



### Issue Highlights

From the Chair .....	1
Nadcap Meeting Schedule .....	2
NDT Newsletter – Want to be on circulation? .....	2
Certification versus Qualification for External Level 3's .....	2
Obtaining the Perfect Photograph for a TAM Panel .....	3
Top 5 Findings for 2007 – AC7114 .....	4-5
Customer Solutions and Support .....	5
Supplier Mentoring .....	5
Auditor Training .....	6
Supplier Voting Member Representatives of the NDT Task Group .....	6
Prime Representatives of the NDT Task Group .....	7
Professional Development .....	8
PRI Staff Contact Details .....	8

### Editors

- Phil Keown
- Mark D. Aubele
- James E. Bennett
- Louise Belak

## From the Chair

To begin with, I would like to take this time to thank my fellow Task Group members, our esteemed Staff Engineers, our team of auditors and CSRs, and those supplier representatives who take the time to get involved in the Nadcap process for another great year. As a group we are dynamic and can all feel proud of the part played in setting the standard for all the other Task Groups to strive to emulate. It is good to have goals and it is rewarding to know that this group helps set those goals for the rest of the Nadcap program.

The October Auditor Training session was a rewarding success. Not only were interactive scenarios introduced to help stimulate discussions between the auditors, the user primes and PRI staff, but the auditors had an opportunity to share with each other, and with the primes, a healthy dose of their expertise. Having the auditors share their best practices, gave another, maybe more pertinent viewpoint into how the program can improve. My thanks to those auditors who delivered these presentations and look forward to continuing this practice by having different auditors involved in upcoming training sessions.

The Standardization Committee is working hard to develop consistent rules for Audit Failure and the Merit Program that encompasses all of the Task Groups. This is as a result of inconsistencies in the way they are applied by the different Task Groups. The supplier world should see the fruits of these labors early in 2008.

Nadcap is making its presence known around the world in many different ways. Not only are audits conducted in the different continents - North America, South America, Europe, Asia and Africa, but some of the emerging National Aerospace NDT Boards are basing their specific exams on the Nadcap requirements because most of the applicants for qualification are from companies involved with the Nadcap process. During the week of November 5th, 2007, the National Aerospace NDT Board-China initiated its first round of level 3 examinations in FPI and MPI for members of the China Aviation Industry. There were 26 candidates participating and the examinations were held in Xian at the Xian Aero Engine (XAE) facilities.

This event has been two years in the planning and preparation stages. During this time they have been preparing the operating procedures, developing the general & specific questions (based on Nadcap requirements) and collecting test pieces that are representative of the hardware that the candidates will deal with in their daily activities. It was a successful start to this new program that will provide the Chinese aviation industry with a reliable source for meeting their customer requirement of qualifying their NDT people to NAS 410/EN 4179.

As the New Year begins, keep in mind that we are entering the new "3 Task Group Meetings per Year" schedule for Nadcap. The meetings this year are in Rome - Italy, Pittsburgh – USA and Yokohama - Japan. I started this note by thanking those who have been a part of this group, and I would like to end it by saying that I hope to meet some new faces as we travel around the world and wish you all a Healthy New Year.

Phil Keown – NDT Task Group Chair

## Nadcap Meeting Schedule

Month	2008
February	Rome, Italy 25-29
July	Pittsburgh, USA 21-25
October	Yokohama, Japan 6-10

## NDT Newsletter – Want to be on the Circulation?

The NDT newsletter is published prior to the Nadcap Task Group meetings. The newsletters are read by the subscribing Nadcap Users, Suppliers, Auditors and anybody that happens to click on the latest NDT newsletter on the PRI website ([www.pri-network.org](http://www.pri-network.org)). The aim of the newsletter is to communicate information relating to NDT within the Nadcap program to improve our process and to promote the sharing of best practices at all levels.

Have you stumbled across the NDT Newsletter by chance? Want to receive it on a regular basis? Keep up-to-date and in the know with all of the latest Nadcap NDT information by getting added to our distribution list! If you wish to receive notification when a new edition has been published, please e-mail Kellie O'Connor at [koconnor@sae.org](mailto:koconnor@sae.org) with your name, company and email address. Don't delay—join our circulation list today!

Kellie O'Connor – NDT Committee Service Representative

## Certification versus Qualification for External Level 3's

There is a new requirement soon to be flowed down to all Nadcap NDT suppliers and this article will hopefully serve as an early warning. The issue is qualification versus certification for external Level 3's. In the past the Nadcap NDT auditor would verify that the external Level 3 was "qualified" to perform the work for which the supplier had hired him or her to do. Recent AIA clarifications to the Nadcap NDT Task Group have made it clear that these individuals, in most cases, will have to provide evidence of "certification" to the supplier in which they are contracted by as well as evidence of qualification.

If a supplier uses external Level 3 services for qualification examinations; to approve techniques and/or procedures; to inspect hardware; or as the responsible Level 3 then that Level 3 shall be qualified and certified to NAS410 /EN4179 by the company who employs the Level 3 full time. The NDT Task Group requirement is that the supplier who utilizes the Level 3's services shall have proof, on file, of this certification as well as proof of the Level 3's background or qualification in the Aerospace industry. "Proof of certification" in this sense is evidence of certification in accordance with NAS 410 / EN4179, the supplier is not required to maintain copies of the Level 3's examinations. Two things are important to note here. First, the requirement for certification is not applicable to an external Level 3 who provides training services only as trainers are not required to be certified. Second, if the Level 3 also processes hardware for the supplier to the supplier's procedures, then he or she would be expected to have taken specific and practical exams reflective of the processes, procedures and test techniques in use at that supplier's facility.

To further clarify, an external Level 3 is one who is defined as not being employed full time by the supplier and/or is not stationed at the supplier's facility, and therefore the average contract level 3 that works for him or herself certainly meets that definition. In addition, a corporate Level 3 of the supplier not stationed full time at the supplier's facility also meets the definition of an external Level 3. In both cases the supplier will be required to clearly identify this individual as an external Level 3 and provide evidence of certification.

Example #1: "Jill Hill" is an external source working for NDT R US and providing Level 3 services to ABC Company. The auditor would be expected to treat this individual as an external source and look for evidence of certification from NDT R US.

Example #2: "Joe Smith", corporate Level 3 for ABC Company but stationed at another facility, provides Level 3 services for ABC Company. The auditor would be expected to treat this individual as an external source and look for evidence of certification from ABC Company.

Example #3: "Marc Martin", corporate Level 3 for ABC Company stationed at the supplier's facility and providing Level 3 services. The auditor would be expected to treat this individual as an internal Level 3 and look for evidence of certification as well as a complete examination package.

It is hoped this article helps to clarify the coming requirement which is expected to be released first quarter of 2008. Note: The new requirement will take effect 90 days after the release date.

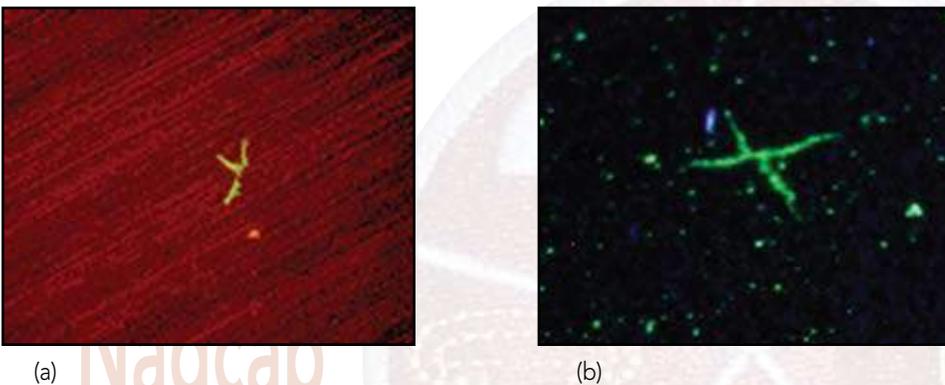
Mark D Aubele - NDT Senior Staff Engineer (Lead)

## Obtaining the perfect Photograph for a TAM Panel

Below are some considerations when taking images of TAM panel penetrant indications.

### CAMERA

It should be possible to manually adjust the exposure and focus. A digital camera will allow you to see the pictures as it is taken. Some cameras 'see' the heat emitted from a UV lamp and so the pictures will appear red. Certain Single Lens Reflex (SLRs) Camera's have this problem (Figure 1.a). Other cameras are over-sensitive to UV light and images will appear purple. Placing a yellow Wratten gel filter in front of the lens will decrease UV glare (yellow filter stops transmission of purple light). Some cameras work fine without filters.



**Figure 1.a)** TAM panel indication under Labino discharge lamp taken by a particular brand of SLR camera. **b)** TAM panel indication under mercury vapour lamp taken by Olympus SP-500UZ. Note – Fuji cameras also work in a similar manner.

Light – take the image in the dark. A small amount of ambient light will not affect the image.

White balance – automatic mode cameras will automatically shift the colours to compensate for lighting. The white balance should be set manually so that the colour appears more realistic. Set the white balance by taking a picture of a white sheet under white light and set this as a user's preset white balance. Use the preset when taking an image.

Focusing – manually focus before taking any images. Use a sheet of paper with fine print on it to aid you with focusing the camera.

Aperture size – in order to allow as much light as possible to enter into the camera you should open the aperture. This is called 'stopping down' the shutter. Select as low an aperture (F) number as possible. These pictures were taken with F3.2. If the aperture size cannot be varied, simply increase the exposure time to compensate.

Exposure – an exposure of ½ to 2 seconds is normally required, although this depends upon the intensity of the UV light on the TAM panel. It is best to take several pictures at different exposures and choose the best.

### TRIPOD

Exposures of 1s or more must be taken. To avoid blurring of the image, a tripod should be used.

Katherine Milne – Rolls-Royce plc, NDE Laboratory

Editorial note – The methods prescribed above have worked for Rolls-Royce plc when producing photographs for TAM Panels to meet their own specification requirements. These methods may not work for everyone, but has been published as guidance.

## Top 5 Checklist Findings for 2007 – AC7114

Further to the release of the baseline in December of 2006, the following article provides data taken from the last 12 months (December 2006 – November 2007) in regard to the non-conformances issued for AC7114 checklist. The data is broken down into paragraph references and not number or classification of NCR's. The simple reason is the classification and grouping of NCR's can vary depending on the situations identified during the audit. Paragraph references identify the number of times a particular paragraph in a checklist is referenced within an NCR. This provides more accurate and reliable information to evaluate.

For those familiar with 'Jim's Data', the information in the past used to be split into the various regions (Americas, Europe and Asia). The original intent being that different regions would have different areas that were non-conforming based on the use of local standards, industry standards, unique customer requirements, etc. Now that the NDT baseline is in place containing requirements that everyone wishing to obtain and maintain Nadcap NDT accreditation must meet, the segregation between regions is no longer necessary.

### AC7114

#### Calibration Procedure Flowdown (para 8.1.1) & Accuracy/Range (para 8.1.2)

*A procedure does not exist or the procedure does not fully address the calibration requirements as it relates to NDT equipment. This is the most common finding out of all the NDT checklists. AC7114 & HB7114 are very specific in that a procedure must exist specifying the calibration requirements. This procedure also needs to include number of points to be checked for each instrument, accuracy required and the range.*

In order to determine the number of points, accuracy, range of calibration, etc, refer to the method specific checklist for the specific equipment items to ensure that all aspects are correct.

#### Level 3 responsibility for the review and sequencing of NDT operation (para 4.1.1)

*The level 3 shall review the NDT requirements and sequencing of NDT operations. This applies to internal or external level 3's. The method of complying with this requirement varies depending on whether the company is a sub-contract NDT House or a manufacturer performing NDT in-house. The simplest method is for the level 3 to approve the traveler / route card that includes the various processing stages, NDT being one of those stages. Another method would be for the operation number for the NDT process to be specified on the technique card. If the level 3 defines general instructions on the sequencing of NDT,*

*then providing the individuals (e.g. planners) that create the travelers / route cards have been trained in that general instruction (objective evidence required), that would be acceptable, although some form of oversight would be necessary. These are just some examples, it is understood that one method will not work for all.*

#### NDT Performance Reviews (para 4.4.1, 4.4.2 & 4.4.3)

*A procedure does not exist / fully address performance evaluations of NDT personnel. Also there is no documentary evidence of performance reviews having been conducted.*

Checklist is clear. There needs to be a procedure and the performance reviews need to be conducted. Note – Performance reviews are independent of re-certification frequency and must be performed by the level 3 or designee (minimum of level 2 qualified).

#### Techniques within a Method (para 5.1.3)

*The procedure for the training, qualification and certification of NDT personnel does not address the specific techniques used within a method.*

NAS410 rev 2 identifies the definition of the term 'technique' within a method. The company procedure must address this.

#### Calibration Certificate Review (para 8.2.2)

*There is no evidence that calibration certificates are reviewed to verify equipment was within the tolerance.*

The company's internal quality procedures will identify that it is the company's responsibility to review the incoming certificate to ensure that it meets the requirements set forth. This applies to calibration certificates. Calibration certificates will by their nature come back indicating that it is calibrated; the issue however is whether the equipment required adjustment prior to meeting the calibration requirement. How much out of tolerance was the equipment before it was adjusted? Did it meet the requirements of the purchase order? Review the certificate and annotate accordingly on the required documentation whether everything was acceptable or further investigations required due to out of tolerance conditions.

### Summary

Without a doubt, the most common causes of these issues are as follows:

1. Understanding the Nadcap NDT requirement. Nadcap NDT accreditation contains requirements that must be complied with to obtain accreditation; this is in addition to satisfying the process specific requirements of your customer. Note: The Nadcap NDT requirement becomes a customer requirement if the customer requires a company to hold Nadcap NDT accreditation to do business with them.

## Supplier Mentoring

2. Failure to perform a pre-audit (using the Nadcap checklists / handbook) with sufficient time to address any potential issues that come up. Note: AC7114 requires the company to perform a self audit prior to the Nadcap audit.

3. HANDBOOKS – The checklist cannot be fully reviewed without the use of the handbook. The handbook outlines the expectation of the NDT Task Group when answering the checklist questions. Note: The handbook is referenced in AC7114.

4. Implement the requirements immediately. As soon as notification is received on a change to the requirements, the supplier is expected to begin implementation within the required time frames. Do not wait to comply with the requirements for the upcoming Nadcap audit. A supplier holding an accreditation is required to comply with those latest requirements, similarly to when a customer specification requirement is changed. Remember - to assist in identifying changes to the documents you will find a vertical line on the left hand side of the paragraph number on the applicable page. Make every effort to fully review the changes accordingly to determine if this affects your system or not.

5. Every effort is made to communicate to all companies accredited for AC7114 the latest requirements to the checklist / supplement / handbook. This is done by NDT Newsletters, NDT Task Group Meeting minutes and not to mention the mass e-mail system. In regard to mass e-mails, when changes are made to the NDT audit criteria, PRI will notify all companies via an e-mail that is issued from the system. The e-mails are distributed to the single point of contact identified by the company for NDT. It is the company's responsibility to make sure the contact information is correct and up to date.

Note: AC7114/1, /2, /3 & 4 will be addressed over the coming newsletters in 2008

James E Bennett - NDT & Fasteners Senior Staff Engineer



### Customer Solutions and Support

Did you spot the cube logo on the front page? Wondered what it means? - PRI has created Customer Solutions and Support initiatives, which exist to provide

quality customer-driven and cost-effective business solutions to continually improve organizations throughout the world. As a result of these initiatives, a new logo has been introduced which represents the many different ways that PRI can support businesses by identifying customized solutions to their unique needs. PRI is already working with industry representatives to determine current and future requirements.

The supplier mentoring program is designed to assist suppliers as they negotiate the Nadcap process. As most companies have experienced, the Nadcap process can be challenging. It's the unknown that suppliers may fear when seeking Nadcap accreditation. This is especially true for those who are new to the process. The Mentoring Program will help "ease" these "unknown fears".

The program is chartered through the Supplier Support Committee. Volunteers will offer their time to mentor a supplier. The goal of the program is to have a more educated supplier base and to reduce the overall audit cycle time.

The process is rather simple:

1. Supplier contacts PRI to request a mentor.
2. PRI assigns a mentor to the supplier.
3. PRI will send the supplier the mentor's contact details.
4. Supplier contacts mentor.
5. Mentor assists the supplier.

The role of the mentor is to respond to general Nadcap questions and to direct the supplier where to obtain additional information. Questions or concerns regarding specific technical issues or checklist interpretations would be referred to the appropriate Task Group or Staff Engineer.

Examples of what a mentor may respond to would be:

1. Where to find checklists on the internet.
2. Why it is important to perform a pre-assessment using the checklists.
3. General tips from experience on how to prepare and conduct a Nadcap audit.
4. Explain and encourage participation of all Nadcap processes such as the web site, eAuditNet, available training and attending Nadcap Task Group meetings.

Please remember, the mentoring program is not limited to new suppliers. The program is also designed to assist accredited suppliers who wish to maintain accreditation or continually improve using the Nadcap system.

If a supplier wishes to request a mentor or if a supplier is interested in volunteering to become a mentor, please contact the Supplier Support Committee at [NadcapSSC@sae.org](mailto:NadcapSSC@sae.org).

Gary White – Orbit Industries, Inc.  
Supplier Voting Member – NDT Task Group

## Auditor Training

I am certain that most individuals reading this Newsletter are aware that Nadcap conducts auditor training every year which is held in Pittsburgh, Pennsylvania in the USA. This year saw some 150 plus auditors being trained in a variety of processes depending on their specialty. There was training held in Welding, Heat Treating, Chemical Processing, Nonconventional Machining, of course Nondestructive Testing and many others.

The format followed as in previous years, with general auditor training issues being offered to all auditors split into groups on Saturday. Most task groups followed up that training on Sunday and some even on Monday with additional training. In NDT we attempted something a little different this year. First, user primes and suppliers alike got together on the Monday morning of the Nadcap meeting in Istanbul and developed the basic groundwork for the training sessions. Second, several auditors were added to the presenters list. These auditors were requested to prepare and present information on some very crucial and important issues. Among them were "Conducting a Compliance Audit"; "Preparation before the Audit"; and a deep dive on "Penetrant System Performance". Most thought that the result of all the efforts was very meaningful and thought provoking training session. All of the sessions were designed to be interactive and did not allow for the almost 40 NDT auditors present to sit back and relax, everyone got involved at one point or another.

Many thanks are deserved for the suppliers and user primes who put the training packages together. Of course a special thank you is sent out to those auditors; Israel Vasquez, Linda Beene, and Ed Fisher, who not only put training packages together but presented them in a very professional manner.

What are we to do next year? Glad you asked. 2008 will see the start of three meetings per year (down from four) for Nadcap and auditor training is scheduled for July of that year. This presented an issue for the NDT Task Group as they felt simply that enough meaningful data could not be collected in such a short time. In lieu of the formal training, the NDT Task Group is going to compile an electronic training package and each auditor will be required to complete that package before being "signed off" on that material. The Nadcap general auditor training will likely go on as planned so the decision by the NDT Task Group will only affect the NDT portion of the 2008 auditor training. In 2009 the task group will return to the normal face to face training routine.

See you at a meeting.

Mark D Aubele - NDT Senior Staff Engineer (Lead)

## Supplier Voting Member Representatives of the NDT Task Group

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E. M. Inspection, Leicester, United Kingdom	Andy Bakewell	Supplier Voting Member	andy.bakewell@emcol.co.uk
GKN Aerospace Services, East Cowes, United Kingdom	Michael Watts	Supplier Voting Member	michaelwatts@gknaerospace.com
Hitco Carbon Composites, Gardena, CA	D.E. "Skip" McDougall	Supplier Voting Member	mcdougall.skip@hitco.com
Alcoa Power & Propulsion, Whitehall, MI	Ryan Soule	Supplier Voting Member	rsoule@howmet.com
Mitchell Labs, Pico Rivera, CA	David Mitchell	Supplier Voting Member	david.mitchell@mitchell-labs.com
NDT Inspection & Testing Ltd, Worcester, United Kingdom	Paul Evans	Supplier Voting Member	paul.evans@ndt-inspection.co.uk
New Hampshire Ball Bearings, Inc., Peterborough, NH	Richard King	Supplier Voting Member	rking@nhbb.com
Orbit Industries Inc., Middleburg Heights, OH	Gary White	Supplier Voting Member	gwhite@orbitndt.com
Praxair Surface Technologies, Weston-Super-Mare, United Kingdom	Bob Gifford	Supplier Voting Member	robert_gifford@praxair.com
TEAM Industrial Services TCM Division, Cincinnati, OH	Cindy Roth	Supplier Voting Member	croth@teamindustrialservices.com
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## Prime Representatives of the NDT Task Group

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## Professional Development

PRI offers the following professional development programs designed for the quality community:

### Internal Auditing: How to Plan & Perform Internal Audits

- This 2-day course teaches participants how to develop and implement an internal audit program and how to perform successful audits of all types. Internal Auditing is a key component of any quality management program and PRI's course will ensure that your internal audits will become an effective continual improvement tool. What participants have to say:

"The instructors, seminar material, and the experience and knowledge I gained were excellent."

-Dieter Frentzen,  
Goodrich Control Systems, GmbH

### Upcoming dates:

11-12 February 2008	Manchester, UK
25-26 February 2008	Rome, Italy
11-12 February 2008	Phoenix, AZ

### Root Cause & Corrective Action

- This 7-hour training course shows participants how to conduct a thorough root cause analysis and implement preventive action to effectively eliminate the sources of non-conformances and ensure continual improvement in your operations. What participants are saying:

"The information presented and the skills taught are so important that seminar attendance should be required of all suppliers."

-Johanna Lisa,  
Continental Heat Treating & Quality Heat Treating

### Upcoming dates:

13 February 2008	Manchester, UK
13 February 2008	Phoenix, AZ
27 February 2008	Rome, Italy
17 March 2008	France

Each of these courses is offered at locations throughout the world and can also be scheduled at your facility and/or customized to your company's needs. For more information and to register, please go to <http://www.pri-network.org/PRI/Supplier-Training-Programs.id.384.htm> to schedule a program for your company, contact Michele Stefanich at [stefanck@sae.org](mailto:stefanck@sae.org) or +1 724 772 8645.

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