This document licensed for the sole use of the purchaser. It may not be shared with any other person or used after the expiration date without the express written permission of the CGA. Any unauthorized use, reproduction, distribution, or modification of this printed page will result in a \$5,000 liquidated damages fee plus loss of access to CGA publications for one year for your company.

## CGA C-18-2019

METHODS FOR ACOUSTIC EMISSION REQUALIFICATION OF SEAMLESS STEEL COMPRESSED GAS TUBES

**FOURTH EDITION** 



PAGE İİ

COMPRESSED GAS ASSOCIATION, INC.

## PLEASE NOTE:

The information contained in this document was obtained from sources believed to be reliable and is based on technical information and experience currently available from members of the Compressed Gas Association, Inc. and others. However, the Association or its members, jointly or severally, make no guarantee of the results and assume no liability or responsibility in connection with the information or suggestions herein contained. Moreover, it should not be assumed that every acceptable commodity grade, test or safety procedure or method, precaution, equipment or device is contained within, or that abnormal or unusual circumstances may not warrant or suggest further requirements or additional procedure.

This document is subject to periodic review, and users are cautioned to obtain the latest edition. The Association invites comments and suggestions for consideration. In connection with such review, any such comments or suggestions will be fully reviewed by the Association after giving the party, upon request, a reasonable opportunity to be heard. Proposed changes may be submitted via the Internet at our website, <u>www.cganet.com</u>.

This document should not be confused with federal, state, provincial, or municipal specifications or regulations; insurance requirements; or national safety codes. While the Association recommends reference to or use of this document by government agencies and others, this document is purely voluntary and not binding unless adopted by reference in regulations.

A listing of all publications, audiovisual programs, safety and technical bulletins, and safety posters is available via the Internet at our website at <u>www.cganet.com</u>. For more information contact CGA at Phone: 703-788-2700, ext. 799. E-mail: <u>customerservice@cganet.com</u>.

Work Item 17-022 Cylinder Specifications Committee

NOTE—Technical changes from the previous edition are underlined.

NOTE—Appendices A and C (Normative) are requirements.

NOTE—Appendix B (Informative) is for information only.

FOURTH EDITION: 2019 REAFFIRMED: 2012 THIRD EDITION: 2005 SECOND EDITION: 2002

© 2019 The Compressed Gas Association, Inc. All rights reserved.

All materials contained in this work are protected by United States and international copyright laws. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording, or any information storage and retrieval system without permission in writing from The Compressed Gas Association, Inc. All requests for permission to reproduce material from this work should be directed to The Compressed Gas Association, Inc., 14501 George Carter Way, Suite 103, Chantilly, VA 20151. You may not alter or remove any trademark, copyright or other notice from this work.

This document licensed for the sole use of the purchaser. It may not be shared with any other person or used after the expiration date without the express written permission of the CGA. Any unauthorized use, reproduction, distribution, or modification of this printed page will result in a \$5,000 liquidated damages fee plus loss of access to CGA publications for one year for your company.

CG	GA C-18—2019COMPRESSED GAS ASSOCIATION, INC.	PAGE iii		
Contents Page				
1	Introduction	1		
2	Scope	1		
3	Definitions	1		
4	Safety considerations	3		
5	Flaws in gas tubes	3		
6	Operator qualifications	6		
7	Operational description	6		
8	Special considerations to obtain valid test	6		
9	Equipment and material	7		
10	Calibration and standardization	8		
11	Acoustic emission test procedure	8		
12	Documentation and report	9		
13	Acoustic emission equipment parameters	10		
14	Follow-up ultrasonic examination	10		
15	Rejection criteria	10		
16	References	11		
17	Additional references	11		

## Figures

Figure 1—Flaw in DOT-3AA tube	. 4
Figure 2—Lap in outside surface of DOT-3T tube (100x magnification)	. 4
Figure 3—Severe flaw in DOT-3T tube (100x magnification)	. 5
Figure 4—Fatigue crack in DOT-3AA tube sidewall (100x magnification)	. 5
Figure 5—Acoustic emission requalification of seamless steel tubes	.7

## Appendices

Appendix A—Listing of known current special permits and equivalency	certificates authorizing AE requalification
in lieu of hydrostatic testing (Informative)	
Appendix B—Fracture toughness (Informative)	
Appendix C—Instrumentation specifications (Normative)	