Crack ILI Response: Maximum Depth and Failure Pressure Ratio

API TECHNICAL REPORT 1190
FIRST EDITION, FEBRUARY 2024

Special Notes

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed. The use of API publications is voluntary. In some cases, third parties or authorities having jurisdiction may choose to incorporate API standards by reference and may mandate compliance.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be used. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Any manufacturer marking equipment or materials in conformance with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard. API does not represent, warrant, or guarantee that such products do in fact conform to the applicable API standard.

All rights reserved. No part of this work may be reproduced, translated, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Contact the Publisher, API Publishing Services, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571.

Copyright © 2024 American Petroleum Institute

Foreword

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

Suggested revisions are invited and should be submitted to the Standards Department, API, 200 Massachusetts Avenue NW, Suite 1100, Washington, DC 20001, standards@api.org.

Contents

Figures

Tables

Crack ILI Response: Maximum Depth and Failure Pressure Ratio

1 Scope

This technical report is related to the Pipeline Research Council International (PRCI) project NDE-4-20[1]. This technical report justifies the failure pressure ratio (FPR) and depth elements of reasonable and prudent crack ILI response criteria, to be applied in combination with other best practices of API RP 1176[2] and consideration of advancements in ultrasonic crack ILI technologies and performance.

2 Normative References

There are no normative references in this document.

3 Abbreviations

CL	crack-like
c/w	considered with
FPR	failure pressure ratio
ILI	in-line inspection
IMP	integrity management plan
MOP	maximum operating pressure
NDE	nondestructive examination
PAUT	phased array ultrasonic test
SCC	stress corrosion crack(ing)
TT	tool tolerance
UTCD	ultrasonic tool crack detection
w/o	without
WT	wall thickness

4 General

The recommended response to crack ILI information, which is expected to become a normative annex to the revision of API RP 1176, is shown in Table 1. The criteria shaded in green were examined as part of the NDE-4-20 project.

While some of the findings can inform gas transmission pipelines and corrosion ILI response, the focus of NDE-4-20 and this technical report is axial cracking in hazardous liquid pipelines.

[1] C. Macrory et al., “Considerations for Crack ILI Response in Hazardous Liquid Pipelines,” PRCI, PR727-213904-R01, 2022.

[2] API RP 1176, *Recommended Practice for Assessment and Management of Cracking in Pipelines*, First Edition, July 2016.