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ASME B31.1 MATERIALS, FABRICATION & EXAMINATION

LECTURER: Mr. Jeff Henry
DATE: Dec 17-18, 2020
LOCATION: ANRIC Enterprises Inc., 701 Evans Ave., Suite 202, Toronto
FEE: Register two weeks before: \$1,495.00 (pp/plus HST)
 Registrations received within two weeks: \$1,595.00 (pp/plus HST)

OBJECTIVE:
 The objective of this course is to provide participants with an understanding of the existing materials, fabrication, and inspection/examination rules of B31.1 and their basis. 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 B31.1 Code and the design specification. The course will also cover the basis for the rules by discussing how materials respond to fabrication processes. Fabrication (particularly welding) and examination processes and their implementation and control will be discussed. 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.

CONTENTS: A two day course consisting of the following:

<p>DAY 1:</p> <ul style="list-style-type: none"> • Introduction to B31.1 • Impact of Provincial Laws <ul style="list-style-type: none"> <input type="checkbox"/> Hierarchy of documents <input type="checkbox"/> Role of the regulator (CNSC - nuclear and TSSA - non-nuclear) <input type="checkbox"/> Application of N285.0 and B51 <input type="checkbox"/> Use of B31.1 • Materials <ul style="list-style-type: none"> <input type="checkbox"/> Chapter III rules for acceptability of materials <input type="checkbox"/> Chapter IV rules for acceptable standard components <input type="checkbox"/> Materials selection • Metallurgy of Steels <ul style="list-style-type: none"> <input type="checkbox"/> Structure <input type="checkbox"/> Alloying <input type="checkbox"/> Hardenability <input type="checkbox"/> Effect of welding <input type="checkbox"/> Residual stresses 	<p>DAY 2:</p> <ul style="list-style-type: none"> • Fabrication <ul style="list-style-type: none"> <input type="checkbox"/> Chapter V Rules for Fabrication <input type="checkbox"/> Design Assumptions <input type="checkbox"/> Special processes <ul style="list-style-type: none"> • Welding & brazing • Bending & forming • Preheat & PWHT • Fabrication <ul style="list-style-type: none"> <input type="checkbox"/> Stamping <input type="checkbox"/> Assembly • Welding Qualification <ul style="list-style-type: none"> <input type="checkbox"/> Section IX Overview • Inspection, Examination & Testing <ul style="list-style-type: none"> <input type="checkbox"/> Inspection <ul style="list-style-type: none"> • By owner • By authorized inspector <input type="checkbox"/> Examination <ul style="list-style-type: none"> • Visual • Penetrant • Magnetic particle • Radiography • Ultrasonic <input type="checkbox"/> Testing <ul style="list-style-type: none"> • Hydrostatic • Other methods
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WHO SHOULD ATTEND?
 This course is excellent training for persons whose work activity requires them to review the B31.1 Code for Power Piping, particularly in the materials, fabrication, and examination/inspection areas. It is targeted at the personnel who are responsible for meeting the design requirements of the Code and of the design specifications while actually building the piping systems. Designers and engineers responsible for the design of the piping systems would also find this course useful. Persons involved in the above work in both the fossil or the nuclear power industry as well as those that are working on industrial or institutional power piping systems would also find this course useful. It will enhance their understanding of what is behind the various requirements and enable them to conform more readily to these requirements. The course will be useful to the people in the many disciplines that are required to understand and implement Code requirements. The people in these disciplines include construction managers, designers, engineers, fabrication supervisors, inspectors, and maintenance personnel.

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.

LECTURERS:

Mr. Henry's technical activities have been centered on materials evaluation, high temperature materials behavior, failure analysis, and support of critical manufacturing activities involved in the production of steam generating equipment for the nuclear and fossil power industries. The scope of his technical activities has included: the resolution of heavy-vessel manufacturing problems, process management, laboratory research and development projects, and problems related to the operation of critical boiler and turbine components. His experience has been particularly concentrated in the areas of welding, high temperature behavior, diffusion processes, heat treatment, fatigue, and the metallurgy of the Creep Strength-Enhanced Ferritic Steels, such as Grade 91.

IMPORTANT INFORMATION:

PAYMENT: Full payment is due exactly two weeks before course date or at time of registration. Payment can be made via credit card (VISA, MasterCard or American Express) or cheque. **PLEASE NOTE:** Payment is non-refundable.

CANCELLATION POLICY: Cancellation must be received in writing 7 days prior to course start date. If cancellations are made after that date, the cancellation fee will be 50% of the course cost. You may send a substitute. Notification of a substitute must be received at least 48 hours prior to the commencement of the course or a cancellation fee will be charged. **PLEASE NOTE:** The cancellation fee can be discounted towards any future course taken at the ANRIC Learning Centre.

FOOD AND BEVERAGE: At the start of the day juice, fruit, pastries, coffee and tea will be provided before the course. Coffee and Tea will be provided at mid-morning break, including pop in the afternoon and lunch will be provided. Please indicate when you are enrolling for the course if you have any specific food requirements. Every effort will be made to accommodate your needs in this area.

COURSE TIMES: Registration begins at 8:00 a.m. The course will begin at 8:30 a.m. and conclude at 4:30 p.m.

DRESS: Please dress so that you will be comfortable. It is prudent to dress light and bring a light jacket in case you need it during the course. The tolerance to temperature varies for people and sometimes room temperature acceptable to the majority may not be right for an individual.

PARKING: There is parking available for a fee of \$5.00 per day. There is parking at 701 and 703 Evans Ave.

ANRIC Enterprises Inc. specializes in courses of caliber to industry by providing lecturers who have recognized expertise and who are involved with the development and application of Codes and Standards.

ANRIC Enterprises Inc. reserves the right to cancel any course and/or change lecturers.