



# Memorandum

To: Christina Shupe, Executive Officer  
Occupational Safety and Health Standards Board

Date: November 18, 2021

From: Eric Berg, Deputy Chief of Health *Eric Berg*  
Division of Occupational Safety and Health

Subject: Evaluation of Petition 593  
The Equity Engineering Group, Inc.

## 1.0 INTRODUCTION AND BACKGROUND

On July 28, 2021 the Division of Occupational Safety and Health (Cal/OSHA) received a petition from Mr. Brian Macejko (Petitioner) to amend Title 8. The Petitioner is a consulting engineer for the Equity Engineering Group, Inc.

Labor Code section 142.2 permits interested persons to propose new or revised standards concerning occupational safety and health, and requires the Occupational Safety and Health Standards Board (Standard Board) to consider such proposals. Labor Code section 147 requires the Standards Board to refer to Cal/OSHA for evaluation any proposed occupational safety and health standard.

## 2.0 PETITIONER'S REQUEST TO AMEND TITLE 8 SECTION 6857

Title 8 Chapter 4, subchapter 15 Article 18 Section 6857 requires a Fitness for Service (FFS) assessment to be performed using American Petroleum Institute (API) Standard 579, Fitness-for-Service, Recommended Practice, First Edition, January 2000.

The petitioner requests a change to Title 8 Section 6857 to require a Fitness for Service evaluation be performed 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.

## 3.0 APPLICABLE FEDERAL OSHA REGULATIONS

There are no federal OSHA regulations for pressure vessels in the refining industry.

## 4.0 HISTORY OF Section 6857

Title 8 Chapter 4, subchapter 15 Article 18 Section 6857 of the Petroleum Safety Orders--Refining, Transportation and Handling was amended on July 26, 2006 to permit the petroleum industry in California to perform a Fitness-For-Service assessment. At the time of the amendment, the only edition of API-579 was the 2000 edition.

Fitness-For-Service (FFS) assessments are quantitative engineering evaluations that are performed to demonstrate the structural integrity of an in-service component that may contain a flaw or damage, or that may be operating under a specific condition that might cause a failure. The API 579 Standard

provides guidance for conducting FFS assessments using methodologies specifically prepared for pressurized equipment. Fitness-For-Service assessments can be used to make run-repair-replace decisions to help determine if components in pressurized equipment containing flaws that have been identified by inspection can continue to operate safely for some period of time.

## **5.0 APPLICABLE CONSENSUS STANDARDS**

FFS assessments are currently recognized and referenced by the API Codes and Standards (510, 570, & 653), and by NB-23 National Board Inspection Code as suitable means for evaluating the structural integrity of pressure vessels, piping systems and storage tanks where inspection has revealed degradation and flaws in the equipment.

## **6.0 PETITIONER'S BASIS FOR AMENDMENTS TO SECTION 462(m)**

The petitioner states that there have been numerous corrections to procedures that were found to be insufficient since the initial edition of API 579 was published in 2000. API 579 was replaced in 2007 with the first edition to the ASME/API jointly approve API 579 Standard. API 579 was again updated with the edition of API 579-1/ASME FFS-1, June, 2016 edition. The 2016 edition of API 579 contains numerous corrections, modifications, and enhancements to the previous 2007 edition.

There are currently numerous instances where results obtained using the 2000 edition of API 579 would no longer be acceptable per the current 2016 edition of API 579. In addition, the 2000 edition of API 579 does not address damage mechanisms that commonly affect the petroleum industry in California such as:

- 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

## **7.0 CAL/OSHA'S ANALYSIS**

Cal/OSHA agrees the 2000 edition of API 579 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 579. In these instances, the requestor has been granted the ability to perform the FFS assessment per the more recent API 579 edition.

## **8.0 CONCLUSION**

Ca/OSHA reviewed the Petitioner's request for a permanent change to Title 8 Chapter 4, subchapter 15 Article 18 Section 6857 to require the most recent edition of API 579-1/ASME FFS-1 be used to perform FFS assessments of equipment in the petroleum industry.

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