



Chart Industries, Inc. – Test Chamber Systems
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CHART CHAMBER SYSTEMS - TECHNICAL TRAINING SEMINAR JUNE 23, 2005 – CHICAGO, IL

Chart is pleased to announce a technical seminar entitled “**Integrating HALT & HASS into a Reliability Program.**” This technical seminar will be held in Chicago, Illinois on June 23, 2005 at **TRACE LABS** and given by Mr. Mike Silverman, C.R.E.. Please complete the attached registration form and return to Chart.

BENEFITS:

Upon completion of this seminar, the attendee will be better equipped to take advantage of today’s accelerated reliability tools – HALT and HASS. These tools will help bring higher quality products to market quicker and leave less warranty exposure. The course will also highlight the best of the traditional reliability tools currently being used and how these tools can be used to help support the HALT/HASS activities. While gaining a better understanding of HALT/HASS techniques, it will be evident that incorporating the HALT/HASS program into the existing reliability program will ensure success of the HALT/HASS program currently being employed.

WHO SHOULD ATTEND THIS SEMINAR:

Quality, Reliability, Design, and Manufacturing Quality Engineers interested in learning more about how to implement today’s current tools and technology to ensure robust product designs and quick time to market. Product Managers are also good candidates to attend and learn of ways to reduce warranty exposure on their products.

COST:

The advance registration fee is \$275.00 if you sign up for the seminar before June 9th, 2005. The cost of the seminar increases to \$325.00 after June 9th. **To take advantage of the advance payment discount, your registration fee must be received by Chart no later than June 9, 2005.** All prices are in U.S. dollars and include the cost of training materials, continental breakfast, and lunch. All other expenses, including all travel and hotel, are the attendee’s responsibilities. Please register at www.chart-ind.com/seminars (see page 4 for more info).

LOCATION:

The seminar will be held at **TRACE LABS** in Chicago. This lab facility is located 10 miles from the Chicago O’Hare airport, or 40 miles from the Chicago Midway Airport. The facility’s address is 1150 West Euclid Ave., Palatine, IL 60067. Please contact the facility at (847) 934-5300, or visit their website (www.tracelabs.com) for specific directions to the facility.



TRACE LABORATORIES

SEMINAR OUTLINE:

- HALT/HASS Testing Technology Overview
 - Technology Definition
 - Why do HALT/HASS?
 - Who does HALT/HASS?
 - What are the Benefits of HALT/HASS?
- Elements of a Reliability Program
 - Definitions
 - Reliability vs. Cost
 - Product Life Cycle Matrix
- Reliability Tools
 - Reliability Modeling and Predictions
 - Failure Modes, Effects, and Criticality Analysis (FMECA)
 - Different types of FMECAs
 - Using a FMECA in preparation for a HALT
 - Derating Analysis
 - What is Derating?
 - Applying the Principles
 - Using Derating in Preparation for a HALT
 - Highly Accelerated Life Test (HALT)
 - Planning for a HALT
 - Executing the HALT
 - Using the HALT Results to plan the RDT
 - Failure Reporting, Analysis, and Corrective Action System (FRACAS)
 - How to set up a FRACAS
 - Different Types of FRACAS tools
 - Using a FRACAS in Conjunction with a HALT
 - Reliability Demonstration Test (RDT)
 - What is an RDT?
 - How to set up an RDT
 - Using the HALT Results and Reliability Predictions in Planning an RDT
 - Highly Accelerated Stress Screening (HASS)
 - Creating the HASS Screen Based on HALT Results
 - Running Proof-of-Screen
 - Using RDT and FMECA Results to Refine the HASS Screen
 - Using Reliability Prediction to Determine Amount of Screening Necessary

ABOUT THE INSTRUCTOR:

Mr. Silverman has 18 years of experience in Operations and Engineering in telecommunications, networking, medical, consumer electronic, and semiconductor equipment products. He is an experienced leader in quality development, reliability testing and agency qualification programs, including programs for domestic and international Safety, EMI, and Telecommunications. Mike's expertise has been developed through conducting hundreds of HALT tests on various products throughout his career. Mike also has extensive experience as a consultant to high-tech companies, and has consulted for over 40 companies including Cisco, Sun, 3Com, Brocade, and Extreme Networks. He has authored, published, and presented 6 papers on reliability and quality techniques. Mike has a BS degree from the University of Colorado at Boulder, and is both a Certified Reliability Engineer and a course instructor through the American Society for Quality (ASQ) and IEEE.



HOTEL:

Doubletree Club Hotel Chicago-Schaumburg 920 E. Northwest Hwy Palatine, IL 60074	Phone: 1-847-359-6900 Fax: 1-847-358-4653 Website: www.doubletreeschaumburg.com
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Attendee is responsible for booking hotel reservation. Please make your hotel reservation by calling the Reservation Desk at 1-847-359-6900 and ask for the Chart Industries room block/rate.

Hotel Room Rate: Chart Industries room rate of \$89.00 plus tax per night for standard room. Rate or rooms may not be available after June 1, 2005.

Check-In: 3:00 PM
 Checkout: 12:00 PM

Upon check-in, you will be asked for a major credit card to cover any room and incidental charges. For more information regarding hotel services, please view hotel web site.

Parking:

- Complimentary on-site parking.

Transportation:

- From the airport, the hotel does not provide shuttle service.
- From the Doubletree hotel to Trace Laboratories, the hotel will provide shuttle service before and after the seminar. Contact Cathy Dols if you are interested.

Directions:

- Please refer to the Doubletree’s website and click on “Location/Directions”.

General Information:

- Cancellation Policy:
 If on the arrival day you have an emergency and are unable to attend, please contact the hotel directly to cancel your reservation. Then, please notify Cathy Dols by leaving a message at the telephone number of 1-952-758-8200.
- Badges:
 Badges will be available at the seminar. PLEASE WEAR YOUR BADGE DURING THE SEMINAR FOR IDENTIFICATION.
- Meals:
 Continental breakfast and lunch will be provided during seminar.
- Dress Code & Weather:
 Dress code will be casual/business casual. Weather info is available at the website of www.weather.com and enter zip code of 60074.

SEMINAR REGISTRATION:

Attendees are responsible for registration. To register, view Chart’s website at www.chart-ind.com/seminars and click the “Register” link under Chamber Seminar. Click the “Seminar Fact Sheet” link for hotel reservations and other information. Reservations will be handled on a first come, first serve basis. **All attendees must be registered.**

Registration fee can be payable by check or credit card. Your check should be payable to Chart Industries and sent to Cathy Dols at the following address: Chart Industries, 407 7th Street NW, New Prague, MN 56071, Attn: Cathy Dols. If you would like to charge the fee to your Visa, MasterCard, or American Express, please mark the appropriate box on the registration form and your card will be charged accordingly. Invoices for seminar fees **will not** be mailed. When you complete the registration process on the Chart website, a receipt will be emailed back to you for your records. If you wish to take advantage of the advance payment discount, your payment must be received by Chart no later than June 9, 2005.

Chart Industries reserves the right to change, or cancel seminar at any time and will refund the attendee’s registration fees in full.

CANCELLATION/REFUND POLICY:

Cancellation of an attendee’s registration will be subject to the following refund policy:

- ◆ Cancel 30 Days Prior To The Meeting Start Date, 100% of registration fee will be refunded
- ◆ Cancel 15 Days Prior To The Meeting Start Date, 50% of registration fee will be refunded
- ◆ Cancel less than 15 Days Prior To The Meeting Start Date, no refund

REGISTER EARLY FOR FREE REFERENCE BOOK – A \$95.00 VALUE!!!

The first five registrants will receive a free copy of *Improving Product Reliability – Strategies and Implementation*. This reference is extremely well laid out and written for practical use. Improving Product Reliability offers a time-tested reliability process, which has been developed over the years and can be readily transferable to any organization.

This book can be comprehended and applied by designers, engineers, business managers, consultants and product development teams who must build reliable products. Anyone involved in this work will appreciate the time-saving, cost-effective, and result oriented techniques described.

Very useful sections include “The Reliability Toolbox,” “Establishing a Reliability Lab,” and “Implementing the Reliability Process.” This book, **valued at \$95.00** will be given to the first five registrations free of charge!!

