Coating Failures...Whose Fault?

Mark Westin, Incospec
NACE Certified Coating Inspector,
CIP Instructor

Premature coating failures are usually quite expensive and the cost of rectifying them is often more than the original application cost. This article looks at some statistical data on causes.

My company has been involved in providing expert and independent consulting in protective coatings since 1981. During that time we have undertaken numerous coating failure investigations. Some twelve or more years ago, whilst archiving a pile of our records and files, I got myself sidetracked, as one does when faced with a boring job. I catalogued all the failure investigations on coatings, the type of coating used, and the reasons for the failure. Later that year I presented a paper at an Australasian Corrosion Association Conference that analyzed several hundred failure investigations. The results were tabulated by the reasons for failure, the type of product that failed, and the size of the project/failure. The paper concluded that there are four basic reasons why a coating system will fail.

The first reason is faulty paint, the second is incorrect specification (in other words the wrong product was specified for the job), the third is that the environment has changed since the original coating specification was devised, and the fourth is application error. These figures broke down to roughly:

- 2% Faulty paint
- 19% Incorrect specification
- 11% Environment change from original design criteria
- 68% Application error

The pie chart shows a break-up percentage of the reasons, with figures taken from our company records over the decade prior to 1992.

Historically, the largest reason for failure has been attributed to application error and the reasons for this are many and varied. Often it is inadequate training of the applicator, sometimes it is inadequate or incomplete application instructions by the coating manufacturer, and sometimes it is just plain cutting corners by the applicator. While this may seem to berate the applicator, in my experience most applicators try to do a good job, often despite unrealistic expectations by the owner/constructor.

It is fair to say that until the early 1990s this type of break-up of reasons for failures was accepted as an industry standard. The old knee-jerk reaction to coating failure was (and unfortunately still is) that “it must be caused

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by poor application."

However, since the late 1980s, we have seen the implementation of quality assurance and quality control systems, namely the ISO 9000 series and later the PCCP and training programs such as the NACE Coating Inspector Program that train not only inspectors, but also applicators, suppliers’ staff, and specifiers.

The education programs dramatically increased product technical knowledge and have improved the recordkeeping of applicators and coating application to the point where those of us involved in coating failures are beginning to question whether in fact the old percentages are correct.

In this age of electronic recordkeeping, it is much easier to record and catalog the reasons for failures from our investigations. The figures post-1992 break up as follows.

- 2% Faulty paint
- 41% Incorrect specification
- 11% Environment change from original design criteria
- 46% Application error

The main change is in the allocation to “incorrect specification.” This category includes the use of coatings that are not appropriate for the service conditions, either due to their chemistry or due to their restriction of application.

A classic example of the latter is the specification of an epoxy mastic that has to be brush or roller applied to a DFT of 200 microns (8 mil) where access is extremely restricted. This in practice means 3 separate applications to get the DFT with a restricted recoat window.

Other examples have root causes due to incorrect or inadequate instructions from the paint supplier to the applicator as to how to apply the product, or that the paint manufacturer’s quality control and manufacturing specifications are either too broad or not stringent enough. This type of failure mode was classified as “incorrect specification.”

The types of coating that featured most often in the failures were coal tar epoxies (number 1 prior to 1995), inorganic zinics, and 2 pack acrylics, followed by epoxies and heat resisting coatings.

I believe, although I can’t prove it, that the percentage of significant coating failures has dropped in the past 10 years or so due to better education. My records, however, show a clear shift in reasons attributed to failures—away from applicator error and toward other causes.
The Basics of Respiratory Protection
Ken Bobetich, product group manager for air-purifying respirators, MSA

Confined spaces, dust-filled shops, and other environments that could make the simple act of breathing dangerous are all in a day’s work for coating inspectors. While keeping contaminants such as harmful dusts, fogs, fumes, mists, gases, smokes, sprays, and/or vapors out of the air that workers breathe is the first line of defense, proper respiratory protection also is essential.

If—after engineering and other measures—contaminants still present a hazard, employers must provide appropriate respiratory protection for every employee who might be exposed to them.

A Sound Respiratory Protection Program
OSHA (the U.S. Occupational Safety and Health Administration) and NIOSH (the U.S. National Institute of Safety and Health) regulations define all the specific requirements which must be followed, including the capabilities of appropriate respiratory protection.

Employers must follow the requirements of these governmental regulations, both the general regulations that apply to all workplaces and the specific regulations for exposures in their particular industry. Examples include lead, silica dust, asbestos, and ammonia.

According to program details in OSHA’s Respiratory Protection Standard (29 CFR 1910.134), the seven key elements that every respiratory protection program should contain are:

- A written plan detailing how the program will be administered.
- A complete assessment and knowledge of respiratory hazards that will be encountered in the workplace.
- Procedures and equipment to control respiratory hazards, including the use of engineering controls and work practices designed to limit or reduce employee exposures to such hazards.
- Guidelines for the proper selection of appropriate respiratory protective equipment.
- An employee training program covering hazard recognition, the dangers associated with respiratory hazards, and proper care and use of respiratory protective equipment.
- Inspection, maintenance, and repair of respiratory protective equipment.
- Medical surveillance of employees.

Respiratory Hazards
Before a respiratory protection program is initiated, it is important to first understand the types of respiratory hazards inherent to your industry.

Of the three normally recognized ways toxic materials can enter the body—through the (1) gastrointestinal tract, (2) skin, and (3) lungs—the respiratory system presents the quickest and most direct avenue of entry. This is because of the respiratory system’s direct relationship with the circulatory system and the constant need to oxygenate tissue cells to sustain life.

The three basic classifications of respiratory hazards are: oxygen-deficient air; particulate contaminants; and gas and vapor contaminants.

Normal ambient air contains an oxygen concentration of 20.8 percent by volume. When the oxygen level dips below 19.5 percent, the air is considered oxygen-deficient. Oxygen concentrations below 16 percent are considered unsafe for human exposure because of harmful effects on bodily functions, mental processes, and coordination.

It is important to note that other gases, such as carbon dioxide, can further displace life-supporting oxygen. When this occurs, the result is often an atmosphere that can be dangerous or fatal when inhaled. Oxygen deficiency also can be caused by rust, corrosion, fermentation, or other forms of oxidation, which consume oxygen. The impact of oxygen deficiency can be gradual or sudden.

Particulate contaminants can be classified according to their physical and chemical characteristics and their physiological effect on the body. The particle diameter in microns (1 micron = 1/25,400 inch) is of utmost importance. Particulates below 10 microns in diameter have a greater chance to enter the respiratory system, and particles below 5 microns in diameter are more apt to reach the deep lung or alveolar spaces.

In healthy lungs, particles from 5 to 10 microns in diameter are generally removed by the respiratory system by a constant cleansing action that takes place in the upper respiratory tract. However, with excessive “dust” exposures or a diseased respiratory system, the efficiency of the cleansing action can be significantly reduced.

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Gas and vapor contaminants can be classified according to their chemical characteristics. True gaseous contaminants are similar to air in that they possess the same ability to diffuse freely within an area or container. Nitrogen, chlorine, carbon monoxide, carbon dioxide, and sulfur dioxide are examples.

Vapors are the gaseous state of substances that are liquids or solids at room temperature. They are formed when the solid or liquid evaporates. Gasoline, solvents, and paint thinners are examples of liquids that evaporate easily, producing vapors.

**Respirator Selection**

All respirators in use in the U.S. must be NIOSH-approved (NIOSH 42 CFR Part 84). Selecting respirators entails knowing what level of respiratory protection employees need, as well as which size respirator is right for any face and facial contours.

Respiratory protective devices vary in design, application, and protective capability. Thus, the user must assess the inhalation hazard and understand the specific use limitations of available equipment to assure proper selection.

If your calculation shows that exposure concentrations exceed recommended limits and engineering/administrative controls do not reduce exposure below the permissible limit, tailor your respiratory protection program to your specific conditions based on:

- Toxicity (TLV or TWA)
- Maximum Expected Concentration
- Oxygen level
- IDLH (Immediately Dangerous to Life or Health) concentration
- Warning properties (adequate or not)
- Sorbent limitations
- Facepiece fit
- Mobility requirements
- Type of use (routine, escape, or emergency entry)

Respirators fall under two classifications: air-purifying and air-supplied.

Air-purifying respirators are used against particulates, gases, and vapors. These are categorized as negative-pressure respirators that use chemical cartridges and/or filters; gas masks; and positive-pressure units such as powered air-purifying respirators (PAPRs).

Air-supplied devices rely on a primary air source to deliver a steady flow of respirable air to the user’s facepiece. These consist of Self-Contained Breathing Apparatus (SCBA) and air-line devices.

Air-Purifying Respirators (APRs) range from simple disposable cup masks to low-maintenance half-mask facepieces with cartridges and/or filters to the more complex PAPRs with full-facepieces, or hoods.

APRs for particulates use filters to capture dusts, mists, and fumes. Filters do not protect against gases or vapors, and generally become less effective as particles accumulate on the filter and plug spaces between the fibers. Filtering APRs require filter replacement when the user finds it difficult to breathe through them.

Gas and vapor APRs employ chemical cartridges or canisters to remove hazardous gases or vapors from the air. They do not protect against airborne particles. Made to protect against specific gases or vapors, they provide protection only as long as the cartridge’s absorbing capacity is not depleted.

Combination APRs, fitted with both particulate filters and gas/vapor cartridges, are worn in atmospheres that contain hazards of both particulates and gases.

Supplied-Air Respirators (SARs) comprise air-line respirators, SCBA, and combination (supplied-air) respirators.

Air-line respirators are used for extended periods in non-IDLH atmospheres. They use a hose (air-line) to deliver clean breathing air from a stationary source of compressed air for prolonged periods of time. Although comparatively lightweight, air-line respirators can limit users’ mobility.

Self-contained breathing apparatus (SCBA) have an open-circuit design that provides air rated for 30 to 60 minutes. They consist of a wearable, clean-air supply and a tight-fitting facepiece, and are used for short-duration (30- to 60-minuted rated) work shifts and entrance to or escape from atmospheres that are or may be IDLH. They offer relatively unrestricted movement.

Combination SARs are air-line devices used for extended work periods in atmospheres that are or may be IDLH. They have an auxiliary self-contained air cylinder that can be used if the primary air supply fails. The air cylinder can also be used for entry into or escape from IDLH atmospheres, such as confined spaces.

Employers are required to provide employees using SARs with breathing gases of high purity, and ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration is in accordance with the specifications of OSHA Standard 1910.134(i).

Whether your inspection takes you inside a rail car to examine coatings or through a paint shop, make sure you’re wearing the appropriate respiratory protection.

It could be a matter of life or death.
NACE International Hires a New Coatings Market Manager

NACE International is pleased to announce the first position within NACE International Headquarters Staff structure that is industry specific. In April 2004, NACE hired Larry Christie, formerly with the Corrpro Companies Inc.

Christie will be responsible for the development and implementation of specific programs focused on increasing the society’s presence in the coatings industry both nationally and internationally.

“I am truly excited with my new position at NACE International. We can become the world’s leading coatings society through the resources made available from the continued commitment and support of the NACE Board of Directors,” Christie said during his introduction to NACE International. He went on to say, “I look forward to working with the many friends I have in the coatings industry and with the new friends I hope to develop”.

Christie brings with him over 30 years experience in the coatings industry. He spent the first 12 years of his career working directly with coating manufacturers. From 1974-1979 Christie worked with Mobil Chemical Canada Ltd as the Western Regional Manager. Christie then went on to own and manage his own company, ‘Christie Corrosion Control Ltd’ (a coating contracting company) and became a shareholder and manager of ‘CSI Coating Systems Inc’. Since 1999 until his hire with NACE International, Christie has been District Manager for the Corrpro Companies Inc., based in Bakersfield, California.

Christie is a certified NACE Coating Inspector, and has been a member of NACE International for more than 20 years.

See a report from Larry on the Houston Coating Society Painters Competition on page 91!

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Coating Inspection—An Ever-Changing Industry

For more than 20 years, the NACE Coating Inspector Program (CIP) Certification has defined the standard for coating inspection within industry. Today, CIP is still the industry benchmark. Over the years, one thing has become clear—maintaining this type of leadership position often requires change. CIP was originally developed because we listened to the needs of industry and responded accordingly. CIP continues to respond to industry’s needs, especially in areas where new demands and changing conditions require modifications in training structure and technical content. Responding to these needs is not always easy and when it requires change to the structure of a program as well renowned as CIP—a program committed to more than 6,000 active participants and dedicated to providing the highest quality training and certification available to industry—such decisions become even more difficult.

The decision to change the training structure of CIP was not made on a moment’s notice, nor was it based on the ideas of just a few individuals, nor was it at the direction of NACE management or the NACE Board of Directors. The decision to change the training structure of CIP came after a considerable amount of industry research—research which involved owners, suppliers, inspection firms, students, etc. The results of this research were clear. For CIP to continue to be successful we needed to find a more intense, more challenging, and more cost effective way to deliver CIP training and certification while maintaining the same level of quality and the same technical content.

In fact, more than three years of research and discussion among the CIP and Education Committees went into the final recommendation to combine CIP Sessions II and III before the final decision was made.

The Process of Change

CIP would like to reassure all current and future participants and industry that maintaining the quality of CIP dictated every step in the process of designing this new structure.

After carefully reviewing Sessions II and III it was evident that there was room within both Sessions to combine the two without removing any of the technical information necessary to train people to be coating inspectors. In fact, there has been nothing of a technical or practical nature taken out of the new Level 2 course. Some sections were shortened. However, the information that has been removed is mostly review material from Level I, plus information that, although maybe helpful, is not mandatory for coating inspection work.

Updates to all courses are necessary from time to time to keep up with new products and processes in the industry. Level I was updated last year and converted to Power Point. Sessions II and III were due for updates and conversion to Power Point. That is what has been done, along with the consolidation of the two weeks into one week. In addition, there will be a new Practical Exam similar to the Practical Exam in Level I and all quizzes and final exams will be revised as well. Editing of the new Level 2 by industry experts is in progress, and will be completed in time for launch this September. Those students who have already taken, and passed a current Session II will be accommodated in the new structure. No one will be left out if they choose to continue to certification. Other than receiving new CIP cards, students currently holding Session III recognition will not be affected and may proceed on to the Peer Review.

Lastly, CIP looked very carefully at other courses in our industry throughout the world, to make sure that CIP courses met or exceeded these competitive courses. An example that they do is that the Australasian Corrosion Association (ACA) now promotes, sponsors, and administers NACE CIP courses throughout the Pacific Rim.

The NACE Coating Inspector Program is by far and away the premier coating inspection course available in the world. That is the reason you see NACE Certified Inspectors called for in so many specifications. CIP is indeed the industry benchmark and it is growing rapidly. In the last 12 months ending on June 30th 2004, NACE held CIP courses in 26 different countries, in comparison to ten years ago when courses were held in only four or five countries. Growth such as this is challenging—however, CIP is up to the challenge!
The Tale of the Tape—ASTM D 3359

Mike O'Brien, NACE Certified Coating Inspector, NACE CIP Instructor

The first part of this article appeared in the February 2004 edition of InspectThis! Part 1 is available at www.nace.org

Throughout the three NACE CIP classes, observing, recording, and reporting are stressed continually. ASTM standards typically include a section listing the particular reporting requirements for that specific standard. In the case of ASTM D 3359, Method A, the reporting requirements vary depending upon whether the test was performed in the field or in the lab.

Many ASTM D 3359 test results the author has observed in inspection reports or seen on manufacturer’s product data sheets only list the rating. However there are several additional items that must be included in order to fully comply with the reporting requirements.

Some reporting requirements apply to all ASTM D 3350 tests, whether they are performed in the field or in the lab. These general reporting requirements are as follows:

■ Reported adhesion value in accordance with the scale (5A, 4A, 3A, 2A, 1A, or 0A)
■ The number of tests conducted

The mean and range of the tests
Location the failure occurred (i.e. within a coat, between two coats or between one coat and the substrate)
Environmental conditions at the time of the test
Adhesion strength of the tape if it was determined by ASTM D 1000 or D 3350
Tape manufacturers name and specific tape used if the adhesion strength of was not determined

For job site or field tests there are several additional reporting requirements, including the following:

■ Identification of the structure or article tested
■ Location of the test
■ Environmental conditions at the time of the test
■ Adhesion strength of the tape if it was determined by ASTM D 1000 or D 3350
■ Tape manufacturers name and specific tape used if the adhesion strength of was not determined

For laboratory testing (i.e. test panels) the following report requirements must be listed in addition to the general requirements shown above. For test panels include the following:

■ The substrate employed
■ Type of coating
■ The method of cure
■ Environmental conditions at the time of the test
■ Adhesion strength of the tape if it was determined by ASTM D 1000 or D 3350
■ Tape manufacturers name and specific tape used if the adhesion strength of was not determined

Before performing your next ASTM D 3359 adhesion test obtain a copy of the current standard and read it thoroughly. Make sure to include in your inspection report all of the reporting requirements. This standard can be downloaded for a nominal fee via the internet from ASTM at www.astm.org.

Message From the Chair

Hello to all of my fellow NACE/CIP Coating Inspectors and I hope you are enjoying another addition of InspectThis! I just want to share a little news about how well the CIP Program is still being accepted in our industry. As you may have already read, we reached 10,000 in our numbers a few months ago, and considering myself young is hard to do when my CIP number remains at 58.

Our growth is due in a large part to your diligence over the years in providing quality inspections to your clients and employers in this ever expanding field of expertise. The way we keep growing our network is through owners, management, and specification writers seeing what a CIP Coating Inspector can offer in quality of the work performed and, of course, cost savings due to a “job well done.” As utilizing CIP trained inspectors is accepted we are seeing more and more of these individuals buying into the quality of the program.

A very good example of clients buying into our program is seen when we take a look at the international markets’ acceptance, we already have, or have already scheduled, CIP courses in the following countries; Venezuela, Australia, Japan, Fiji Islands, India, Peru, Mexico, China, Trinidad, Azerbaijan, United Kingdom, Singapore, Italy, France, UAE, Saudi Arabia, Malaysia, Korea, Nigeria, Sweden, Spain, Holland, Bahrain, Indonesia, and Colombia.

This year alone the number of international students participating in the CIP program has increased by 71%.

We at CIP will continue offering our commitment to the highest standards of quality training and we thank you, the CIP Inspector, for supporting our program and your continued efforts in keeping CIP as the coating industry’s mainstay for quality control and assurance.

Keep up the good work.

Raymond C. Stone
CIP Chairman
P.S. Not bad for a program that, during development in 1982, was expected to last for about five years.
During April, 2004, I attended my first Houston Coating Society Painters Competition and Trade Show.

The Painters Competition was held on April 17th, at the Shaw Facility in LaPorte, TX. There were eight teams entered: Protherm #1 (Shell-Deer Park), Protherm #2 (Pasadena), Mobley Industrial Services, ISI (Barton), Basic Industries (Equistar) Brock Maintenance, Shaw Group and the Rag-Tag Team. All the teams looked very professional with the exception of the Rag-Tag Team...loud colored coveralls and feathers! Everyone worked hard and efficient to complete their tasks within the one hour time limit. The surface preparation and coating application procedures of each team were graded by volunteer NACE Certified Coating Inspectors.

The winners were announced the following week during the Society's Annual Trade Show—1st Place: Brock Maintenance, Inc., 2nd Place: Protherm #1 (Shell-Deer Park), and 3rd Place: ISI (Barton).

To me they all looked like winners—well done, Teams! This was an excellent event, thanks to Chairman Mike Tavary of Dow Chemical Co. and all the sponsors and volunteers, including Wayne Pruitt of Brock Maintenance—“Mr. Master Of Ceremonies.”

The Houston Coating Society Trade Show was held on April 23rd and 24th, 2004, at the Pasadena Fair Grounds. The show was well organized and run efficiently due to the hard work of Chairman Tom Vahle of Sherwin Williams, Co-Chair Steve Waguespack of Equistar Pipeline, and all the volunteer helpers. The many sponsors and exhibitors along with the excellent food, refreshments and entertainment made this event a huge success.

CIP—A Big Hit in Japan

Iwao Matsui, NACE Certified Coating Inspector, NACE CIP Instructor

In Japan, our business is mainly conducted with the US Navy as a part of Naval Ships maintenance. As annual average, we inspect approximately 300,000 square feet of internal tank lining and 500,000 square feet of external coating, including Deck Nonskid projects.

In 1996, we started using water jetting surface preparation methods on internal and external tank free board. We also used this method on the underwater area on the USS Belleau Wood in dry dock and successfully completed the project. This was probably the first attempt in Japan to use water jetting on such an extremely large area (approximately 600,000 square feet).

Because water jetting offers a pollution free advantage, we have been trying to encourage this method of surface preparation in Japan. It has been quite difficult to introduce this new concept to the customers here. From their past experience, they had learned that water and blush rust are both enemies of the coating to be applied. Not too many people wanted to take a chance themselves. They wanted to wait and see the results as others in the coatings industries used this new process. However, water jetting surface preparation is gradually being applied by a growing number of various industries involving maintenance coating in Japan.

In the meantime, a new US Navy requirement makes certification through NACE CIP mandatory in order for contractors to conduct critical area coating and establish their own Quality Control Systems.

Beginning in October 2004, a CIP Level 1 Coating Inspector will be a requirement for all those who are involved in U.S. Naval Ship coating projects. However, we actually started to prepare for this well in advance. About 5 years ago we sent several employees, including myself, to courses in California, Texas and Florida.

Subsequently, we organized In-House training in Japan. This includes various training courses such as all CIP courses and the Peer Review, as well as Protective Coating & Lining, Designing for Corrosion Control, Basic Corrosion, and even the CP 1—Tester course. Thanks to NACE, the information and knowledge gained through these courses is helping us in every aspect of coating work.

Here in Japan, we have conducted one open course and several In-House courses open to agencies working with the US Navy, and have enjoyed a high success rate not only with the Navy but also with the marine industry in general. We now have four CIP Instructors and are very proud of our NACE CIP certifications.
Get in on the Ground Level

Help Develop the Standards That Affect You
Whether you want to help shape change in the coatings industry or just gain a better understanding of the standards that affect you, participating in NACE technical committee meetings is your best resource for the latest in cutting-edge coatings technology. If you are a member and would like to join a committee, contact ann.miller@mail.nace.org or call 281/228-6264.

The following is a list of NACE Technical Committees that deal specifically with the protective coatings and linings industry. If you are a member of NACE, you may participate in Technical Committee Activities.

- **Specific Technology Groups (STGs)** are groups of technical committees organized under a specific scope of activity. They either sponsor or administer a number of Task Groups (TGs) and Technology Exchange Groups (TEGs).
- **Task Groups (TGs)** are small committees formed by one or more STGs to produce specific documents as assigned. The work of each TG generally culminates in a technical committee publication.
- **Technology Exchange Groups (TEGs)** are committees that are formed by STGs to conduct symposium and/or technical information exchanges (TIEs). TEGs do not generate technical committee publications.

### SPECIFIC TECHNOLOGY GROUP (STG) 02
**COATINGS AND LININGS, PROTECTIVE: ATMOSPHERIC**

**Scope:** Determine uses, application, and performance of coatings for atmospheric service. Atmospheric service denotes industrial and commercial equipment, architectural structures, and bridges.

### TECHNOLOGY EXCHANGE GROUP (TEG) 255X
**Vapor Corrosion Inhibitors and Rust Preventives for Interim (Temporary) Corrosion Protection: Advances and Novel Applications**

**Assignment:** To conduct a symposium based on the recently revised NACE Standard RP0176.

### TASK GROUP (TG) 146
**Coatings, Thermal-Spray**

**Assignment:** To prepare state-of-the-art reports and recommended practices, and develop training, testing, and other programs to promote the awareness and proper use of thermally sprayed metals, plastics, ceramics, etc.

### TG 148
**Threaded Fasteners: Coatings and Methods of Protection for Threaded Fasteners Used with New Structural Steel, Piping, and Equipment**

**Assignment:** To develop a state-of-the-art report on effective coatings and methods for corrosion control of these connections.

### TEG 192X
**Coating Industry Problems Confronting Owners and Contractors**

**Assignment:** To provide a format for handling problems and issues that affect the owner and contractor utilizing coatings. Problems and issues may include hazardous waste, volatile organic compounds, applicator training, federal and state regulations, and others that may develop.

### TEG 229X
**Fretting Corrosion Between Piping and Pipe Supports**

**Assignment:** Determining extent of and mitigation of corrosion damage associated with coating failures and/or pipe wall thickness reduction due to abrasion from relative movement between pipe and pipe supports.

### TEG 255X
**Coatings, Thermal-Spray for Corrosion Protection**

**Assignment:** Exchange of information regarding TSGs used for corrosion protection.

### TG 258
**Coatings for Concrete in Atmospheric and Nonimmersion Service, Selection**

**Assignment:** To write a standard recommended practice on the selection of coatings for concrete in atmospheric and nonimmersion service.

### TG 260

**Assignment:** To write test methods that utilize effective and economical hardware and test specimens. Test methods will include (1) prohesion/UV exposure, (2) salt contamination resistance, (3) edge retention, (4) thermal cycling resistance, (5) wet adhesion, (6) wormhole wettability, (7) impact resistance, and (8) abrasion resistance. They cover the coating systems for offshore platform structural steel--splash zone, anti-skid, above the water areas.

### TEG 261
**Vapor Corrosion Inhibitors and Rust Preventives for Interim (Temporary) Corrosion Protection: Standard**

**Assignment:** To write a standard on rust prevents and vapor corrosion inhibitors for interim (temporary) corrosion protection.

### TEG 311X
**Threaded Fasteners: Coatings and Methods of Protection for Threaded Fasteners Used with Structural Steel, Piping, and Equipment**

**Assignment:** Share information concerning, and discuss effective methods for, corrosion control of fasteners used with structural, piping, and equipment connections.

### TG 312
**Offshore Platform Coatings for Atmospheric and Splash Zone New Construction**

**Assignment:** To develop standard test methods for new construction coatings. The test methods are similar to, but not identical with, those for maintenance coatings.

### TG 313
**Offshore Platforms: Coatings for Corrosion Control of Steel**

**Assignment:** To write a standard addressing corrosion control of steel offshore platforms by protective coatings. Sections on protective coatings in NACE Standard RP0176 will then be removed.

### STG 03
**COATINGS AND LININGS, PROTECTIVE: IMMERSSION AND BURIED SERVICE**

**Scope:** Determine effectiveness, performance criteria, and quality needs of immersion coatings and lining materials used in immersion service.

### TEG 033X
**Pipeline Rehabilitation Coatings**

**Assignment:** To discuss the technologies of underground pipeline coatings used for pipeline rehabilitation.

### TG 034
**Pipeline Coatings, External: Gouge Test**

**Assignment:** To write a test method and criteria for evaluation of gouge resistance of a particular coating.

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GetThis!

Congratulations to Gerard MacLellan who works with the Canadian Department of National Defense at the naval repair facility “Fleet Maintenance Facility Cape Scott” in Halifax, Nova Scotia. He is the winner of our latest drawing for a free CIP course (from the Spring Issue of InspectThis!). Gerard successfully completed the CIP Session I Course in Halifax, NS in January of this year. Gerard’s comments:

“What a great surprise to hear that I won a CIP course. The first issue of InspectThis! I received was the Spring 2004 issue, and I decided to send in an e-mail to the contest. I never win anything, so what a surprise to get a call letting me know I won. I am planning to use my win for CIP Level 2 to be held here in Nova Scotia in January 2005. Thanks to NACE and InspectThis!” Thanks Gerard and good luck!

Still don’t get it??

Send an email to InspectThis@mail.nace.org or send a fax to 281/228-6368 letting us know that you saw this ad and we will put your name into a drawing for a free course registration. To be eligible you must have passed either the CIP Session I Course or the CIP Exam Course 1. You can use the free course for a Session II, III or Peer Review, the choice is yours. The free course must be taken before June 30, 2005. (The prize is transferable, but the person receiving the prize must meet the same criterion and have completed Session I any time before July 1, 2004. The prize may not be resold). ■
TG 008
Abrasives--Specialty Media
Assignment: To prepare a technical committee report on the use of specialty media abrasives for cleaning and/or surface preparation.

TEG 064X
Railcar Surface Preparation
Assignment: To keep abreast of industry changes and techniques and report findings annually.

TG 142
Surface Preparation of Contaminated Steel Surfaces
Assignment: To review and update NACE Publication 6G186, “Surface Preparation of Contaminated Steel Surfaces.”

TG 259
Salt Contaminants, Nonvisible, Soluble on Coated and Uncoated Metallic Surfaces Immediately Prior to Coating Application: Evaluation
Assignment: Prepare a technical committee report on evaluating nonvisible soluble salts on steel and other nonporous surfaces prior to coating application.

TG 275
Surface Preparation of Metals to WJ-1 (Clean to Bare Substrate) by High-Pressure Waterjetting
Assignment: Develop a standard recommended practice for surface preparation of metals to WJ-1 by high-pressure waterjetting. This standard will be based on information provided in NACE No. 5/SSPC-SP 12, “Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.”

TG 276
Surface Preparation of Metals to WJ-2 (Very Thorough or Substantial Cleaning) by High-Pressure Waterjetting
Assignment: Develop a standard recommended practice for surface preparation of metals to WJ-2 by high-pressure waterjetting. This standard will be based on information provided in NACE No. 5/SSPC-SP 12, “Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.”

TG 277
Surface Preparation of Metals to WJ-3 (Thorough Cleaning) by High-Pressure Waterjetting
Assignment: Develop a standard recommended practice for surface preparation of metals to WJ-3 by high-pressure waterjetting. This standard will be based on information provided in NACE No. 5/SSPC-SP 12, “Surface Preparation and Cleaning of Metals by Waterjetting prior to recoating.”

TG 278
Surface Preparation of Metals to WJ-4 (Light Cleaning) by High-Pressure Waterjetting
Assignment: Develop a standard recommended practice for surface preparation of metals to WJ-4 by high-pressure waterjetting. This standard will be based on information provided in NACE No. 5/SSPC-SP 12, “Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.”

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TG 288  
**Nonvisible Contaminants, Identifying Specific Levels**  
Assignment: Develop a standard to correctly identify various levels of nonvisible contaminants, primarily soluble salts, to assist specifiers in designating desired levels.

TG 295  

STG 43  
**TRANSPORTATION, LAND**  
Scope: To promote the development of techniques to extend the life of land transportation equipment.

TG 063  
**Railcars: Corrosion Protection and Control Program**  
Assignment: Develop guidelines for railcar lining requalification.

TG 066  
**Railcars: The Application of Solvent-Free Coating Using Plural-Component Spray Equipment**  
Assignment: To prepare a state-of-the-art report on the application of solvent-free coatings with plural-component spray equipment.

TG 067  
**Railcars: Interior Protection of Railcars Hauling Sulfur**  
Assignment: To produce a report on state-of-the-art methods for protecting sulfur cars.

TG 068  
**Tank Truck Trailer Interiors: Corrosion Protection with Coatings and Linings**  
Assignment: To prepare a state-of-the-art report on coatings and linings that are applied to the interior surfaces of tank truck trailers for the purpose of mitigating corrosion. This report will include a description of the generic-type systems, commodities transported, and life expectancy of the systems.

TG 069  
**Tank Truck Interiors: Coating and Lining Inspection**  
Assignment: Prepare a state-of-the-art report relating to inspection requirements as provided in HM183. This report will include the criteria required to prevent damage of the applied coating and/or lining during the yearly inspection and provide the necessary steps to ensure a continual serviceable system.

TEG 180X  
**Automotive Corrosion**  
Assignment: Discuss corrosion issues facing the ground transportation (automotive) industry.

TEG 228X  
**Coatings Corrosion Protection and Control Program**  
Assignment: Exchange information on corrosion protection and control program for railcar coatings.

TG 271  
**Railcar and Tank Trailer Interiors, Used: Surface Decontamination Procedures**  
Assignment: To prepare a technical committee report describing surface decontamination procedures for used railcars and tank trailers prior to coating application.

TEG 272X  
**Lining Application and Serviceability for Molten Sulfur Tank Cars: Information Exchange on Technical Advances**  
Assignment: Information exchange on technological advances in lining application and service standards for tank cars in molten sulfur transportation.

TEG 291X  
**Rail Industry: Information Exchange on Coatings-Related Issues**  
Assignment: Technical information exchange in conjunction with an STG meeting.

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# NACE Standards & Reports

## Protective Coatings and Linings

### Documents

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Thermal Precoating Item #24183

NACE Publication 6G197/SSPC-TU 2
Design, Installation, and Maintenance of Coating Systems for Concrete Used in Secondary Containment Item #24193

NACE Publication 6G198/SSPC-TR 2
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NACE Standard RP0692-2001
Application of a Coating System to Interior Surfaces of New and Used Rail Tank Cars in Concentrated (90 to 98%) Sulfuric Acid Service Item #21057

NACE Standard RP0952-2003
Application of a Coating System to Exterior Surfaces of Steel Rail Cars Item #21058

NACE Standard RP0295-2003
Application of a Coating System to Interior Surfaces of New and Used Rail Tank Cars Item #21070

NACE Standard RP0495-2003
Guidelines for Qualifying Personnel as Abrasive Blasters and Coating and Lining Applicators in the Rail Industries Item #21072

NACE Standard RP0389-98
Recommendations for Training and Qualifying Personnel as Coating Inspectors in the Railcar Industry Item #21086

NACE Standard RP0398-2002
Selection and Application of a Coating System to Interior Surfaces of New and Used Rail Tank Cars in Molten Sulfur Service Item #21095

Land Transportation Reports

NACE Publication 14C196
The Application of Solvent-Free Epoxy Coatings to Railcars Using Plural-Component Spray Equipment Item #24188

NACE Publication 14C296
Protective Coatings for Mitigating Corrosion Under Insulation on Rail Tank Cars Item #24191

NACE Publication 14D194
Resource Materials and Services for Materials Selection and Corrosion Control in the Cargo Tank Industry Item #24181
What is the old saying? There are only two things you can guarantee in life; death and taxes. I would like to add one thing to that list, CHANGE. I believe it is safe to say that change can and will happen. CIP is no exception.

I am sure by now you have heard of the upcoming changes to the training structure of CIP (pg. 6). Although these “Level 2 changes” have drawn the most attention (and for good reason) there have been other changes, perhaps not as visible, but just as exciting. For the first time since its inception, CIP is offering continuing education for its participants by way of industry “specialty” courses. These 1-3 day courses are designed for CIP participants who are interested in continuing their training and expertise within specific industries. Participants who successfully complete a specialty course will receive a specialty stamp on their CIP card.

The first specialty course, the CIP Bridge Specialty Course, was offered at CORROSION/2004 in New Orleans. While in New Orleans, the CIP Committee approved the development of a CIP Marine Specialty Course and also gave approval to research the need in other industries for additional specialty courses.

But wait, the changes don’t stop there!

Due to the overwhelming interest in InspectThis!, beginning with the Fall/Winter 2004 Issue, for those who are NACE members, InspectThis! will be delivered via polybag with Materials Performance (MP). For those who are not NACE members, delivery will continue through regular mail service. Issues will be received in the following months: Fall/Winter—November; Spring—March; Summer—July.

This is an exciting time for CIP and its participants. CIP is growing rapidly both in the US and abroad (see Ray Stone’s comments, this issue, page 8.) Where time and logistics have made training difficult to access in the past, CIP has made the necessary changes to allow accessibility to all those who need the training.

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**CIP COURSE SCHEDULE**

**Bridge Specialty Course**

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**CIP Exam Course 1**

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For the most up-to-date course schedule, go to www.nace.org/educschedule.
First CIP class in Bogota, Colombia, May 2004.

Building friendships in the CIP class, Bogota, Colombia. Left to right: Jair Rincón, student; Phil Fouche, CIP Instructor; José Ignacio Huertas, Vice Chairman of NACE Colombia Section

First CIP class in Nigeria, April 2004. Students were employees of Shell and SAIPEM.

Lab day at the first CIP class in Nigeria, April 2004, at ACT Contractors, including blasting and painting crew of ACT Contractors who assisted with Lab day.

CIP IN ACTION—Meet our new friends!