

PRI Update

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Nadcap Asia Symposia

On Apr 14-17, the 2015 Nadcap Asia symposia were successfully held in Shanghai and Nagoya.

Supported by PRI, these two symposia were organized by COMAC and JAQG respectively. Over 300 supplier representatives from China and Japan attended the symposia.

This series of symposia covered four special processes: chemical processing, shot peening, welding, and composites. PRI staff engineers and experienced Nadcap auditors gave presentations on Nadcap audit requirements and common audit findings.

2015 is the fifth consecutive year that PRI held Nadcap supplier symposia in Asia. These symposia were very well attended and supported by the Asian supplier community.

Over the past few years, Nadcap has seen a significant growth in Asia - from 540 audits in 2011 to 811 audits in 2014. The number of Nadcap audits is expected to exceed 900 by the end of 2015. The number of Nadcap Asian subscribers has also increased to 3, including COMAC from China, MHI from Japan, and ST Aerospace from Singapore. PRI will continue to hold such symposia in the future to support our Asian customers.

PRI Joined With KOTRA To Provide Training in South Korea

KOTRA (Korea Trade-Investment Promotion Agency), – the Korean national trade and foreign investment promotion agency, launched their Global Partnering support program for the aerospace industry in June by supporting PRI eQuaLearn training in South Korea. The aim of the Global Partnering support program is to provide support for Korea’s small and medium enterprises to enter the 'Global Value Chain'. Funded by this program, participants from 27 aerospace supplier companies were able to attend the training free of charge.



KOTRA’s initiative is a strategic move in promoting supply chain enhancement in South Korea by providing training courses in aerospace manufacturing. The cooperation between KOTRA and PRI is an example of the government’s commitment to developing the Korean aerospace industry as a key player in the global market.

PRI Update

Nadcap Document Transition

Effective April 19, 2015, the Nadcap document structure has changed. The Nadcap Management Council (NMC) made the decision, with the approval of the PRI Board of Directors, to cancel AS 7003 as the controlling document of the Nadcap Program and to replace it with PD 1100 (Program Document 1100 Nadcap Program Requirements). Unlike AS 7003, PD 1100 will be controlled by the NMC, allowing the industry stakeholders with the most invested in the Nadcap program greater influence over it. PD 1100 is a policy level document defining the Nadcap program, and is comprised of requirements from the former AS 7003, NOP-001, NOP-002 and PD 3000 documents.

In conjunction with this action, the supporting procedures were reorganized and the PRI Quality Manual was eliminated.

The former Nadcap Operating Procedures (NOPs), Nadcap Task Group Operating Procedures (NTGOPs) and Nadcap Internal Procedures (NIPs) were reorganized into Operating Procedures numbered OP 11XX; where XX are numbers from 01 to 23. As much as possible, the new OPs follow a process methodology and were created by cutting and pasting the existing requirements into the new OPs in order to minimize the impact on the Nadcap program and the audit and accreditation process.

Editorial changes were made to forms and audit criteria to update procedure references.

The new Program Document PD 1100 and Operating Procedures are located in [eAuditNet](#)

under Resources\Documents\Procedures and Forms\Operating Procedures. The obsolete NOPs, NTGOPs and NIPs are being maintained for 90 days in Resources\Documents\Procedures and Forms\Operating Procedures. The obsolete NOPs, NTGOPs and NIPs are being maintained for 90 days in Resources\Documents\Procedures and Forms\Obsolete Procedures as a reference only to aid in the transition process.

A table called Document Transition Reference has been provided in [eAuditNet](#) as a guide showing the relationship between the old and new procedures. You are encouraged to review this table and the new Operating Procedures to ensure that the changes are clear and any impact on your activity is minimized.

During the reorganization activity, it became apparent that there was an opportunity to remove redundancies, standardize terminology, improve clarity and flow, and streamline requirements in the resultant Operating Procedures. Throughout the remainder of the year the document transition team will be working on this as part of phase 2 transition activity. Technical changes made as a result of this activity will be balloted according to the standard balloting process.

In addition, the NUCAP program merged with the Nadcap Program. Instead of NUCAP, Subscribers will now be able to obtain Nadcap accreditation under Subscriber accreditation Options A and B. The Subscriber audit process will be managed by the Subscriber Accreditation Committee formerly known as NuMC. NUCAP documents PD3000 and PD3001 were transitioned to OP 11XX as well. The Subscriber Option B HQ audit checklist (PD3100) was changed into Nadcap Audit Criteria numbered AC 7008.

If you have any questions about the document transition please contact Bob Lizewski, Manager, Nadcap Quality and NUCAP at blizewski@p-r-i.org.



Welding - Top NCRs

The following checklist questions are the most common to receive NCR's. They are also new to the Welding Top NCR's List. Explanation, examples of findings, as well as helpful tips are given to help suppliers avoid such issues.

1) Is there a documented procedure that controls electrodes?

This is a new checklist requirement in AC7110/5 Rev H para 5.3.

Explanation: While control of consumable fillers has been in place in the checklists for a number of years, the control of electrodes has not. Auditors were witnessing issues where electrodes were not under control, for example not purchased to a specification, not ensuring the electrodes were receipt-inspected, or cutting of electrodes leading to loss of identification.

Examples of findings:

No procedure in place that defines how electrodes are to be purchased, inspected and maintained for identification.

Procedure has been written but electrodes are not being controlled as per the procedure requirements.

Electrodes are required to meet a defined specification, but this not specified in the purchase order.

The incoming certification of the electrodes does not certify the electrodes to the requirements defined on the Purchase Order.

Helpful tips:

This is a new checklist requirement that many Suppliers have not incorporated into their system. Suppliers must review new checklist revisions and implement changes into their systems.

Understand the requirement. Don't assume you already have the item under control. Many Suppliers incorrectly assume that this applies to consumables, when in fact it applies to non-consumable electrodes as well. Review Purchase orders, receipt documentation and electrode

traceability to ensure it meets your procedure and any other specifications that are flowed by contract

2) Is there a documented procedure in place to train and qualify welding visual inspectors?

This is a checklist question in section 8 of weld process checklists. The specific cause of NCR's is failure to meet AWS D17.1 para 7.1.2.

Explanation: This checklist question has been in place for a number of years, and the Handbook defines the minimum requirements that have to be met.

The 2010 revision of AWS D17.1, however, noted specific requirements for visual weld inspector qualification. A grace period was given to Suppliers, who are required to meet AWS D17.1, to become compliant. The grace period has now expired, hence any Supplier who needs to visually inspect welds, including welder qualification testing, per AWS D17.1 must meet the requirements of para 7.1.2 of that specification. Suppliers must define how any specific Subscriber requirements for visual weld inspectors will be controlled.

Example of findings:

- Supplier has no procedure in place to define how visual weld inspectors will be trained and qualified to meet AWS D17.1 para 7.1.2, or customer requirements, as applicable, when these specifications are required. Note that this can be production welds or welder qualification tests.

Helpful tips:

The Task Group has made a significant attempt to communicate the requirement to Suppliers: Auditor Advisories have been issued and Suppliers notified of these; discussions in Task Group meetings have been recorded and minutes made available for anyone to review; Handbook updates and Suppliers notified of these. The information that the Task Group communicates is for the benefit of Suppliers and should not be ignored.

Technical Forum

3) Is there documented evidence of training and qualification of welding visual inspectors?

This is a checklist question in section 8 of weld process checklists. The specific cause of NCR's is failure to meet AWS D17.1 para 7.1.2.

Explanation: This is the question that requires evidence of visual inspector training and qualification. Specific requirements are imposed if AWS D17.1, or customer specific requirements, as applicable, are mandated. If Suppliers are unable to provide this evidence an NCR is written against this paragraph.

Example of findings:

- For visual weld inspectors who are required to meet AWS D17.1 para 7.1.2, no evidence of either QC1 certification or an Engineering Authority approved system such as AWS B5.2 is available.

Helpful tips:

- Compliance with the requirements of AWS D17.1 para 7.1.2 is necessary when either production welding, or welder qualification testing to this specification is mandated.
- Review Customer specific requirements for



visual weld inspector qualification and ensure these are also met.

- There is further guidance in the handbooks for AC7110/5 and AC7110/12.

9) (New). Is there a documented procedure to ensure cleaning tools, such as brushes, flap wheels, abrading tools etc. are marked with the material type they are used on in order to avoid cross contamination?

This is a new checklist requirement in AC7110/5 Rev H para 7.1.3.

Explanation: In order to prevent cross contamination, cleaning tools are restricted to the material types they were first used on.

Example of findings:

- No documented procedure to define how the Supplier will control cleaning tools to prevent cross contamination.
- System is not robust enough to prevent cleaning tools from being used on more than one material type.
- Unidentified cleaning tools found in use and hence unable to prove which material types they can be used on.
- Cleaning tools made from materials that are prohibited by flowed-down specification. E.g. carbon steel brushes used on nickel.

Helpful tips:

- This is a new checklist requirement that many Suppliers have not incorporated into their system. Suppliers must review new checklist revisions and implement changes into their system.
- Spot check weld areas. Ensure cleaning tools are marked with the materials they can be used on.
- There is guidance on material types in the handbook.

Nadcap Asia Symposium Q&A – Welding

Q1: AC7110:7Para. 9.8 Is there a documented procedure to ensure production parts are proof tested when applicable? Please explain the meaning of “Proof Test”.

The structure of the question requires you to make provision for proof testing should it be a requirement.

Providing that provision is in place it is not mandating you to do something that is not required by the contract.

As a general comment, proof testing, such as tensile testing/impact testing is sometimes required, usually on a test piece per batch. These are sometimes required if the materials being joined are a new combination, or if it is a new part. For established parts/materials, the control is usually by monitoring of the process parameters and ensuring they remain within the original qualification limits rather than by destructive testing of a test piece.

Q2 AC7110 Para 5.2 Does the supplier have documented evidence that process improvement activity applicable to welding/brazing is being monitored by designated personnel?

We would like to know the level of Process improvement analysis. Is a welding-specific analysis necessary? Or do you analyze the overall quality including the welding quality and, if necessary, take actions to the welding quality.

The Task Group is requiring that the generic AS9100 requirement is specifically applied to welding.

The Task Group is requiring that welding is included in the data that is reviewed for process improvement. If the analysis shows welding is low on the pareto and that other improvements would

be more beneficial, they are not requiring weld to be subject to improvement.

Q3 AC7110/5 D2.1 Is there a documented procedure to ensure welds and heat affected zone meet the discoloration requirements of the welded condition?

Shall a discoloration sample of titanium welds and a color sample for the welding filler material cleanliness check be used? Do you recommend to prepare a color sample? Or we should not prepare a color sample, when the specification defines the color with words.

Some specifications have the written words to describe the color acceptance, while others provide color acceptance pictures. Providing you meet the specification that is flowed to you then you are compliant.

I personally prefer an actual color chart to the written word as I agree that it is easier for welders and inspectors to understand. If you do create a color sample, then you need to be extremely careful that the color chart is representative of the written word and that your system directs personnel towards which standard to use.

Also, be careful to use specific acceptance standards when these are flowed down by contract. Different customers allow different levels of oxidation.

Q4 AC7110/5 8.3.1 Is there a documented procedure in place to train and qualify welding visual inspectors?

We are qualifying welding personnel in accordance with AWS D17.1. According to AWS D17.1 7.1.2, welding visual inspector is required to be experienced, trained and examined and approved by an “Engineering Authority” in accordance with AWS B5.2. We interpret “Engineering Authority” is the person who is designated by the supplier, based on AWS D17.1 3.

We have built an internal qualification system and the authorized person in the company qualifies the inspector based on AWS B5.2.

Is this a good method?

The Nadcap Task Group has representatives who also work on AWS D17 committees. They state that the intent of “Engineering Authority” is the company that designed the part.

Hence, on this basis, your interpretation is not correct, and you would need to gain approval from the company that designs the product, for them to accept the system you have developed.

In the absence of guidelines in your customer handbook, the default position for welding to AWS D17.1 para 7.1.2 is as stated above. Guidelines were usually added to explain what a Subscriber may accept in lieu of the default position.

Q5 AC7110/5 9.4 Does the facility have the proper inspection equipment to inspect weld characteristics?

We would like to confirm the meaning of “corrected magnification”. We consider it is enough to use specified magnification. The magnifying glass cannot be calibrated. Is it enough that the magnifying glass has an identification of magnification?



It’s agreed that magnifying glasses cannot be calibrated. The handbook is simply ensuring that the correct magnification is used. For example if the specification requires X10 then an X10 magnifying glass is used. Magnifying glasses can be purchased to a defined magnification and if you ensure that they are traceable through the

Purchase Order / Certificate of Conformity, then that will be acceptable.

Q6 AC7110/5 9.4 Is the way to measure the weld size by cutting out the pattern by shape copy compound using shape measuring instrument acceptable?

In the absence of a specification requirement that defines the actual method of inspection, this technique would be considered acceptable.

Q7 AC7110/5 F4.2.1 Is filler material segregated in such a manner as to prevent co-mingling of different sizes or filler material specification numbers?

When using an automatic welding machine, a spool of filler wire is set and used. For work efficiency, I’d like to take down the spool only when I exchange the spool.

The welding machine cannot be locked out, everyone can access the mounted spool.

Misuse is being prevented by putting the spool which isn’t use in a locked depository. Is this way enough as access restriction method of filler spool?

The method described meets the intent of the question for prevention of co-mingling.

The guidance for storage requires control to prevent personnel who may select the wrong filler from having access. Depending on the location of the machine, you may not be meeting this requirement. There is also a question about the filler being stored in an environment that prevents detrimental contamination. You would need to consider how spooled wire left on a machine is controlled to prevent this.

Therefore you need to be extremely careful about adopting this practice. Providing you have controls that address all of the checklist items, then it will be acceptable, but please consider the entire aspect of the filler material supplement before implementing this.

Meeting Industry Need

Customer Satisfaction Survey Results Announced

In April 2015, eQuaLearn released a survey to customers who have taken a training class in the last three years, including those who participated in a complimentary course at a Nadcap meeting. Over 300 customers participated in the survey. The aim of the survey was to measure how well eQuaLearn is meeting their training expectations.

Why eQuaLearn training?

45% of respondents indicated intended purpose of eQuaLearn training was to improve their knowledge of the subject being taught. 32% responded by saying the objective was to improve their company's Nadcap audit performance, and 23% hoped to improve their personal work performance.

When asked to rate whether the training they attended met their intended purpose, 88% agreed that it did. Further, 52% of respondents reported additional benefits to attendance, with comments such as: "The training expanded my knowledge base and supported my promotion," and "The training enabled me to pass on vital information to the Heat Treat Department which had been missing due to the lack of knowledge of AMS2750E."

The interaction with the eQuaLearn team also scored highly, with 92% of customers satisfied with the professionalism and knowledge of the team.

When asked whether they were likely to sign up for more eQuaLearn training in the future, an overwhelming majority of respondents (95%) said they were likely to do so.



eQuaLearn Onsite Training

Interview with Barden Corporation

Irma Mendoza, the NDT Supervisor at Barden Corporation, Connecticut, USA, shares feedback on her company's recent eQuaLearn onsite training experience in an interview with eQuaLearn.

What eQuaLearn training did you do and what made you choose eQuaLearn?

The course was Nadcap Checklist Review-NDT, and we did it because first of all, we have no-one internally to do the necessary training. Not every member of staff goes through Nadcap audits every time, because we have different shifts, and we wanted to make all the team members aware of what the Nadcap auditor is looking for and what the focus of the audit is. The intent was to help staff members who do participate in the Nadcap audits to focus on the expectations and not get sidetracked. In other words, the training helped our personnel know what to expect from a Nadcap audit.

We had the whole team of 12 trained. Since Nadcap auditors tend to cover all the shifts in an audit, there was a need for training for all the personnel. That was a big commitment. We had two groups of six plus four from other groups trained over two 2-day sessions, which took place about one month apart.

What was the main reason for choosing onsite training instead of a public class?

We had onsite training because we had such a large number of people to train. It was the easiest and most convenient way – to have them trained onsite. It was also less expensive to have the training brought over to our premises than to pay for travel for 12 people.

PRI Professional Development

What were the goals of the training from your perspective?

As I mentioned before, preparing for the Nadcap audit and understanding auditor expectations was key. The other part of it was to train staff so they could become auditors themselves for other processes if we needed them to.

We have an internal program called “Certified Operators”. My group audits the work of our operators as part of this program. The eQuaLearn training helped us to become better at carrying out that function.

Were there other benefits of having the class onsite rather than attending public classes?

Beyond the financial side, we could choose exactly what we wanted to be covered by the training. We identified specific parts of the audit scope that we wanted to focus on, and consequently, those four NDT methods were discussed in detail over two days of training.

The attendees were told to focus on what we really needed them to target and the instructor was well prepared ahead of time. We wanted them to concentrate on the methods and learn how to better prepare for an audit and get a good understanding of what the auditor is looking for.

By the end of the course all the attendees had a good grasp of the auditor’s expectations and how to satisfy them in a Nadcap audit.

How satisfied are you with the skills and knowledge acquired during the training?

Very satisfied. A lot of ideas came out of that training that will help us to work together better moving forward and hopefully improve our Nadcap audit and internal audit performance. It increased awareness of Nadcap requirements. It was good to have all the NDT group members take the training. A single person may have not

been able to grasp every point. Whereas when a number of people get trained, some will understand what the others don’t and vice versa, and then share their understanding with colleagues.

Each participant also had the chance to contribute their own skills and experience to the discussion. The instructor was very good, very efficient and punctual. He followed the schedule and answered the questions in detail.

Overall the training was very good, but a little tiring because it was very interactive and there was a lot of information to absorb. The training experience was very helpful and I’m pleased because it seems like the attendees got exactly what they needed from it.

Upcoming eQuaLearn Training

Course	Date	Venue
Nadcap Symposium-Composites	24-27 Oct	Xi’an
AS9100 Internal Auditor	19-22 Oct	Xi’an
Nadcap Checklist Review – NDT	27-29 Oct	Xi’an
NDT L3 Responsibilities	29-30 Oct	Xi’an
Anodizing – Process Planner	29-30 Oct	Xi’an
Introduction to Pyrometry	2-4 Nov	Xi’an
Heat Treating – Process Planner	4-7 Nov	Xi’an
Nadcap Checklist Review – MMTL	9-11 Nov	Xi’an

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