes a fuel system on a self-propelled vehicle for the provision of motive power.

Note: *This Recommended Practice is intended to cover the fuel storage and delivery system as defined in Figure 1. Elements downstream of the regulation device(s) or stage(s) such as the low pressure delivery line and injectors are not included in the Scope of this Recommended Practice.*

1.2

This Recommended Practice does not apply to:

a) stationary engines;
b) mobile equipment using natural gas as a fuel for other than propulsion; or
c) electronic control module or controls strategy of a fuel management system.

Future editions of this Recommended Practice may include:

a) liquefied natural gas (LNG) fuel storage system;
b) compressed natural gas (CNG) portion of an LNG vehicle;
c) storage or utilization of natural gas on boats or trains;
d) powered industrial trucks;
e) off road applications including mining applications, all-terrain vehicles; and
f) motorcycles.

1.3

OEM compressed natural gas vehicles and containers that have been qualified under the Canadian *Motor Vehicle Safety Regulations* or U.S. *Federal Motor Vehicle Safety Standards (FMVSS)* are exempt from the requirements in this Recommended Practice.

1.4

All references to pressure throughout this Recommended Practice are to be considered gauge pressures, unless otherwise specified.

1.5

This Recommended Practice contains SI (Metric) with corresponding English units, the purpose being to allow the Recommended Practice to be used in SI (Metric) units. *American National Standard for Metric Practice*, IEEE/ASTM SI 10, or ISO 80000-1, *Quantities and units — Part 1: General*, is used as a guide in making English conversion from metric units. If a value for a measurement and a corresponding value in

other units are stated, the first stated value is to be regarded as the requirement. The given corresponding value may be approximate. If a value for a measurement and a corresponding value in other units are both specified as a quoted marking requirement, the first stated unit, or both, are to be provided.

Where the word “gallon” is used in this Recommended Practice, it indicates a U.S. gallon equivalent to 3.785 liters water capacity.

1.6

In this Recommended Practice, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with existing codes; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Recommended Practice.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications

This Recommended Practice refers to the following publications and unless otherwise noted, the publication of a document is the most recent edition, or to the edition in effect at the time that the vehicle was designed or the conversion completed.

CSA Group

ANSI NGV 2
Compressed natural gas vehicle fuel containers

ANSI NGV 3.1/CSA 12.3
Fuel system components for compressed natural gas powered vehicles

ANSI NGV 1/CSA NGV 1
Compressed natural gas vehicle (NGV) fueling connection devices

ANSI PRD 1
Pressure relief devices for natural gas vehicle (NGV) fuel containers

CSA B109 (Part 1)
Natural gas for vehicles installation code

EXP2.1-16
Best practice for defueling, decommissioning, and disposal of compressed natural gas vehicle fuel containers