

TEST NDT

Catalog for Non-Destructive Testing Courses
Effective from January 1st 2011 to December 31st 2011

193 Viking Ave., Brea, CA 92821 USA
Ph (714) 255-1500 Fax (714) 255-1580

Name of Institution: TEST NDT, LLC

Physical Address: 193 Viking Ave.
Brea, CA 92821

Mailing Address: 193 Viking Avenue
Brea, CA 92821

Telephone Number: Day & night (714) 255-1500

Fax: (714) 255-1580

Email: ndttrain@aol.com

Web-Site www.testndt.com

Agencies the school is approved and/or accredited by:

Bureau for Private Postsecondary Education approval #3014141

The information contained in this bulletin is true and correct in content and policy.

Mission Statement

Our aim is to provide the highest quality training service that fulfills or exceeds the requirements and expectations of our customers, the Company and its workforce.

In order to implement this policy it is our aim to provide services that are:

- Controlled;
- At a price acceptable to all parties;
- Within agreed timescales;
- Carried out in an efficient and professional manner ensuring that all necessary resources both human and material are available;
- Carried out with due regard to the environmental impact of the operations;
- Are able to recognize the client's present and future requirements.

Please Note: Any questions a student may have regarding this catalog that have not been satisfactorily answered by the Institution (TEST NDT, LLC) may be directed to the Bureau of Private Postsecondary Education at 2535 Capitol Oaks Drive, Suite 400, Sacramento, CA 95833, www.bppe.ca.gov, toll-free telephone number (888) 370-7589 or by fax (916) 263-1897.

As a prospective student, you are encouraged to review this catalog prior to signing a enrollment agreement. You are also encouraged to review the School Performance Fact Sheet, which must be provided to you prior to signing an enrollment agreement.

A student of any member of the public may file a complaint about this institution with the Bureau of Private Postsecondary Education by calling (toll-free telephone number) or by completing a complaint form, which can be obtained on the bureau's internet Web site (Internet Web site address).

INSTRUCTIONAL FACILITIES

All Training Courses will be held at:

TEST NDT, LLC
193 Viking Avenue
Brea, CA 92821

Introduction to NDT and who uses it

Nondestructive Testing (NDT) is a profession involved in quality assurance for critical structures and components it is a vital engineering tool used to determine the structural integrity of a critical product without damaging or structurally altering the product.

It can be used for instance to locate cracks in welds or voids in castings or damaged internal components without disassembling the product. It is used in a wide variety of industries from Aerospace to ship building to Petrochemical facilities to Bridge building and construction sites to Nuclear components and thousands of other Industries.

There are many methods of performing NDT, but the most common are: Visual testing (VT), Penetrant Inspection (PT), Magnetic Particle Inspection (MT), Radiography (RT), Ultrasonic Inspection (UT) and Eddy Current Inspection (ET).

These methods range from the relatively simple to the highly complex scientific analysis of Ultrasonic or Eddy Current Inspection processes.

Training Requirements

All users of NDT equipment are required by customer specifications to be trained, qualified and certified in accordance with one of several programs, the most commonly used program is the "American Society for Non-destructive Testing" (ASNT) program SNT-TC-1A.

This program is a published set of guidelines, which are used by the employer of NDT personnel to develop their own in-house certification program.

The programs should include details of how the NDT personnel are "Trained" (Formally, in a classroom environment and on the job) "Qualified" (Documented training, experience and certification examinations) and "certified" (Written testimony from the employer) to perform NDT.

Personnel need to be certified for each method of NDT that they perform and can be certified to one of 3 different levels of responsibility. A level I, is an individual who can perform NDT under supervision from a higher level. A level II can perform NDT independently. A level III is qualified to perform NDT and can also perform training, conduct qualification examinations, approve procedures and many other functions.

The NDT market in Southern California is very buoyant for several reasons:

- There are several aerospace Primes in the region (Boeing, Lockheed, BAE Systems, Allied Signal, BF Goodrich, GE Engines etc.)
- There are literally thousands of aerospace manufacturing sub-contractors in the area.
- There are hundreds of aircraft operators.
- There are several petroleum companies and refineries.
- There are several Nuclear power generation companies and facilities.
- There are several major military facilities.
- There is major shipping and dockyards in the area.
- Because of the stringent earthquake codes all public buildings, bridges and structures must be NDT inspected. These also need to be re-inspected after any major earthquakes.

The NDT industry is a very stable marketplace, if the local economy is up, then manufacturing is up and therefore the NDT support to manufacturing is also up. When the economy is down, less new products are bought and the customer therefore needs to extend the life of the existing product, this can only usually be done by employing a rigorous NDT monitoring program to determine the condition and life expectancy of the product. (A good example of this is the airline industry and their aircraft life extension programs).

All of the mentioned programs require suitably trained NDT personnel.

The average local area starting salary for the various methods are as follows:

Magnetic Particle Level II	\$12 – 30 / hour
Penetrant Level II	\$12 – 30/ hour
Ultrasonic Level II	\$15 – 40/ hour
Eddy Current Level II	\$15 – 40/ hour
Radiography Level II	\$15 – 40/ hour

TEST NDT aims to provide a training center for NDT personnel to be trained in accordance with the guidelines set out by the ASNT. The training guidelines are detailed in the ASNT document SNT-TC-1A.

The training consists of several short courses, each lasting from 2 days to 2 weeks.

This training, together with work experience will go towards becoming certified by a future employer in one or more of the NDT methods.

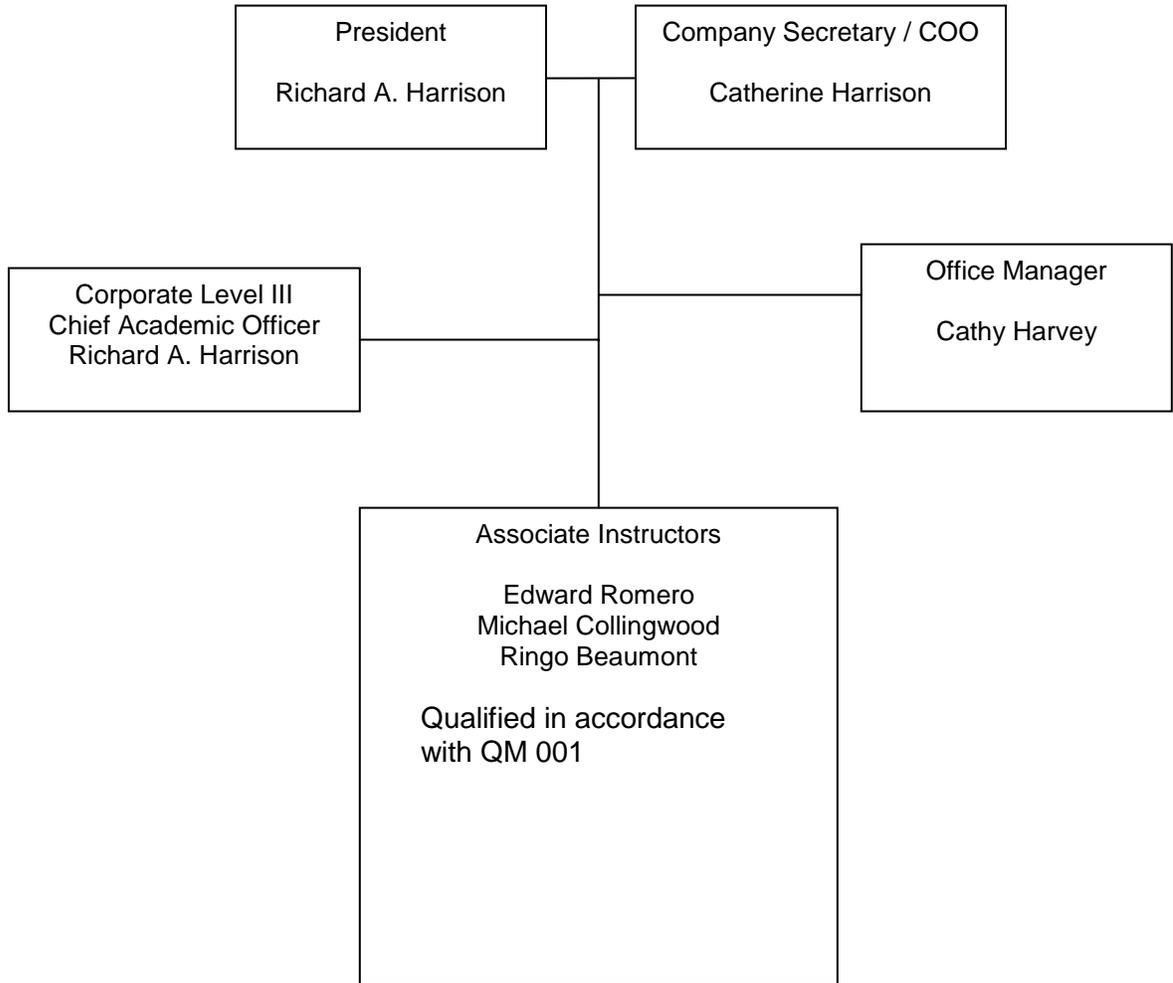
A comprehensive package detailing the operation of this proposed training school follows.

Richard A Harrison

ASNT Level III Certificate # 73537

President TEST NDT

TEST NDT Organizational Chart



The Staff and Instructors of TEST NDT

TEST NDT is co-owned and managed and directed by **Richard A Harrison**. Richard will teach the Magnetic Particle, Liquid Penetrant, Eddy Current, Radiography, Radiation Safety, Radiographic Film Interpretation, Ultrasonic courses. Richard was formerly General Manager and senior NDT instructor at a large NDT training school in Southern California.

Richard is also certified by the American Society for Nondestructive Testing (ASNT) as a Level III in Ultrasonic Testing (UT), Radiographic Testing (RT), Eddy Current Testing (ET), Magnetic Particle Testing (MT), Penetrant Testing (PT), and Visual Testing (VT). He has worked in NDT for over 30 years and has been a professional instructor in this field for over 16 years.

Catherine Harrison – Company Secretary and co-owner of TEST NDT LLC.

Cathy Harvey is the Office Manager and the Institution's contact person who has initial, direct contact with students and potential students. She is also responsible for the day to day running of the company.

Edward Romero, Edward has 10 years' experience in the NDT field in 4 of the major NDT methods. His exposure in the NDT field includes extensive hands-on inspections, technique and procedure development, inspector supervision, classroom and on-the-job training, as well as QA/NDT managerial positions. He is ASNT level III certified in VT, MT, PT, and UT.

He also has expertise in the welding industry, particularly steels and exotic alloys (including titanium) on structural members, piping, pressure vessels, as well in developing weld procedures, welder certification programs, and providing welder workmanship and inspection training. He has also worked on inspections to NAVSEA codes.

Michael Collingwood, Mike will teach Eddy Current Level I/II, Radiography Level I/II, Radiographic Film Interpretation and Radiation Safety courses. He has 35 years of NDT experience worldwide and is also a professional instructor with both TEST NDT and his own NDT training school in California. He is ASNT level III certified in ET, RT, MT, PT, and UT.

Ringo Beaumont, Ringo will teach Radiography Level I/II, Radiographic Film Interpretation and Radiation Safety courses. Ringo has over 35 years experience in the industry and is a member of the American Welding Society and the American Society of Nondestructive Testing. He is ASNT level III certified in ET, RT, MT, PT, and UT.

Attendance, Drop out and Leave of absence policy

To successfully complete a course the student must attend the hours specified in the course outline specified in SNT-TC-1A and additionally pass the end of course test with a grade of 70% or higher.

Students who drop out part way through the courses or do not achieve a satisfactory score in the end of course test will not receive a courses completion certificate. If requested, a course attendance certificate detailing the hours attended will be issued.

Any course fee refunds given will be in accordance with the "Training course fee refund policy" document.

Students who miss part of a course due to illness or other unavoidable incidents will be given the option to complete the course by sitting in on the next identical course held. No charge will be made for this, but no additional books or training material will be provided.

Students who fail the end of course test will be given the opportunity to re-sit the test after 30 days has elapsed.

No charge will be made for this re-sit test.

Student Records

All non employer and employer funded student records will be maintained in a hard copy (Printed) and also a computer stored file for a period of 5 years from the date of course completion. This also applies to students who withdraw or who are terminated.

TEST NDT will make available to all students, or person designated by the student, all of the student's records, except for transcripts of grades if the student is in default on a student tuition contract.

Or in the instance that the student has made partial payment of their tuition obligation, TEST NDT may withhold that portion of the grades or transcripts that corresponds to the amount of tuition that the student has not paid. If the course of study consists of only one course, TEST NDT may withhold the grades or the transcript until the tuition is paid in full.

Also available on file the name, address, and educational qualifications of each instructor at the facility.

The records will be stored both at TEST NDT and at a second separate location.

In the event that a course of study is not completed, the records of the amount of days/hours completed will be recorded in the same file.

All records require the directors' signature prior to filing.

A separate file will be kept for each student by name.

Each file will contain details of:

- Name, telephone number, address of student.
- Courses attended, including actual hours of attendance.
- Course outlines for all courses attended.
- Copies of all end of course assessment tests and certificates of course completion. In the case of courses not being completed or a satisfactory grade not being attained in the end of course test, no certificate will be issued, but a letter detailing course attendance will be provided to the student and will also be maintained on file at TEST NDT Where end of course tests were attempted and failed, the actual grade achieved will be recorded.
- A receipt showing fees paid to TEST NDT
- A copy of the refund policy document.
- A record of any refund including amount, the method for calculating the refund, the date the refund was made, the check number of the refund, and the name and address of the person or entity to which the refund was sent.
- Copies of any advisory or counseling notices produced during the training.
- Copies of any formal complaints from the student.
- An exemplar of all notices and disclosures provided to students and a record of the time period within which each notice and disclosure was made.

In the event that TEST NDT closes for business as a training center, the records will be maintained for the required 5-year period at the expense of TEST NDT.

Richard A Harrison
President TEST NDT

The school's physical address is 193 Viking Ave., Brea, California 92821. The school consists of 1400 square feet of two formal (2) classrooms and one practical training area, and two (2) offices. The facility has teaching equipment sufficient to meet the educational needs and class sizes are normally limited to eight (8) students for good student / instructor ratio. One restroom is available along with student refreshment facilities.

Maximum capacity for each course is as follows:

Ultrasonic Testing, Levels I & II	8
Eddy Current Testing, Levels I & II	8
Radiographic Testing, Levels I & II	8
Magnetic Particle Testing, Levels I & II	8
Penetrant Testing, Level I & II	8
Radiation Safety (IRRSP Preparation)	8

ENTRANCE / ENROLLMENT REQUIREMENTS

Entrance / enrollment in any of our training courses require that prospective students possess a high school diploma or its equivalent. Each person is accepted only if, in the school's opinion, such individual has the possibility of success in the chosen objective.

POLICIES

Enrollment Policy

Students may enroll on any day school is in session but will only be allowed to commence a course on Day 1 of the course that they wish to enroll for, unless the student needs to make up hours that they have missed on a previous course of the same method, in which case they would be allowed to attend at the appropriate portion of the course to complete the necessary required hours.

Credit Evaluation Policy

ALL PRIOR TRAINING MUST BE EVALUATED

Students with previous training in the course to be pursued will be required prior to enrollment to produce written documented evidence in the form of previous course/hours completion certificate(s) for the particular course that they wish to pursue.

Documented written evidence of completed formal training and "on the job" experience is a Nondestructive Industry requirement for the student to be eligible to be certified by an employer.

Attendance Policy

1. Absence

Absence will be considered excused under the following circumstances: illness, death, or birth in the immediate family, and other valid reasons at the discretion of the School Director. If the absence amounts to less than a total of two (2) hours per week, the student will be allowed to make the time up within the original course dates with additional study as deemed suitable by the Instructor and School Director. All other absences will be considered unexcused.

2. Tardiness

Tardiness is a disruption of a good learning environment and is to be discouraged.

Tardiness without legitimate reason on more than two occasions in one course will result in the student being unable to complete the required hours of class and thus resulting in no certificate being awarded to the student.

As per the requirements of the Nondestructive Industry recommended practice, to successfully complete a course the student must attend the hours specified in the course outline as specified in the document, SNT-TC-1A and additionally pass the end of course test with a grade of 70% or higher.

3. Cutting Courses

Students who drop out part way through the courses or do not achieve a satisfactory score in the end of course test will not receive a course completion certificate. If requested, a course attendance letter detailing the hours attended will be issued.

4. Make-Up Work

Students who miss part of a course due to illness or other unavoidable incidents will be given the option to complete the course by sitting in on the next identical course held. No charge will be made for this, but no additional books or training material will be provided.

Progress Policy

1. The school's grading system is governed by the Nondestructive Testing Industry requirements. Grade average required for successful completion of a course is a passing Grade of 70% or above in the End of Course Test. Upon successful completion of the Test and completion of the required hours of training, a signed, numbered certificate bearing the Company seal will be awarded.

End of Course Test

Passing Grade 70% or above

Satisfactory

Failing Grade 69% or below

Unsatisfactory

2. Satisfactory Progress

Grade average of 70% or above is required for successful completion of the course and the awarding of a Certificate by the school and for the students certifying process, which is carried out by the employer.

3. Unsatisfactory Progress

No student will be considered to have made satisfactory progress when he / she fails, receives no credit, or withdraws from any subjects he /she is enrolled in because of extenuating circumstances.

4. Retest:

Students who fail the End of Course Test will be given the opportunity to re-test after 30 days has elapsed. No charge will be made for this re-sit test. Only one retest is allowed, if a student fails a retest then it is recommended the student repeat the course.

5. Conditions for re-enrollment:

Re-enrollment or re-entrance will be approved only after evidence is shown to the School Director's satisfaction that conditions which caused the interruption for unsatisfactory progress or unsatisfactory attendance have been rectified.

Conduct Policy

Students shall at all time when on the school premises conduct themselves in an orderly and considerate manner, and shall appear for classes in a sober and receptive condition. Violation of this condition is a just cause for dismissal.

INSTRUCTIONAL SCHEDULE

1. Training is offered on Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays.

2. Class periods of **less** than 40 hours operate on the following schedules:

8:00 – 12:00
Lunch 12:00 – 1:00
1:00 – 5:00

3. Class periods of 40 hours or more operate on the following schedules:

Monday – Thursday
8:00 – 12:00
Lunch 12:00 – 1:00
1:00 – 5:00

Friday
8:00 – 12:00

Course Time Schedule for the listed courses of less than 40 hours operates on the following schedules:

8:00 – 12:00
Lunch 12:00 – 1:00
1:00 – 5:00

4. School is closed for the following holidays and/or vacation time: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and the Friday after and Christmas Day.

DETAILED INSTRUCTIONAL SCHEDULE PER COURSE

For each course please see below for the instructional schedule of which the veterans and other eligible persons will attend class. The following is the breakdown of the duration of the referenced course attendance:

<u>Course</u>	<u>Total # of hours</u>
Ultrasonic Testing, Levels I & II (2 weeks)	80 hours
Eddy Current Testing, Levels I & II (2 weeks)	80 hours
Radiographic Testing, Levels I & II (2 weeks)	80 hours
Radiation Safety (IRRSP Preparation) (1week)	40 hours
Magnetic Particle Testing, Levels I & II (3 days x 8 hours)	24 hours
Penetrant Testing, Levels I & II (2 days x 8 hours)	16 hours

193 Viking Ave., Brea, CA 92821
Ph: (714) 255-1500 Fax: (714) 255-1580 Email: ndttrain@aol.com

2011 COURSE ENROLLMENT AGREEMENT FORM

Please complete and fax, mail or email pages of this form to TESTNDT, LLC

1. Course (s) required
2. Dates
3. Name of attendee
4. Address
5. Phone #
6. Fax #
7. Email address
8. Contact person

9. **Fee schedule (Please circle whichever is applicable)**
Price includes all class material and use of equipment.
All courses held at TEST NDT, LLC Brea facility.

(24hr) \$825	(16hr) \$675	(80hr) \$2490
Magnetic Particle Testing LI/II,	Liquid Penetrant Testing LI/II,	Ultrasonic Testing L I / II,
		(80hr)
\$2490	(80hr) \$2490	
Radiographic Testing L I / II,	Eddy Current Testing L I / II	
Radiation Safety (40hr) \$1245,	Radiographic Film Interpretation (40hr) \$1245	

10. **Payment details:** *Please make checks payable to TEST NDT, LLC*
(Please circle one) Company check Personal check
- Credit card (Please circle one) Visa MasterCard

Please complete credit card payment form enclosed and mail fax or email back or mail check.
Payment terms: Payment must be received 14 days prior to start of course to reserve a place.

Registration fee for non-accredited schools

As a Non-accredited school we are limited to a non-refundable registration fee not to exceed \$10.00. Any registration fee over \$10.00 requires that the amount in excess of \$10.00 be subject to pro ration.

Distance Education - TEST NDT does not offer distance education.

Loans - TEST NDT does not accept any loans

Bankruptcy

TEST NDT does not have a pending petition in bankruptcy, is not operating as a debtor in possession, has not filed a petition within the preceding five years, and does not have a petition in bankruptcy filed against it within the preceding five years that resulted in reorganization under Chapter 11 of the United States Bankruptcy Code (11 U.S.C. Sec. 1101 et seq.).

Financial Aid - TEST NDT does not offer student financial aid grants or funding.

Placement Services - TEST NDT does not provide placement services.

Library - TEST NDT does have books and videos that a student can read or watch at our site only.

Student Complaints Procedure

Any questions or problems concerning this school (TEST NDT, LLC) which have not been satisfactorily answered or resolved by the school should be directed to the Bureau for Private Postsecondary Education, 2535 Capitol Oaks Drive, Suite 400. Sacramento, CA 95814, Phone Number (916) 431-6959.

Student Initials

Should any question or complaint not be satisfactorily resolved within 30 days of notification after contacting either in writing or orally, Richard Harrison during 8am – 5pm Monday – Friday on (714) 255-1500, at the training facility the Bureau for Private and Postsecondary and Vocational Education will be notified of the complaint, investigation, and resolution or lack of resolution.

“Buyer’s Right to Cancel”:

You may cancel this agreement and receive a refund by providing written notice to Richard Harrison, TEST NDT 193 Viking Ave. Brea, CA 92821

Withdrawal and Refund Policy

Refunds: If any course is canceled by TEST NDT, LLC then at least five (5) working days notice will be given and a full refund of course fees paid will be given.

Cancellations and requests for refunds must be made in writing postmarked prior to or on the first day of instruction to receive a full refund of amount paid less a **non-refundable registration fee of \$10.00**. Refund policy for students who withdraw after having completed 99 percent or less of the course shall receive a pro rata refund as explained in the following example. The refund is calculated by deducting a non-refundable registration fee of \$10.00 from the total course fee then dividing that figure by the number of hours in the course, this hourly rate is then multiplied by the total number of hours attended by the student, plus the non-refundable registration fee of \$10.00. The refund shall be any amount paid by the student in excess of the amount owed and the refund will be paid in a timely basis not to exceed 30 days following the date of withdrawal / cancellation.

Example: If you were to sign up for the MT L I / II course (24 hrs) and pay \$825, then withdraw after 1 day (8 hrs) your refund would be calculated as follows:

Course fee = \$825.00 – non-refundable registration fee of \$10.00 = \$815.00.

\$815.00 ÷ 24 (number of hours in the course) = \$34 hourly rate for the course.

Hourly rate for the course multiplied by the number of hours attended by student (\$34 x 8hrs = \$272.00)

\$272.00 plus the non-refundable registration fee of \$10.00 = \$282.00

Amount paid by student = \$825.00 less \$282.00 = **Refund to student of \$543.00**

Student Charges

Student Tuition Recovery Fund

The State of California created the Student Tuition Recovery Fund (STRF) to relieve or mitigate economic losses suffered by California residents who were students attending schools approved by, or registered to offer Short-term Career Training with the Bureau for Private Postsecondary Education (Bureau).

You may be eligible for STRF if you are a California resident, prepaid tuition, paid the STRF fee, and suffered an economic loss as a result of any of the following:

1. The school closed before the course of instruction was completed.
2. The school's failure to pay refunds or charges on behalf of a student to a third party for license fees or any other purpose, or to provide equipment or materials for which a charge was collected within 180 days before the closure of the school.
3. The school's failure to pay or reimburse loan proceeds under a federally guaranteed student loan program as required by law or to pay or reimburse proceeds received by the school prior to closure in excess of tuition and other costs.

Student Initials.....

4. The school's breach or anticipatory breach of the agreement for the course of instruction.
5. There was a decline in the quality of the course of instruction within 30 days before the school closed, or if the decline began earlier than 30 days prior to closure, a time period of decline determined by the Bureau.
6. The school committed fraud during the recruitment or enrollment or program participation of the student.

You may also be eligible for STRF if you were a student that was unable to collect a court judgment rendered against the school for violation of the Private Postsecondary and Vocational Education Reform Act of 1989.

You must pay the state-imposed fee for the Student Tuition Recovery Fund (STRF) if all of the following applies to you:

1. You are a student, who is a California resident and prepays all or part of your tuition either by cash, guaranteed student loans, or personal loans, and
2. Your total charges are not paid by any third-party payer such as an employer, government program or other payer unless you have a separate agreement to repay the third party.

You are not eligible for protection from the STRF and you are not required to pay the STRF fee if either of the following applies:

1. You are not a California resident,
2. Your total charges are paid by a third party, such as an employer, government program or other payer, and you have no separate agreement to repay the third party.

The Student Tuition Recovery Fund (STRF) was established by the Legislature to protect any California resident who attends a private postsecondary institution from losing money if you prepaid tuition and suffered a financial loss as a result of the school closing, failing to live up to its enrollment agreement, or refusing to pay a court judgment.

- (a) If the student is a recipient of third-party payer tuition and course costs that the student is not eligible for protection under the STRF, and
- (b) "The student is responsible for paying the state assessment amount for the Student Tuition Recovery Fund"

Effective January 1, 2012, to December 31, 2012 it is required that institutions collect from each newly enrolled student a "STRF fee" in the amount of \$3.00 per thousand dollars of tuition paid, regardless of the portion that is prepaid.

To be eligible for STRF, you must be a "California resident" and reside in California at the time the enrollment agreement is signed or when you receive lessons at a California mailing address from an approved institution offering correspondence instruction. Students who are temporarily residing in California for the sole purpose of pursuing an education, specifically those who hold student visas, are not considered a "California resident".

To qualify for STRF reimbursement you must file a STRF application within one year of receiving notice from the Bureau that the school is closed. If you do not receive notice from the Bureau, you have 4 years from the date of closure to file a STRF application. If a judgment is obtained you must file a STRF application within two years of the final judgment.

It is important that you keep copies of the enrollment agreement, financial aid papers, receipts or any other information that documents the monies paid to the school. Questions regarding the STRF may be directed to the Bureau for Private Postsecondary Education, 2535 Capitol Oaks Drive, Suite 400. Sacramento, CA 95814, Ph (916) 431-6959.

Student Initials.....

This agreement is a legally binding instrument when signed by the student and accepted by TEST NDT, LLC Your signature on this agreement acknowledges that you have been given reasonable time to read and understand it and that you have been given a written statement of the refund policy and a catalog / brochure (which you will retain) including a description of the course(s), including all material facts concerning the training facility and the course of instruction which are likely to affect your decision to enroll.

This agreement is for the course(s) you have indicated, all of which will be held at TEST NDT, Brea, CA facility.

Total number of courses.....

Total number of hours required to complete above courses.....

Start date of each course.....

Scheduled Completion Date of each course.....

FEES AND CHARGES: The student is responsible for the following fees and charges.

Tuition Fee (includes **Non-refundable Registration Fee: \$10.00 and** \$ _____
Student Tuition Recovery Fund (STRF) Fee: \$3.00 per \$1000 of tuition)

Please note: Accommodation, Travel, meals are all the responsibility of the student.

My signature below certifies that I have read, understood, and agreed to my rights and responsibilities, and that the institution's cancellation and refund policies have been clearly explained to me.

Signature of Student _____ **Date** _____

This agreement is not operative until the student attends the first class or session of instruction.

Date of tour or visit _____

Student Signature _____ Date _____ **Student Initials**

I certify that TEST NDT, LLC has met the disclosure requirements of Education Code §94923; Title 5, CA Code of Regulations §76020-76140.

This agreement is accepted by _____ Date _____
Signature of School /Training Official

Visa

TEST NDT will admit students from other countries.

TEST NDT does not offer VISA services and will not vouch for student status and any associated charges.

However, if requested by the student, TEST NDT will issue a supporting “Letter of Invitation” which references students name, address, phone number and educational program with dates for which the student which to attend.

Students for whom TEST NDT issues letters of invitation regarding application for VISA’s who do not show up on the training dates requested without prior notification , then TEST NDT will contact INS within 24 hours.

Language

Our only language service will be in **English**, including manuals, instructions and exams. English language proficiency requirement for students is that they are able to understand, speak and write in English.

Training Course Information Sheet for Attendee's

Location of TEST NDT, 193 Viking Ave. Brea, CA 92821, U.S.A.

The facility is conveniently located for airports and freeways. The most direct freeway access is to exit the 57 Freeway at the "Imperial Highway" exit (4 miles north of the 91-freeway intersection) and follow Imperial heading **west** for 1½ miles. Just after the stop light at "Berry" you will see "The Hitching Post" (RV sales) on the right hand side of the road and then the next road on the right is Viking Ave, (**look for the large red and white sign for "Viking Business Park"**). Across the road from Viking Ave. is a Church with a large statue. We are at # 193, which is approximately 200 yards on the left hand side of Viking Ave. (*If you reach the "Arovista" stop light, then you have passed Viking Ave, and will need to turn right onto "Arovista" and follow the road round and turn left on to Viking Ave.*)

Course start time:

All courses start prompt at 8:00am unless otherwise stated. We suggest students arrive about 7:45am to give chance to get a coffee and settle in. There is parking at the rear of the building.

Airports

There are four airports, which serve the Orange County area. Orange County Airport (John Wayne) approx. 25 minutes Ontario Airport approx. 45 minutes LAX (Los Angeles International Airport) approx. 1 hr (Expect heavy traffic). Long Beach Airport (good, small airport) approx. 45 minutes

TEST NDT does not have any dormitory facilities. You are responsible for your own hotel bill and TEST NDT will not be liable for any unpaid accounts. They accept most major Credit Cards and Company checks.

Where to stay

Below are some suggestions on local hotels/motels from people that attended training at TEST NDT:

Chase Suite Hotel - Brea (714) 579-3200 (Ask to speak to Hector Mejia for our preferred rate) 3100 East Imperial Hwy Fullerton, CA 92821 \$89.00 per night

Ayres Suites (714) 921-8688 (Ask to speak to Estrella Cherry for our preferred rate) 2267 Oakcrest Circle Yorba Linda, CA 92887 \$89.00 per night

Howard Johnson (714) 992-1700 Ask to speak to Quisqueya Ceja for the best rates and mention our name. 222 West Houston Avenue Fullerton, CA 92832

Days Inn (714) 447-9200 333 East Imperial Hwy Fullerton, CA 92835

NDT Training Scheduled Courses for January - December 2011

NDT Training

Magnetic Particle Level II SNT-TC-1A

(24 hours) \$825

February 7-9, March 28-30, May 23-25,
July 11-13, October 10-12

Penetrant Level II SNT-TC-1A

(16 hours) \$675

February 10-11, March 31-April 1, May 26-27,
July 14-15, October 13-14

Ultrasonic Testing Level I/II

(40 hours) \$2490

February 14-25, April 11-22, June 20-July 1,
August 15-26, November 7-18

Radiation Safety (IRRSP Preparation)

(40 hours) \$1245 (Approved by State of CA)

January 17-21, May 2-6, August 29-September 2

Radiography Testing Level I/II

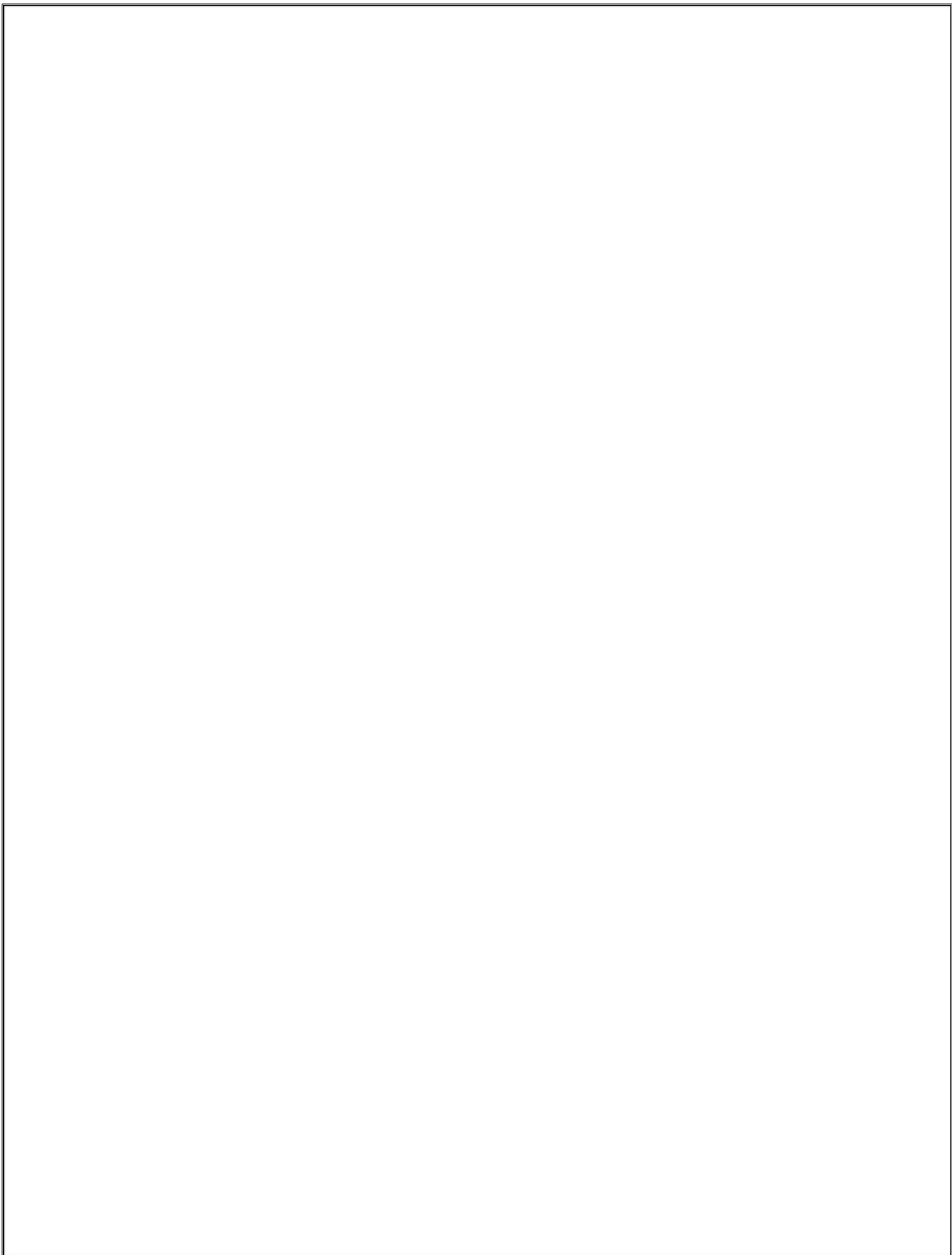
(40 hours) \$2490

January 24-February 4, May 9-20, September 12-23

Eddy Current Testing Level I/II (40 hours) \$2490

July 25-August 5

Course Outlines



Eddy Current Level I – II Course Outline (40hrs)

NDT overview and certification requirements

Introduction to Electromagnetic Testing (Eddy Current/Flux Leakage)

- a. Brief history of testing
- b. Basic principles of testing

Electromagnetic Theory

- a. Eddy current theory
 - (1) Generation of eddy currents by means of an AC field
 - (2) Effect of fields created by eddy currents (impedance changes)
 - (3) Effect of change of impedance on instrumentation
 - (4) Properties of eddy current
 - (a) Travel in circular direction
 - (b) Strongest on surface of test material
 - (c) Zero value at center of solid conductor placed in an alternating magnetic field
 - (d) Strength, time relationship, and orientation as functions of test- system parameters and test-part characteristics
 - (e) Have properties of compressible fluids
 - (f) Small magnitude of current flow
 - (g) Relationship of frequency and plane with current in coil
 - (h) Effective permeability variations when induced in magnetic materials
 - (i) Effect of discontinuity orientation
 - (j) Power losses
- b. Flux leakage theory
 - (1) Terminology and units
 - (2) Principles of magnetization
 - (a) B-H curve
 - (b) Magnetic properties
 - (c) Magnetic field
 - (d) Hysteresis loop
 - (e) Magnetic permeability
 - (f) Factors affecting permeability
 - (3) Magnetization - electromagnetism theory
 - (a) Oersted's law
 - (b) Faraday's law
 - (c) Electromagnetics

Readout Mechanism

- a. Meter
- b. Impedance plane
- c. LED bar graph
- d. Alarm, lights, etc.
- e. Numerical
- f. Marking system

- b. Strip chart recorder

Types of Eddy Current Sensing Elements

a. Probes

- (1) Types of arrangements
 - (a) Absolute
 - (b) Differential
- (2) Lift-off
- (3) Theory of operation
- (4) Applications
- (5) Advantages
- (6) Limitations

b. Through, encircling, or annular coils

- (1) Types of arrangements
 - (a) Absolute
 - (b) Differential
- (2) Fill factor
- (3) Theory of operation
- (4) Applications
- (5) Advantages
- (6) Limitations

c. Factors affecting choice of sensing elements (1) Type of part to be inspected

- (2) Type of discontinuity to be detected
- (3) Speed of testing required
- (4) Amount of testing required
- (5) Probable location of discontinuity

Applications for Eddy Current Testing

- a. Aerospace
- b. Tubing inspection (power plant)
- c. Rod, wire, tube inspection (Manufacturing)

Types of Abnormalities detected by ET

- a. Conductivity testing
- b. Crack detection (Surface and sub-surface)
- c. Corrosion detection
- d. Overheated structure
- e. Coating thickness
- f. Metal thinning

Practical demonstrations and exercises

Summary/Final review

Eddy Current Level I End of course test and review

Magnetic Particle LI/II Testing (24 hours)

Principles of Magnets and Magnetic Fields

- a. Theory of magnetic fields
 - (1) Earth's magnetic field
 - (2) Magnetic fields around magnetized materials
- b. Theory of magnetism
 - (1) Magnetic poles
 - (2) Law of magnetism
 - (3) Materials influenced by magnetic fields
 - (a) Ferromagnetic
 - (b) Paramagnetic
 - (4) Magnetic characteristics of nonferrous materials
- c. Terminology associated with magnetic particle testing

Characteristics of Magnetic Fields

- a. Bar magnet
- b. Ring magnet

Effect of Discontinuities of Materials

- a. Surface cracks
- b. Scratches
- c. Subsurface defects

Magnetization by Means of Electric Current

- a. Circular field
 - (1) Field around a straight conductor
 - (2) Right-hand rule
 - (3) Field in parts through which current flows
 - (a) Long, solid, cylindrical, regular parts
 - (b) Irregularly-shaped parts
 - (c) Tubular parts
 - (d) Parts containing machined holes, slots, etc.
 - (4) Methods of inducing current flow in parts
 - (a) Contact plates
 - (b) Prods
 - (5) Discontinuities commonly discovered by circular fields
- b. Longitudinal field
 - (1) Field produced by current flow in a coil
 - (2) Field direction in a current-carrying coil
 - (3) Field strength in a current-carrying coil

- (4) Discontinuities commonly discovered by longitudinal fields
- (5) Advantages of longitudinal magnetization
- (6) Disadvantages of longitudinal magnetization

Selecting the Proper Method of Magnetization

- a. Alloy, shape, and condition of part
- b. Type of magnetizing current
- c. Direction of magnetic field
- d. Sequence of operations
- e. Value of flux density

Inspection Materials

- a. Wet particles
- b. Dry particles

Principles of Demagnetization

- a. Residual magnetism
- b. Reasons for requiring demagnetization
- c. Longitudinal and circular residual fields
- d. Basic principles of demagnetization
- e. Retentivity and coercive force
- f. Methods of demagnetization

Magnetic Particle Testing Equipment

- a. Equipment-selection considerations
 - (1) Type of magnetizing current
 - (2) Location and nature of test
 - (3) Test materials used
 - (4) Purpose of test
 - (5) Area inspected
- b. Manual inspection equipment
- c. Medium- and heavy-duty equipment
- d. Stationary equipment
- e. Mechanized inspection equipment
 - (1) Semiautomatic inspection equipment
 - (2) Single-purpose semiautomatic equipment
 - (3) Multipurpose semiautomatic equipment
 - (4) Fully automatic equipment

- a. Forging bursts
- b. Voids

Magnetic Particle Test Indications and Interpretations

- a. Indications of nonmetallic inclusions
- b. Indications of surface seams
- c. Indications of cracks
- d. Indications of laminations
- e. Indications of laps

Types of Discontinuities Detected by Magnetic Particle Testing

- a. Inclusions
- b. Blowholes
- c. Porosity
- d. Flakes
- e. Cracks
- f. Pipes
- g. Laminations
- h. Laps
- i. Indications of bursts and flakes
- j. Indications of porosity
- k. Nonrelevant indications

Selecting the Proper Method of Magnetization

Principles

- a. Theory
 - (1) Flux Patterns
 - (2) Frequency and voltage factors
 - (3) Current calculations
 - (4) Surface flux strength
 - (5) Subsurface effects
- b. Magnets and magnetism
 - (1) Distance factor vs. strength of flux
 - (2) Internal and external flux patterns
 - (3) Phenomenon action at the discontinuity
 - (4) Heat effects on magnetism
 - (5) Material Hardness vs. magnetic retention

Flux Fields

- a. Direct current
 - (1) Depth of penetration factors
 - (2) Source of current
- b. Direct pulsating current
 - (1) Similarity to direct current
 - (2) Advantages
 - (3) Typical fields
- c. Alternating current
 - (1) Cyclic effects
 - (2) Surface strength characteristics
 - (3) Safety precautions
 - (4) Voltage and current factors

Source of current

Magnetization by Means of Electric Current

- a. Circular techniques
 - (1) Current calculations
 - (2) Depth-factor considerations
 - (3) Precautions – safety and overheating
 - (4) Contact prods and yokes
 - (a) Requirements for prods and yokes
 - (b) Current carrying capabilities
 - (5) Discontinuities commonly detected
- b. Longitudinal technique
 - (1) Principles of induced flux fields
 - (2) Geometry of part to be inspected
 - (3) Shapes and sizes of coils
 - (4) Use of coils and cables
 - (a) strength of field
 - (b) Current directional flow vs. flux field
 - (5) Current calculations
 - (a) Formulas
 - (b) Types of current required
 - (c) Current demand
 - (6) Discontinuities commonly detected
- a. Alloy, shape, and condition of part
- b. Type of magnetizing current
- c. Direction of magnetic field
- d. Sequence of operations
- e. Value of flux density

Demagnetizing Procedures

- a. Need for demagnetization of parts
 - b. Current, frequency, and field orientation
 - c. Heat factors and precautions
- Need for collapsing flux fields

Equipment

- a. Portable type
 - (1) Reason for portable equipment
 - (2) Capabilities of portable equipment
 - (3) Similarity to stationary equipment
 - b. Stationary type
 - (1) Capability of handling large and heavy parts
 - (2) Flexibility in use
 - (3) Need for stationary equipment
- Use of accessories and attachments
- c. Automatic Type
 - (1) Requirements for automation
 - (2) Sequential operations
 - (3) Control and operation factors
 - (4) Alarm and rejection mechanisms
 - d. Liquids and powders
 - (1) Liquid requirements as a particle vehicle
 - (2) Safety precautions
 - (3) Temperature needs
 - (4) Powder and paste contents
 - (5) Mixing procedures
 - (6) Need for accurate proportions
 - e. Black-light type
 - (1) Black-light and florescence
 - (2) Visible- and black-light comparisons
 - (3) Requirements in the testing cycle
 - (4) Techniques in use
 - f. Light-sensitive instruments
 - (1) Need for instrumentation
 - (2) Light characteristics

Types of Discontinuities

- a. In castings
- b. In ingots
- c. In wrought sections and parts
- d. In welds

Evaluation Techniques

- a. Use of standards
 - (1) Need for standards and references
 - (2) Comparisons of known and unknown
 - (3) Specifications and certifications
 - (4) Comparison techniques
- b. Defect appraisal
 - (1) History of part
 - (2) Manufacturing process
 - (3) Possible causes of defect
 - (4) Use of part
 - (5) Acceptance and rejection criteria
 - (6) Use of tolerances

Q Quality Control of Equipment and Process

- a. Malfunctioning of equipment
- b. Proper magnetic particles and bath liquid
- c. Bath concentration
 - (1) Settling test
 - (2) Other bath-strength tests
- d. Tests for black-light intensity

Practical demonstrations and structured daily exercises

Summary / Final review

End of Course Test and review

Material Reference:

Written material used to support this training course consists of the course manual written and prepared by Mr. R. Harrison with photographs courtesy of Met-l-Chek and Magnaflux.

Other sources:

ASNT NonDestructive Handbook

Handbook of Nondestructive Evaluation (Hellier), Chapter 5, Authored by: Richard A. Harrison

SNT-TC-1A 1996 & 2001

NAS-410 2003

Standards/Codes: ASTM E 1444

Penetrant Course Outline (16hrs)

1. Introduction

- a. Brief history of nondestructive testing and liquid penetrant testing
- b. Purpose of liquid penetrant testing
 - c. **Basic principles of liquid penetrant testing**
- d. Types of liquid penetrants commercially available

2. Liquid Penetrant Processing

- a. Preparation of parts
- b. Adequate lighting
- c. Application of penetrant to parts
- d. Removal of surface penetrant
- e. Developer application and drying
- f. Inspection and evaluation
- g. Postcleaning

3. Various Penetrant Testing Methods

- a. Characteristics of each method
- b. General applications of each method

4. Liquid Penetrant Testing Equipment

- a. Liquid penetrant testing units
- b. Lighting for liquid penetrant inspection
- c. Materials for liquid penetrant testing
- d. Precautions in liquid penetrant inspection

RECOMMENDED TRAINING FOR LEVEL II LIQUID PENETRANT TESTING

1. **Review**
 - a. Basic principles
 - b. Process of various methods
 - c. Equipment
 - (2) Cracks occurring during processing
 - (3) Cracks occurring during service
 - d. Indications from porosity
 - e. Indications from specific material forms
 - (1) Forgings
 - (2) Castings
 - (3) Plate
 - (4) Welds
 - (5) Extrusions
2. **Selection of the Appropriate Penetrant Testing Method**
 - a. Advantages of various methods
 - b. Disadvantages of various methods
3. **Inspection and Evaluation of Indications**
 - a. General
 - (1) Discontinuities inherent in various materials
 - (2) Reason for indications
 - (3) Appearance of indications
 - (4) Time for indications to appear
 - (5) Persistence of indications
 - b. Factors affecting indications
 - (1) Penetrant used
 - (2) Prior processing
 - (3) Technique used
 - c. Indications from cracks
 - (1) Cracks occurring during solidification
 - (1) True indications
 - (2) False indications
 - (3) Relevant indications
 - (4) Nonrelevant indications

Practical demonstrations and structured daily exercises

Summary / Final review

End of Course Test and review

Radiation Safety Course Outline (40hr)

Personnel Monitoring

- a. Wearing of monitoring badges sources
- b. Reading of pocket dosimeters
- c. Recording of daily dosimeter readings shielded
- d. "Off-scale" dosimeter-action required
- e. Permissible exposure limits

Survey Instruments Devices

- a. Types of radiation instruments
- b. Reading and interpreting meter indications
- c. Calibration frequency
- d. Calibration expiration-action material
- e. Battery check-importance

Leak Testing of Sealed Radioactive Sources

- a. Requirements for leak testing
- b. Purpose of leak testing and
- c. Performance of leak testing

Radiation Survey Reports

requirements for

- a. Description of report format radiographic
- b. Requirements for completion

Radiographic Work Practices

- a. Establishment of restricted areas regulations for
- b. Posting and surveillance of restricted areas
- c. Use of time, distance, and shielding to reduce machines personnel radiation exposure
- d. Applicable regulatory requirements for surveys, posting, and control of radiation and high- radiation areas

Emergency Procedures

- a. Vehicle accidents with radioactive
- b. Fire involving sealed sources
- c. "Source out" - failure to return to safe conditions
- d. Emergency call list

Storage and Shipment of Exposure

- a. Vehicle storage
- b. Storage vault - permanent
- c. Shipping instructions - sources
- d. Receiving instructions - radioactive

State and Federal Regulations

- a. Nuclear Regulatory Commission (NRC) agreement states - authority
- b. License reciprocity
- c. Radioactive materials license industrial radiography
- d. Qualification requirements for personnel
- e. Regulations for the control of radiation (state or NRC as applicable)
- f. Department of Transportation radiographic-source shipment
- g. Regulatory requirements for X-ray (state and federal as applicable)

Exposure Devices

- a. Daily inspection and maintenance
- b. Radiation exposure limits for gamma-ray exposure devices
- c. Labeling
- d. Use
- e. Use of collimators to reduce personnel exposure

Radioactive Materials

- a. Production
 - (1) Neutron activation
 - (2) Nuclear fission
- b. Stable vs. unstable (radioactive) atoms
- c. Curie - the unit of activity
- d. Half-life of radioactive materials
- e. Plotting of radioactive decay
- f. Specific activity - curies/gram

Types of Radiation

- a. Particulate radiation - properties: alpha, beta, neutron
- b. Electromagnetic radiation - X-ray, gamma-ray
- c. X-ray production
- d. Gamma-ray production
- e. Gamma-ray energy
- f. Energy characteristics of common radioisotope sources
- g. Energy characteristics of X-ray machines

Interaction of Radiation with Matter

- a. Ionization
- b. Radiation interaction with matter
 - (1) Photoelectric effect
 - (2) Compton scattering
 - (3) Pair production
- c. Unit of radiation exposure - the roentgen
- d. Emissivity of commonly used radiographic sources
- e. Emissivity of X-ray exposure devices
- f. Attenuation of electromagnetic radiation - shielding
- g. Half-value layers; tenth-value layers
- h. Inverse-square law

Biological Effects of Radiation

- a. "Natural" background radiation
- b. Unit of radiation dose - rem
- c. Difference between radiation and contamination
- d. Allowable personnel-exposure limits
- e. Theory of allowable dose
- f. Radiation damage - repair concept
- g. Symptoms of radiation injury
- h. Acute radiation exposure and somatic injury
- i. Personnel monitoring for tracking exposure
- j. Organ radio-sensitivity

Radiation Detection

- a. Pocket dosimeter
- b. Difference between dose and dose rate
- c. Survey instruments
 - (1) Geiger-Muller tube
 - (2) Ionization chambers
 - (3) Scintillation chambers, counters
- d. Film badge - radiation detector
- e. TLDs (Thermo-Luminescent Dosimeters)
- f. Calibration

Exposure Devices and Radiation Sources

- a. Radioisotope sources
 - (1) Sealed-source design and fabrication
 - (2) Gamma-ray sources
 - (3) Neutron sources
- b. Radioisotope exposure device characteristics
- c. Electronic radiation sources - 500 keV and less, low-energy
 - (1) Generator - high-voltage rectifiers
 - (2) X-ray tube design and fabrication
 - (3) X-ray control circuits
 - (4) Accelerating potential
 - (5) Target material and configuration
 - (6) Heat dissipation
- d. Electronic radiation sources - medium- and high-energy
 - (1) Resonance transformer
 - (2) Van de Graaff accelerator
 - (3) Linac
 - (4) Betatron
 - (5) Roentgen output
 - (6) Equipment design and fabrication

Practical demonstrations and structured daily exercises

Summary / Final review

End of Course Test and review

Radiography Level 1/II Course Outline (40hrs)

1. Introduction

- a. Process of radiography
- b. Types of electromagnetic radiation sources
- c. Electromagnetic spectrum
- d. Penetrating ability or "quality" of X-rays and gamma rays
- e. Spectrum of X-ray tube source
- f. Spectrum of gamma-radioisotope source
- g. X-ray tube - change of mA or kVp effect on "quality" and intensity

2. Basic Principles of Radiography

- a. Geometric exposure principles
 - (1) "Shadow" formation and distortion
 - (2) Shadow enlargement calculation
 - (3) Shadow sharpness
 - (4) Geometric unsharpness
 - (5) Finding discontinuity depth
- b. Radiographic screens
 - (1) Lead intensifying screens
 - (2) Fluorescent intensifying screens
 - (3) Intensifying factors
 - (4) Importance of screen-to-film contact
 - (5) Importance of screen cleanliness and care
 - (6) Techniques for cleaning screens
- c. Radiographic cassettes
- d. Composition of industrial radiographic film
- e. The "heel effect" with X-ray tubes

3. Radiographs

- a. Formation of the latent image on film
- b. Inherent unsharpness
- c. Arithmetic of radiographic exposure
 - (1) Milliampereage - distance-time relationship
 - (2) Reciprocity law
 - (3) Photographic density
 - (4) X-ray exposure charts - material thickness, kV, and exposure
 - (5) Gamma-ray exposure chart
 - (6) Inverse-square-law considerations
 - (6) Calculation of exposure time for gamma- and X-ray sources
- d. Characteristic Hurter and Driffield (H&D) curve
- e. Film speed and class descriptions
- f. Selection of film for particular purpose

4. Radiographic Image Quality

- a. Radiographic sensitivity
- b. Radiographic contrast
- c. Film contrast
- d. Subject contrast
- e. Definition
- f. Film graininess and screen mottle effects
- g. Penetrameters or image-quality indicators

5. Film Handling, Loading, and

- Processing**
- a. Safe light and darkroom practices
- b. Loading bench and cleanliness
- c. Opening of film boxes and packets
- d. Loading of film and sealing cassettes
- e. Handling techniques for "green film"
- f. Elements of manual film processing

6. Exposure Techniques - Radiography

- a. Single-wall radiography
- b. Double-wall radiography
 - (1) Viewing two walls simultaneously
 - (2) Offset double-wall exposure single-wall viewing
 - (3) Elliptical techniques
- c. Panoramic radiography
- d. Use of multiple-film loading
- e. Specimen configuration

7. Fluoroscopic Techniques

- a. Dark adaptation and eye sensitivity
- b. Special scattered radiation techniques
- c. Personnel protection
- d. Sensitivity
- e. Limitations
- f. Direct screen viewing
- g. Indirect and remote screen viewing

8. Darkroom Facilities, Techniques, and Processing

- a. Facilities and equipment
 - (1) Automatic film processor vs. manual processing
 - (2) Safe lights
 - (3) Viewer lights
 - (4) Loading bench
 - (5) Miscellaneous equipment
- b. Film loading
 - (1) General rules for handling unprocessed film
 - (2) Types of film packaging
 - (3) Cassette-loading techniques for sheet and roll
- c. Protection of radiographic film in storage
- d. Processing of film - manual
 - (1) Developer and replenishment
 - (2) Stop bath

- (3) Fixer and replenishment
- (4) Washing
- (5) Prevention of water spots
- (6) Drying
- e. Automatic film processing
- f. Film filing and storage
 - (1) Retention-life measurements
 - (2) Long-term storage
 - (3) Filing and separation techniques
- g. Unsatisfactory radiographs - causes and cures

- (1) High film density
- (2) Insufficient film density
- (3) High contrast
- (4) Low contrast
- (5) Poor definition
- (6) Fog
- (7) Light leaks
- (8) Artifacts
- h. Film density
 - (1) Step-wedge
 - (2) Densitometers

9. Indications, Discontinuities, and Defects

- a. Indications
- b. Discontinuities
 - (1) Inherent
 - (2) Processing
 - (3) Service
- c. Defects

10. Manufacturing Processes and Associated Discontinuities

- a. Casting processes and associated discontinuities
 - (1) Ingots, blooms, and billets
 - (2) Sand casting
 - (3) Centrifugal casting
 - (4) Investment casting
- b. Wrought processes and associated discontinuities
 - (1) Forging
 - (2) Rolled products
 - (3) Extruded products
- c. Welding processes and associated discontinuities
 - (1) Submerged arc welding (SAW)
 - (2) Shielded metal arc welding (SMAW) (3) Gas metal arc welding (GMAW)
 - (4) Flux corded arc welding (FCAW)
 - (5) Gas tungsten arc welding (GTAW) (6) Resistance welding
 - (7) Special welding processes –
electron beam, electroslag, electrogas,

- 11. Radiological Safety Principles Review**
- a. Controlling personnel exposure
 - b. Time, distance, shielding concepts
 - c. ALARA (as low as reasonably achievable) concept
 - d. Radiation-detection equipment
 - e. Exposure-device operation

Practical demonstrations and structured daily exercises

Summary / Final review

End of Course Test and review