

# Master Class Series



## Life Cycle Management of Pressure Equipment and Piping Integrity

Inspection Planning and Integrity Assessments across Industries  
Led by

**George Antaki, P.E.**

January 30, 2015, Houston, Texas

### About this MasterClass (MC116)

The life cycle of pressure equipment from new construction to decommissioning requires that the management system flow in a consistent, organized, logical sequence without gaps or, at least, with known gaps identified. Being aware of all applicable standards and guidelines is a daunting task for even the most experienced ASME code engineer.

Using the ASME PTB-2 "Guide to Life Cycle Management of Pressure Equipment Integrity" as framework for discussion, this one-day MasterClass reviews the codes and standards that are used to develop inspection plans for pressure equipment and piping and pipeline systems, and to evaluate inspection results to make fitness-for-service and run-or-repair decisions. The class covers the spectrum of codes and standards (ASME, API, NBIC, NACE, etc.) and contrasts the approach of different industries. It focuses on the technical basis of the inspection and integrity rules, and how they are meant to address the various failure modes. Examples are presented for inspection planning and fitness-for-service assessments.

For more information and to register, visit  
[go.asme.org/mc116](http://go.asme.org/mc116)



## ASME MasterClass Series

The ASME Master Class Series focuses on applications and case studies of a particular topic. Each Master Class is led by an ASME Master, an expert in his professional discipline, who brings a wealth of knowledge and practical examples to the forum. Participants are expected to have prior knowledge of the topic area to gain the most from this interactive environment.

Sessions are focused on real world examples and case studies, with active class discussion and analysis.

### About this MasterClass

This one-day MasterClass discusses the roadmap of ASME PTB-2 “Guide to Life Cycle Management of Pressure Equipment Integrity” to navigate the various codes and standards that address inspection and fitness-for-service assessment of tanks, pressure vessels, boilers, piping systems and pipelines. The class then presents an illustrative example of inspection planning in three industries: the process industry (risk-based inspection), the pipeline industry, and the nuclear power industry (risk-informed inspections). Practical examples and the technical logic behind the fitness-for-service rules of API-579/ASME FFS-1, and ASME XI, and NBIC are reviewed in detail. Discussion also includes focus on the technical basis of the inspection and integrity rules, and how they are meant to address various failure modes.

### Upon completion, attendees will be able to

- Gain a big picture view of the roadmap of codes and standards for inspection planning and fitness-for-service.
- Evaluate the difference between industries in their approach to inspections and integrity assessments.
- Explain the technical basis of the integrity assessment methods and margins used for fitness-for-service (process and fossil power), and operability (nuclear) assessments

### Who Should Attend

This MasterClass is an essential resource for engineers, designers, maintenance engineers, inspectors, and regulators who desire a good overview of inspection and integrity codes and standards, their application across industries, and their technical basis.

### About this ASME Master

#### George Antaki, P.E.

is a Fellow of the ASME, recognized for his expertise in design, analysis, and fitness-for-service evaluation of pressure equipment and piping systems. He is the Chairman of ASME B31 Mechanical Design Committee, Chairman of ASME III Working Group



Piping Design, member of the ASME III Subgroup Component Design, ASME QME, and ASME Operation and Maintenance Subgroup Piping. He is the author of two textbooks on the subject of pressure equipment design and integrity evaluation “Piping and Pipeline Engineering” and “Fitness-for-Service for Piping, Vessels, and Tanks”. Mr. Antaki has nearly 40 years of engineering experience in the power and process industries. He earned his degree in Nuclear Engineering from the University of Liege, Belgium in 1975, and his Master’s degree in Mechanical Engineering from Carnegie Mellon University in 1985.

### MasterClass Requirements

This MasterClass is structured on the assumption that participants have a basic knowledge of ASME Nuclear Codes & Standards.

***Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.***

# Life Cycle Management of Pressure Equipment and Piping Integrity

## AGENDA

The contents are presented in several case studies, tentatively organized as shown below. The one-day schedule allows for ample discussion and interaction with attendees. The instructors reserve the right to modify the content to address the audience's needs and preferences.

Friday, January 30, 8:00am – 5:00pm

<b>Overview: Inspection Planning Codes and Standards</b> Risk-based inspections in process industry, risk-informed inspections in the nuclear industry, direct and indirect inspections in the pipeline industry	8:00 – 8:30
<b>Case Study 1: Inspection Planning in a Process Plant</b> Example of inspection planning and planning strategies in a process plant	8:30 - 10:00
BREAK	10:00 – 10:15
<b>Case Study 2: Inspection Planning in a Nuclear Power Plant</b> Example of ASME XI inspection planning and inservice inspection in a nuclear power plant	10:15 – 11:00
<b>Overview: Integrity Assessment Codes and Standards</b> ASME PTB-2 and the tour of methods and criteria for fitness-for-service (process and fossil power), and operability (nuclear) assessments	11:00 – 12:00
LUNCH	12:00 – 1:00
<b>Case Study 3: Assessment of Corrosion in the Process Industry</b> A case study to highlight the logic behind API-579/ASME FFS-1 for the prevention of rupture and the prevention of pinhole leak, a discussion of the difficult parameters and decisions in FFS assessments	1:00 – 2:00
<b>Case Study 4: Assessment of Corrosion in the Pipeline Industry</b> Application of B31G and its hidden logic	2:00 – 2:45
BREAK	2:45 – 3:00
<b>Case Study 5: Assessment of Corrosion in the Nuclear Industry</b> An example of application of ASME XI Code Case N-513 and its technical basis, and a discussion of ASME XI CC N-597, and N-806.	3:00 – 5:00
End of MasterClass	