ANRIC

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PROFESSIONAL DEVELOPMENT COURSE

ASME B31.1 MATERIALS, FABRICATION & EXAMINATION

OBJECTIVE:

The objective of this course is to provide participants with an understanding of the bases of the existing materials, fabrication, and inspection/examination rules of B31.1. The course will review how materials respond to the fabrication processes, particularly welding and examination, and their implementation and control. Slides and videos will be shown to emphasize the discussion points. The course will also provide ample opportunity to discuss issues raised by the participants. An overview of the Canadian requirements for pressure retaining systems will be presented and the fact that B31.1 is a legal requirement in Canada will be discussed.

There will be references, as appropriate, to the design requirements as they relate to these rules. Emphasis will be given to the importance of building the piping systems to the requirements of the B31.1 Code and the design specification.

CONTENTS: Online delivery – Delivered over four (4) half-day segments (8:00 am – 12:00 noon).

COURSE CONTENT

- **Introduction to B31.1**
- **Materials**
  - Chapter III rules for acceptability of materials
  - Chapter IV rules for acceptable standard components
  - Materials selection
- **Metallurgy of Steels**
  - Structure
  - Alloying
  - Hardenability
  - Effect of welding
  - Residual stresses
- **Fabrication**
  - Chapter V Rules for Fabrication
  - Design Assumptions
  - Special processes
    - Welding & brazing
    - Bending & forming
    - Preheat & PWHT
- **Fabrication**
  - Stamping
  - Assembly

COURSE CONTENT

- **Welding Qualification**
  - Section IX Overview
- **Inspection, Examination & Testing**
  - Inspection
    - By owner
    - By authorized inspector
  - Examination
    - Visual
    - Penetrant
    - Magnetic particle
    - Radiography
    - Ultrasonic
  - Testing
    - Hydrostatic
    - Other methods
- **Impact of Provincial Laws**
  - Hierarchy of documents
  - Role of the regulator (CNSC - nuclear and TSSA - non-nuclear)
  - Application of N285.0 and B51
  - Use of B31.1

WHO SHOULD ATTEND?

This course is directed towards personnel who are designers or engineers responsible for the design of the piping systems in both the fossil or the nuclear power industry. It is also applicable to those persons working on industrial or institutional power piping systems. The course will be useful to the people in the many disciplines that support these industries, construction managers, designers, engineers, fabrication supervisors, inspectors, and maintenance personnel. It is excellent training for persons whose work activity requires knowledge of B31.1 requirements for materials, fabrication, and examination/inspection.

EXPECTATIONS:

Course participants with adequate experience will have attained the following by the end of the course:

1. An understanding of the B31.1 Rules concerning materials, fabrication, and inspection/examination.
2. An understanding of the basis for these rules.
3. A basic knowledge of how steels react to fabrication processes.
4. A basic knowledge of how fabrication special processes are qualified and controlled.
5. An understanding of the rules for inspection, examination, and testing.
6. A basic knowledge of typical nondestructive examination processes.

For all course inquiries, please contact Anric at (416) 253-9459 ext. 123; email: training@anric.com
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