

API 579-1/ASME FFS-1 2007 – A JOINT API/ASME FITNESS-FOR-SERVICE STANDARD FOR PRESSURIZED EQUIPMENT

API 579-1/ASME FFS-1 2007 - NORME COMMUNE API/ASME POUR L'APTITUDE AU SERVICE DES ÉQUIPEMENTS SOUS PRESSION

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ABSTRACT

The first edition of API 579 *Recommended Practice for Fitness-For-Service* was published in 2000. Work on the second edition of API 579 was initiated the same year with many planned technical improvements. In addition to technical improvements, API and ASME agreed to form a joint committee to produce a joint API/ASME FFS Standard that can be used for pressure-containing equipment. This new standard designated as API 579-1/ASME FFS-1 2007 *Fitness-For-Service* is based on the first edition of API 579, incorporates all planned technical enhancements originally slated for the second edition, and also includes modifications to address the special needs of other industries such as the fossil electric power industry, and the pulp and paper industry. Insights into the driving force to create API 579 and an overview of the technical enhancements that will be incorporated into API 579-1/ASME FFS-1 are presented in this paper. The use of the API 579-1/ASME FFS-1 Fitness-For-Service assessment procedure models to establish a probability of failure for use with the API Risk-Based Inspection Planning Technology is also provided.

RÉSUMÉ

La première édition de l'API 579 "Recommandations pour l'évaluation de l'aptitude au service" a été publiée en 2000. Les travaux pour la rédaction de la deuxième édition ont commencé la même année. De nombreuses améliorations techniques étaient prévues. En plus des améliorations techniques, l'API et l'ASME se sont unis pour former un comité chargé de rédiger non plus des recommandations mais une norme commune d'aptitude au service pour les équipements sous pression. Cette nouvelle norme baptisée API 579/ASME FFS-1 2007 sera basée sur la première édition de l'API 579, incorporera toutes les améliorations techniques prévues dès l'origine pour la deuxième édition et inclura des modifications couvrant des besoins bien précis pour d'autres industries telles que celle de l'énergie fossile ou de la pâte à papier. Un aperçu des raisons profondes à l'origine de la rédaction de l'API 579 et une synthèse des améliorations techniques qui apparaîtront dans l'API 579/ASME FFS-1 sont présentés dans cette communication. L'utilisation des procédures d'évaluation d'aptitude au service de l'API 579/ASME FFS-1, pour déterminer des probabilités de ruine utilisées en tant que données dans le document API concernant la Planification des Inspections Basée sur l'Analyses des Risques, est aussi présentée.

INTRODUCTION

The ASME and API design codes and standards for pressurized equipment provide rules for the design, fabrication, inspection, and testing of new pressure vessels, piping systems, and storage tanks. These codes typically do not provide assessment procedures to evaluate degradation due to in-service environmentally-induced damage, or flaws from original fabrication that may be found during subsequent inspections. Fitness-For-Service (FFS) assessments are quantitative engineering evaluations that are performed to demonstrate the structural integrity of an in-service component containing a flaw or damage. The first edition of API 579 *Recommended Practice for Fitness-For-Service* [1] published in 2000 (API 579 2000) was developed to provide guidance for conducting FFS assessments of flaws commonly encountered in the refining and petrochemical industry that occur in pressure vessels, piping, and tankage. However, the assessment procedures have been used to evaluate flaws encountered in other industries such as the pulp and paper industry, fossil electric power industry, and nuclear industry. The results from a FFS assessment may be used to make run, rerate, repair, or replace decisions to ensure that pressurized equipment containing flaws that have been identified during an inspection can continue to be operated safely.

API 579 2000 produced by API Committee on Refinery Equipment (CRE) Fitness-For-Service (FFS) Task Group has become the de facto international FFS Standard for pressure containing equipment in the refining and petrochemical industries. Based on advances in technology and User feedback, the API CRE FFS Task Group initiated an effort to produce the second edition of API 579 in 2001. The work to produce an updated version continued within this Task Group until 2002 when a joint API and ASME FFS Standard committee was formed to complete this task.