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ASME B31.1 MATERIALS, FABRICATION & EXAMINATION

LECTURER: Mr. Jeff Henry
DATE(S): See the **WEBSITE** for dates
LOCATION: **ON-LINE Delivery** through ANRIC Enterprises Inc.
FEE: Register & PAY three (3) weeks before the start: \$1,720.00 (pp/plus HST).
 Register within three (3) weeks of the start: \$1,890.00 (pp/plus HST).
 Group pricing available; please contact training@anric.com or Call (416) 253-9459. **
 Payment can be made by Credit Card or Purchase Order.

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.

COURSE CONTENT	COURSE CONTENT
<ul style="list-style-type: none"> ● Introduction to B31.1 ● Materials <ul style="list-style-type: none"> ≡ Chapter III rules for acceptability of materials ≡ Chapter IV rules for acceptable standard components ≡ Materials selection ● Metallurgy of Steels <ul style="list-style-type: none"> ≡ Structure ≡ Alloying ≡ Hardenability ≡ Effect of welding ≡ Residual stresses ● Fabrication <ul style="list-style-type: none"> ≡ Chapter V Rules for Fabrication ≡ Design Assumptions ≡ Special processes <ul style="list-style-type: none"> ● Welding & brazing ● Bending & forming ● Preheat & PWHT ● Fabrication <ul style="list-style-type: none"> ≡ Stamping ≡ Assembly 	<ul style="list-style-type: none"> ● Welding Qualification <ul style="list-style-type: none"> ≡ Section IX Overview ● Inspection, Examination & Testing <ul style="list-style-type: none"> ≡ Inspection <ul style="list-style-type: none"> ● By owner ● By authorized inspector ≡ Examination <ul style="list-style-type: none"> ● Visual ● Penetrant ● Magnetic particle ● Radiography ● Ultrasonic ≡ Testing <ul style="list-style-type: none"> ● Hydrostatic ● Other methods ● Impact of Provincial Laws <ul style="list-style-type: none"> ≡ 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.

LECTURERS:

Mr. Henry's technical expertise includes materials evaluation, high temperature materials behavior, failure analysis, and support of critical manufacturing activities. These activities have been focused on the production of steam generating equipment for the nuclear and fossil power industries. He is experienced in: 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.

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

IMPORTANT INFORMATION:

PAYMENT: Full payment is due at time of registration. Payment can be made via credit card (VISA, MasterCard or American Express) or purchase order. **PLEASE NOTE:** Payment is non-refundable within 3 weeks prior to the start of the course.

CANCELLATION POLICY: Cancellation must be received in writing 7 days prior to course start date. You may send a substitute. Notification of a substitute must be received at least **72 hours prior to the commencement of the course to allow time for delivery of course material.** If a substitute is not available, the fee for the course may be used towards another ANRIC course at a later date.

**** ANRIC Enterprises Inc. reserves the right to cancel any course and/or change lecturers. Courses that fail to register a "MINIMUM" of 10 participants will be cancelled. Personnel who require this course to meet qualification requirements should contact the office at training@anric.com to discuss/arrange other options.**

INFORMATION ASSOCIATED WITH ON-LINE COURSES FOLLOWS:

The course is delivered on-line.

The maximum number of people per course is 16 people. This limitation is set because the courses are run with Workshops using Breakout Rooms to provide for maximum interaction and learning experience. This provides an excellent learning opportunity.

All rights, title and content of the course manuals and all other instructional material shall remain the property of ANRIC Enterprises Inc. The manuals will be delivered to course participants by courier.

The course is run online in half day sessions (4 half-day), to accommodate the ergonomic issues of sitting at a small screen. An added benefit is that it allows people to cover off other work duties during the course. We have successfully done this for the nuclear power stations in Ontario over the past year and this system has proven to be excellent. This course if run in a classroom setting, is a two (2) full day course.

REQUIREMENT: This course requires participants to have video and audio capability.

There will be an examination/checkout at the end of each course. ANRIC Enterprises Inc. will only provide certificates of successful completion for participants that achieve an examination result of 80% or higher and video access is required for the checkout.