

DEPARTMENT OF INDUSTRIAL RELATIONS
Occupational Safety and Health Standards Board
2520 Venture Oaks Way, Suite 350
Sacramento, CA 95833
Tel: (916) 274-5721 Fax: (916) 274-5743
www.dir.ca.gov/oshsb



PROPOSED PETITION DECISION OF THE
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD
(PETITION FILE NO. 593)

INTRODUCTION

The Occupational Safety and Health Standards Board (Board) received a petition on July 28, 2021, from Brian R. Macejko, P.E., Phillip E. Prueter, P.E. and David A. Osage, ASME Fellow, P.E. for E²G, The Equity Engineering Group, Inc., (Petitioners). The Petitioners requests the Board to amend title 8, subchapter 15. Petroleum Safety Orders - Refining, Transportation and Handling, article 18. Unfired Pressure Vessels, Boilers, and Fired Pressure Vessels and Pressure Relief Valves, section 6857. Pressure Vessels and Boilers, by incorporating by reference the latest edition of American Petroleum Institute (API) 579, Fitness-for-Service (FFS) assessment standard.

Labor Code section 142.2 permits interested persons to propose new or revised regulations concerning occupational safety and health and requires the Board to consider such proposals and render a decision no later than six months following receipt.

Further, as required by Labor Code section 147, any proposed occupational safety and health standard received by the Board from a source other than the Division of Occupational Safety and Health (Cal/OSHA) must be referred to Cal/OSHA for evaluation. Cal/OSHA has 60 days after the receipt to submit an evaluation regarding the proposal.

SUMMARY

The Petitioners request the Board modify all references in California Code of Regulations title 8, chapter 4, subchapter 15, article 18, section 6857 related to the execution of FFS assessments to refer to “the latest edition of the API 579-1/ASME FFS-1 *Fitness-For-Service* Standard” as opposed to the 2000 edition of API RP579.

They opine that the API Recommended Practice 579 (API RP579), First Edition, January 2000 that is currently incorporated by reference within section 6857 is no longer consistent with the latest edition of ASME Codes.

Additionally, the 2000 edition of API RP579 does not address the following damage mechanisms that commonly affect the petroleum industry in California:

- Creep due to high temperature operation

- Hydrogen Induced Cracking (HIC) and Stress Oriented Hydrogen Induced Cracking (SOHIC) due to low temperature hydrogen damage
- Fatigue due to cyclic operation
- Dents, gouges, and dent-gouge combinations due to mechanical damage

CAL/OSHA'S EVALUATION

Cal/OSHA's evaluation report dated November 18, 2021, is in agreement with the Petitioners that the 2000 edition of API RP579 does not address many of the common damage mechanism that affect equipment in the petroleum industry. Cal/OSHA's Pressure Vessel Unit has been involved in many FFS assessments involving damage mechanism not covered in the 2000 edition of API RP579. In these instances, the requestor has been granted the ability to perform the FFS assessment per the more recent API 579 edition.

Cal/OSHA recommends the petition be granted and the 2016 edition of API-579 be incorporated into title 8 section 6857 in place of the 2000 edition.

BOARD STAFF EVALUATION

API RP579, which was first published in January 2000, contains methods for assessing the structural integrity of pressurized equipment used in oil and gas, petrochemical, and chemical plants. API RP579 is intended to be used in conjunction with API 510, Pressure Vessel Inspection Code: Maintenance Inspection, Rerating, Repair and Alteration, API 570, Piping Inspection Code: Inspection, Repair, Alteration, and Rerating of In-Service Piping Systems and API 653, Tank Inspection, Repair, Alteration, and Reconstruction.

According to the Foreword of API 579-1/ASME FFS-1 2016 Fitness-For-Service, a number of modifications and technical improvements are included, such as:

- Reorganized the standard to facilitate use and updates.
- Expanded equipment design code coverage.
- Added Annex for establishing an allowable Remaining Strength Factor.
- Simplified Level 1 criterion for the circumferential extent of a Local Thin Area through the modification of the Type A Component definition and subdivision of Type B Components into Class 1 or Class 2.
- Updated crack-like flaw interaction rules.
- Re-wrote weld residual stress solution Annex for use in the assessment of crack-like flaws.
- Updated guidance on material toughness predictions for use in the assessment of crack-like flaws.
- Updated evaluation procedures for the assessment of creep damage.
- Added Annex covering metallurgical investigation and evaluation of mechanical properties in a fire damage assessment.

- Developed new Part 14 covering the assessment of fatigue damage.

According to section 1.7.2 of API 579-1/ASME FFS-1 2016, the edition of the codes, standards, and recommended practices used in the FFS assessment shall be either the latest edition, the edition used for the design and fabrication of the component, or a combination thereof. The engineer responsible for the assessment shall determine the edition(s) to be used.

As technology moves forward and new inspection methods become acceptable, the recommended practices change. Therefore, consensus standards incorporated by reference require updating. The manner in which the standards are updated must ensure that harmony is maintained with other sections of title 8. For example, section 6845. Piping, Fittings, and Valves incorporates by reference API 570, Piping Inspection Code, Second Edition, October 1998, Addendum 3, August 2003 and section 6857. Pressure Vessels and Boilers incorporates by reference API 510, Pressure Vessel Inspection Code, Eighth Edition, June 1997, Addendum 4, August 2003, which may also need to be updated.

Board staff recommend the petition be granted to the extent that an advisory committee be convened by the Cal/OSHA Pressure Vessel Unit. Cal/OSHA should review other sections of title 8 to ensure that the changes remain in harmony. The Petitioners should be extended an invitation to be part of the advisory committee.

DISCUSSION

Both Cal/OSHA and Board staff are in agreement with the Petitioners that the references within section 6857 to the 2000 edition of API RP579 require updating. However, while the Petitioners request a general incorporation by reference to “the latest edition of the API 579-1/ASME FFS-1 Fitness-For-Service Standard”, the Administrative Procedures Act, specifically title 1, section 20(c), requires that the document incorporated by reference be identified by title of the document and date of publication or issuance.

Cal/OSHA recommends that the 2016 edition of API 579 be incorporated into title 8 section 6857 in place of the 2000 edition, while Board staff suggests an advisory committee be convened to consider the incorporation by reference to the latest edition of API 579 available at the time of the meetings and to also assure that other sections of title 8 be updated accordingly.

CONCLUSION AND ORDER

Having considered Petition 593, and evaluations by Board staff and Cal/OSHA, the Board hereby GRANTS, IN PART, the petition to the extent that Cal/OSHA Pressure Vessel Unit is asked by the Board to convene an advisory committee of stakeholders, inclusive of the Petitioners. The committee shall consider incorporating by reference the 2016 edition of API 579, Fitness-for-Service assessment standard, or the latest edition available at the time, in section 6857 and other sections of title 8 as necessary to ensure that harmony is maintained.