

# NADCAP NEWSLETTER

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## IN BRIEF...

Nadcap is an approach to conformity assessment that brings together technical experts from Industry to manage the program by establishing requirements for accreditation, accrediting Suppliers and defining operational program requirements. This results in a standardized approach to quality assurance and a reduction in redundant auditing throughout the aerospace industry.

Nadcap is administered by the Performance Review Institute (PRI), a not-for-profit organization headquartered in the USA with satellite offices in Europe and Asia.

[www.p-r-i.org/Nadcap/](http://www.p-r-i.org/Nadcap/)

## VOLUME 4 – ISSUE 2

Welcome to the 2019 summer edition of the Nadcap newsletter. Entering the fourth year of publishing and sharing this content, we recently gathered your feedback to make sure this activity continues to bring added value. 89% of you find this newsletter useful and for this, I would like to thank all the individuals who keep making this newsletter a success.

This issue starts by sharing the audit experience of a Supplier from the Netherlands who became proactively Nadcap accredited. The newsletter then continues with our usual commodity-specific article, this time focusing on Conventional Machining as a Special Process (CMSP).

The Supplier Support Committee (SSC) added value at the coming February 2020 Nadcap in Beijing, China, is the focus of the next article. It is followed by a piece on eAuditNet, and more precisely its recent new feature "Subscriber Supplier Alignment".

We then provide an explanation on how Nadcap Task Groups actually work and what their responsibilities are by looking at Operating Procedure (OP) – 1114 Task Group Operation. Finally, we look at self-audit effectiveness and areas of improvement.

We continue to do our best to provide you with valuable content.

Michael Hayward  
Executive Vice President & Chief Operating Officer  
Performance Review Institute



## MY NADCAP AUDIT EXPERIENCE

After three "real audit case study" articles by companies from Europe, the USA, and Asia which focused on Suppliers who obtained Nadcap accreditation because their customers required it, this edition approaches the topic from a different perspective. This time, PRI talked with Roel Fidler, QA Manager at Pontus HeatTreatment B.V. in the Netherlands, who obtained the Nadcap Heat Treatment (HT) accreditation proactively.

**Can you briefly describe your company to set the scene?**

In 1990, Pontus HeatTreatment was founded by

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# MY NADCAP AUDIT EXPERIENCE

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Cor Wubben, who had a vast experience in heat treatment as a researcher at the University of Twente as well as in several Dutch production facilities. From the beginning, Pontus aimed at the high-end of the tool manufacturing market in the Netherlands and abroad.

In 2005, the company was taken over by our founder's son, Geert Wubben. In order to redefine the company's position, Pontus targeted the aerospace industry. First by supplying heat treatment with a high input of knowledge to nearby aerospace customers. Later by working towards an aerospace certification, starting off with a 9100 certified quality management system in 2011.

In our opinion, a Nadcap certification is the highest possible standard in the aerospace industry. It is also a marketing tool giving access to the aerospace industry.

It is for these reasons that in early 2012 we started searching for companies willing to help us obtain this certificate. Unfortunately, we were not able to find a business partner requiring we work towards Nadcap requirements. We finally asked one of our existing customers if we could use their products to get Nadcap accredited, which they accepted. The journey was only just starting.

In 2016, we had a progress check on our Nadcap audit preparation done by Martin Bridge, Nadcap Auditor and an authority in this field. After a positive conclusion, we went on to great lengths to obtain the certification. In September 2018, Bernhard Vandewiele, another Nadcap Auditor, carried out our first Nadcap audit. After solving the five minor non-conformances (NCRs) raised during the audit, we received the Nadcap accreditation. We are particularly proud of this!



### **How did you first hear about Nadcap and why did your company decide to pursue Nadcap accreditation in the first place?**

I first heard of Nadcap during my job interview at Pontus in late 2009. The ambition of Pontus to get a Nadcap accreditation was what made me decide to go and work for them. My automotive experience with many quality tools such as 8D and Failure Modes and Effects Analysis (FMEA) has helped me a lot to get up to speed and guide Pontus towards our first Nadcap HT accreditation.

As we see it, heat treating for the Aerospace industry is the highest level of heat treatment. Therefore, it was only logical for Pontus to work towards a Nadcap accreditation.

The mission of Pontus is to contribute to successful end products. We are continually searching for improvements to heat treat products by optimizing processes and expanding knowledge.

It is important to note that being an independent heat treating company, we do not own any products, but we are particularly proud of the products we have enhanced or optimized by our heat treatment processes.

### **How easy is it to find the information you need to help you prepare for a Nadcap audit?**

Without any experience with Nadcap in the beginning and no customer requiring Nadcap from us, it was hard at first to understand the context, importance and level of detail required. Even though this is outlined in many trainings such as the eQualLearn free introduction webinar, it is still difficult to see everything in perspective.

We have found it to be very useful to attend various Nadcap trainings, including some during Nadcap meetings. Also, other meetings such as the Supplier

Support Committee (SSC) sponsored events and the Task Group meetings during each Nadcap meeting were useful.

### **How long before the actual audit do you start preparing and what do you do to prepare for a Nadcap Audit?**

We only passed the initial audit back in September 2018. We had been preparing with various projects for some years but after we decided to get the Nadcap accreditation without any customer requirement, it took us about a year to prepare everything for the audit.

### **How do you find the audit scheduling process?**

The scheduling process works fine. Communication with PRI staff is quite easy.

On the downside, payment of the audit fee was very complicated. This was because it has to be done in a way that is not supported by any Dutch banks at all. It took us a lot of research to find this out. Finally, we had no other option than to pay by credit card.

### **Do you have much interaction with PRI staff before the Nadcap audit and how is it?**

We have had some interaction with various PRI staff and found them very responsive and helpful.

In general, we have found the collaboration within the Aerospace industry heart-warming. That very much has given us the feeling we are all working together towards a mutual goal.

### **What are your expectations of the following and how do they compare with what actually happens...**

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# MY NADCAP AUDIT EXPERIENCE

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### **...the Auditor and his/her way of conducting the audit?**

We expected the Auditor to be very thorough. And he was. He had excellent knowledge of heat treating, which helped him get a quick understanding of our processes. He was very perceptive and thorough.

The Auditor spoke Dutch which made communication very easy. This of course helped a lot in making good progress during the audit. We have also learned a lot from the Auditor. His remarks helped us improve our Nadcap – and also other – processes.

We did expect the Auditor to be very strict. And he was, even more so than expected. When finding a textual error, we had an initial feeling it was just a typo. The Auditor explained us that it was actually a non-conformance (NCR). This was for us an eye-opener in practice of how strict Nadcap actually is.

### **...opening session?**

Opening session was good. I realized we could have made a little more effort in helping the Auditor get a quick overview of our company and the way things are organized. Preparing everything for the audit was a lot of effort for us which made us slightly forget about helping the Auditor get a quick insight.

### **...closing session?**

Closing session was fine as well. We already had a clear understanding of the NCRs before the closing session. In addition, the Auditor took a lot of time during the audit explaining all NCRs and answering all our related questions.

In the end, the closing session was a formal closing of one of the most interesting weeks we have ever had at Pontus!

### **What did you find was the most challenging during the audit?**

We did not find the audit particularly challenging. Since we had quick access to all required information, it was not challenging to answer the Auditor's questions. The challenging part was the preparation as mentioned previously!

### **What could be done to improve the experience of going through a Nadcap Audit as well as having an Auditor on site?**

As said about the opening session, I realized we could have made a little more effort in helping to give the Auditor a quick general understanding of our company and the way things are organized at Pontus. What is a normal way of working for us, may not be obvious for someone outside our organization.

### **What is the first thing you do once the Nadcap Auditor leaves?**

We had a glass of Champagne! We finished our initial Nadcap audit with only five minor NCRs.

We were confident we would solve them all, so after tedious preparations and a huge effort for our company, we celebrated with a glass of Champagne!

### **What steps do you take next?**

Sit together with the team and discuss again the NCRs, to focus on a really, really, really thorough root cause analysis. Then, we monitor and discuss our progress with frequent follow-up meetings.

### **How does the outcome of the audit and your company performance compare to your expectations?**

We prepared to the best of our ability. We found it difficult for some subjects to get a feeling about what would be good enough. Altogether, we did not really know what to expect. Any number from 0 to 20 NCRs was what I expected we would get. Closing our initial audit with zero major NCR and only five minor NCRs is a real achievement of which we are truly proud.

### How do you go about responding to NCRs, if you have any?

We have performed Root Cause Corrective Action (RCCA) in a structured 8D way. We have documented everything we did and found in a very detailed and elaborate way. Then, before uploading this information into eAuditNet, we brought it back to the most essential and relevant sections. After having our NCRs' responses checked multiple times by various people to make sure all essential information was present, we uploaded them into eAuditNet, using copy-paste from our prepared Microsoft Word documents.

What would be a helpful tool for new Suppliers is a demo – or some sort of training version of eAuditNet and specifically on where you can upload information. The purpose would be to get a look and feel with what you are supposed to do. As we didn't want to lose any of our NCR response cycles, we were very careful in the use of eAuditNet.

### What tools do you find most useful in the RCCA process?

We found the 5-Why analysis, that we use quite frequently, the most useful in our case. Since our NCRs were all related to document issues and because these NCRs were very clear to us, the root causes were not very unexpected.

We have used fishbone in the past in more complex and more technical situations. We used it in scenarios where we had no clue in what area the root cause would be found and where it was much harder to get a grip on the root cause itself.

### Do you have much interaction with PRI staff after the Nadcap audit and how is it?

We had some contact with our Staff Engineer, who was very helpful. It seems that some questions may have surprised the Staff Engineer since in his opinion the answer was obvious. However, since this was our first

experience with the Nadcap NCR responses, we wanted to be absolutely sure that we were not making any mistakes, or “lose” a submission round/NCR-response cycle.

Our Staff Engineer demonstrated a very good understanding of our NCRs and related responses as well as our RCCA. We were actually making it complicated in trying to reach perfection. The Staff Engineer helped us keep it simple.

To conclude, I would like to share some thoughts with our peers within the Nadcap Supplier community: Prepare, prepare, prepare.

Go to Nadcap trainings, attend one or more Nadcap meetings and talk to people from companies who already have Nadcap. The Nadcap Supplier Mentoring program offered by the Supplier Support Committee might be helpful as well.



## NADCAP NEWSLETTER

# CONVENTIONAL MACHINING AS A SPECIAL PROCESS (CMSP) AUDIT INSIGHTS

Article by Sarah Jordan, Consultant CMSP Staff Engineer, Lead CMSP Auditor.

The mere mention of Conventional Machining as a Special Process (CMSP) confuses a lot of people. The majority of aerospace companies have some aspect of machining involved in their manufacturing processes. Companies may wonder, “How can machining – a typical process that people think of as being under “form, fit, function” – be a special process? What is this commodity about? Does it apply to me?”

The short answer is that it probably does not impact your process from the point of view of being a requirement. Out of the +4,000 Nadcap accredited Suppliers, only about 120 hold CMSP accreditation. However, if you perform machining, the requirements of CMSP and the lessons learned from the audits may be worth considering as opportunities for improvement. This article discusses the CMSP commodity, provides some historical insights, discusses audit preparation tips, and analyzes the most common findings.

### What is CMSP?

It may be helpful to define these terms separately.

- “Conventional” has been added as there was already a Task Group focused on Non-conventional machining processes such as Electrical Discharge Machining (EDM) which operate by mechanism other than mechanical material removal.
- “Machining” is a process to mechanically remove undesired material through a variety of processes including but not limited to drilling, reaming, grinding, turning, milling, tumbling, handbenching and broaching.
- “Special Process” is a phrase that was originally in the ISO 9001:1994 document but which has since been superseded and now refers to “processes requiring validation.” In short, “special process” refers to processes whose outputs cannot be verified before shipping to a customer. Traditionally, the thought has been that they are processes that cannot be validated by means other than destructive testing. Some Subscribers take a broader

view than that due to the risk involved and may invoke both CMSP as well as nondestructive testing (NDT). They do not want to rely on nondestructive testing alone to catch problems but rather seek to prevent defects through process control methods.










For CMSP, there are a variety of circumstances where the aerospace Subscribers have determined that the machining is a special process. The typical linkage between them is that there is a risk of metallurgical damage to the microstructure due to the machining process. Some examples of such metallurgical damage include overheating of heat treated metal including when it is chrome plated or High Velocity Oxy Fuel (HVOF) coated, grain pull outs, grain distortion, or missed burrs which may then get folded over by shot peening. The majority of the concerns are those that can weaken the component and lead to fracture due to a weaker material or due to fatigue happening prematurely.

Depending on the Subscriber, the strategy to control machining as a special process may vary. Some control it by validating the process and freezing it. Others have specifications with guidelines defining the permissible processing parameters. Others again may use a combination of both approaches. Depending on the Subscriber, the key factors that they control may also vary but most typically include speeds, feeds, tools, coolants, equipment maintenance, training, and equipment qualification/calibration.

To explain qualification/calibration further, in CMSP one does not simply trust that the speeds, feeds, traverse rate, fluid flow/pressure, and other parameters that the machine readout displays are accurate. In the same way that a hardness machine needs calibrated to verify that the 60 Rockwell Hardness on the C Scale (HRC) value is in fact 60 HRC, the machine needs verified to ensure that the setting and resulting output are accurate to within some small tolerance. The Task Group has defined in the CMSP Audit Handbook what items need addressed. This can be found in eAuditNet under Resources / Documents / Audit Criteria / CMSP

/ Handbooks & Guides as shown (with a specific tab for each customer requirements). They also indicate that the qualification/calibration needs performed at values covering the range of use.

**Documents**

- Expand All
- Public Documents
- Procedures and Forms
- Audit Criteria *[English version is the official version and will be used by PRI Audit]*
  - Aero Structure Assembly (AC7135) ASA
  - Aerospace Quality System (AC7004/AC7005)
  - Chemical Processing (AC7108)
  - Coatings (AC7109)
  - Composites (AC7118)
  - Conventional Machining as a Special Process (AC7126)
    -  [AC7126 Rev DΔ1 Nadcap AUDIT CRITERIA FOR CONVENTIONAL MACHINING \(HOLEMAKING, BROACHING, TURNING, MILLING, GRINDING, EDGE TREATMENT\)](#)
    -  [AC7126/1 Rev B Δ2 Nadcap Audit Criteria for Holemaking](#)
    -  [AC7126/2 Rev B Nadcap Audit Criteria for Broaching](#)
    -  [AC7126/3 Rev BΔ1 Nadcap Audit Criteria for Turning](#)
    -  [AC7126/4 Rev B – Nadcap AUDIT CRITERIA FOR Milling and Hobbing](#)
    -  [AC7126/5 Rev B – Nadcap Audit Criteria for Grinding](#)
    -  [AC7126/6 Rev B - Nadcap Audit Criteria for Edge Treatment](#)
  - Word Copies of Checklists
  - Handbooks & Guides
    -  [Audit Handbook Appendix A - Prime References 14 Sep 2018](#)
    -  [CMSP Handbook 27-Nov-2018](#)

In some cases, where there is an even higher level of risk, “Process Monitoring” may be required by the customer. This phrase refers to the use of one or more automated systems capable of producing an alarm or automatically interrupting the machining process when a process variable moves outside of a pre-determined range. Some examples are systems with sensors to monitor the cutting force or power, cutting speed, acoustic

emission, coolant flow or coolant pressure. In those circumstances, additional validation is required to ensure that the process monitoring system itself is functioning as required.

### Background on the CMSP Task Group

After certain aerospace industry incidents which were found to have occurred due to machining issues, several of the aerospace Subscribers created their own internal specifications. Most of these are at either the engine manufacturers (GE, Honeywell, SAFRAN) or landing gear manufacturers (Collins Aerospace – Goodrich). There are almost no industry CMSP standards. The only known one is MIL-STD-866C on the subject of grinding chrome plated steel heat treated to over 180 ksi. This standard has been deemed inactive for new designs.

In 2008, the CMSP Task Group was created as subcommittee of the Nadcap Management Council (NMC) with the goal of launching it as a new commodity. Companies represented on the early group included GE Aviation, Honeywell, SAFRAN, Pratt Whitney, Rolls Royce, Raytheon, Eurocopter, Avio, and Goodrich.

In creating the CMSP Audit Criteria, the team maintained the practice that they each had to tie to an aerospace Subscriber requirement. The Task Group was not supposed to be elevating best practices or causing increased demands that would increase costs. Thus, the approach was to go through the various Subscriber specs and turn every statement of requirement into a question. Due to the multiple specs, in many cases there were redundant questions. These were then grouped and consolidated where possible.

In most cases the team was able to achieve consensus. The key parameters to control for machining are universal. These include operator training, machine maintenance, machine qualification, tool control, coolant

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control, and process parameter control.

In addition, the CMSP Audit Criteria include many questions asking for process documentation as procedure/instruction. This is because traditionally machine shops have not documented processes as they rely on knowledgeable, well-trained Operators to know what they are supposed to do and how to do it. AC7126 asks that many of the items that may be considered as “tribal knowledge” be turned into procedures so that there is process control and consistency across Operators as well as consistent training.

Some Task Groups have Subscriber-specific Audit Criteria. That is not how CMSP has handled the cases where there were unique requirements and not a consensus on how the issue was to be addressed. The CMSP Audit Criteria have many questions that ask “Are you doing \_\_\_\_\_ per customer requirements?” Then the question has a Not Applicable (NA) if your particular customer does not have a requirement. However, that then begs the question as to how an Auditor or Auditee is to know if something is a customer requirement and what the requirement is. That has been addressed through the Audit Handbook Appendix A.

### Current CMSP Task Group

As of May 2019, the CMSP Task Group is led by David Gil of Honeywell. The Vice Chair is Chuck Beargie of Collins Aerospace. The CMSP Task Group is currently seeking a Secretary – contact the appropriate Staff Engineer at the next meeting or at [cmsp@p-r-i.org](mailto:cmsp@p-r-i.org) to volunteer for this leadership position. There are currently 15 Subscriber representatives from nine companies and six Supplier representatives from five companies active within the Task Group.

The CMSP Audit Criteria (AC – formerly called Audit Checklist) include a base checklist and six slash sheets which can be found in eAuditNet following the same path as for the CMSP Audit Handbook. The slash sheets are for performing job audits which are the primary focus of the audit. Slash sheets may have additional

sub-topics or methods associated with them as shown in the table below. Some key items that the base checklist AC7126 covers include:

- General system requirements for controlling flow down and frozen processes
- Control of Sub-contracted CMSP
- Tools/abrasives control including purchasing, issuing to the shop, dealing with worn tools, and reconditioning tools
- Cutting fluid control including purchasing, testing, and maintenance
- Equipment qualification/calibration and maintenance
- Training
- Process deviations
- Control of Computer Numeric Control (CNC) programs

Slash Sheet	Topic	Methods
/1	Holemaking	Holemaking, Holemaking with Process Monitoring, Abrasive Flow Post Finish, Jig Grinding Post Finish, Hone Post Finish
/2	Broaching	NA
/3	Turning	NA
/4	Milling	Milling, Hobbing
/5	Grinding	Grinding General, Grinding of Coatings, Gear Grinding, Spline Grinding
/6	Edge Treatment	Edge Treatment General, Hand-bench, Automated, Mass Finishing

GE Aviation, Honeywell, SAFRAN, and Collins Aerospace (Goodrich) mandate the CMSP accreditation. The CMSP Audit Handbook indicates which Subscribers and specifications are under the scope of CMSP and which must be made available for audits if a Supplier gets accredited for a given process. In some cases,



Subscribers who have not mandated expect their specifications to be addressed in the audit scope if one is getting a Nadcap accreditation for another Subscriber. Occasionally, Auditees will use other Subscribers' jobs for audits if that is the work available and if it is a frozen process with a similar level of control as typical CMSP job audits.

In addition to the approved and official English Audit Criteria, eAuditNet provides several of them in other languages which may be useful, but which are considered as reference only.

### Audit Preparation

In many ways, the key to effective audit preparation for CMSP is like any other commodity. It is essential to conduct an in-depth objective self-audit and provide sufficient time to address any issues. A best practice is to always be ready for an audit and not have it based on last minute preparation because an Auditor is coming. The CMSP Task Group requires some unique items such as a job audit from each Subscriber (as applicable) in the self-audit. This may mean additional work upfront for Auditees, but in turn, it helps them accurately assess their system. Another unique requirement is that a list of CMSP qualified equipment needs to be attached to the audit.

It is crucial to read everything! For example, the beginning of AC7126 includes instructions where the actual first few pages do not list questions. Read any Compliance Assessment Guidance (CAG) listed with any question. Make sure you read all bullet points and assess your compliance to all the points mentioned. Often, people will be mostly compliant with a question and then miss one of the items listed. Also, make sure that you break apart complex questions. Some questions have multiple parts and if examined too quickly, they will not be fully addressed.

Finally, it is required that you list the procedure number in the self-audit for CMSP. However, it is most helpful to the Auditee, as well as the Auditor, if you actually

document the applicable paragraph. This will facilitate providing the evidence when the Auditor asks the question if something is documented.

### Top Nonconformances (NCRs)

In analyzing the past three years of NCR data, the table below lists the top findings after aggregating the job audits. While a thorough self-audit should cover all the questions in the Audit Criteria, if an Auditee pays special attention to these, they can avoid common pitfalls.

Paragraph	Count
AC7126/4, question #4.7.8	38
AC7126/4, question #4.6.3	27
AC7126/4, question #4.2.1	27
AC7126, question #8.2.1	25
AC7126, question #2.2.1.1	25

**4.7.8:** Does the actual process match the approved process?

This is the key question in the audit. Unfortunately, it is also the one most likely to be noncompliant. The most common reason leading to nonconformance(s) relates to using the wrong tool or the wrong feeds/speeds. These need to match exactly. There is no such thing as "just a typo" in this case if you are noncompliant to the required process. It is essential the Auditee verifies that everything they are doing matches the approved process or frozen process documentation.

**4.6.3:** Has the supplier performed cutting fluid maintenance per their documented procedure?

There are a number of areas where this question can lead to nonconformance(s). A surprising number of Auditees test the cutting fluid but then do not react to negative results. There may be no records of actions taken or worse, there

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may not have been actions taken at all. Auditees may also not be using a refractometer correctly or may not have it calibrated. They may be making additions of coolant or water without re-measuring the concentration. Or they may just not perform tests the way their procedure requires.

**4.2.1:** Does the process approval document (technical plan, manufacturing plan, data sheet, etc.) contain all the information per Customer requirements?

CMSP is primarily controlled on the basis of Subscriber specifications. In many cases, the specs explicitly call out what must be on the frozen process planning. Frequently, some of these items are missed, meaning that Auditees should verify the specification and compare it to the approved process. Just because a tech plan or technique sheet was approved does not mean that nothing was missed on it. Frequent items that are missed are handbenching processes, the Revolutions per Minute (RPMs) of handbenching tools, and coatings on tools. These are most often missed because the process can appear complete without disclosing all the required information and the approver at the Subscriber does not necessarily know what data is missing.

**8.2.1:** For the cutting fluid(s) in use, is there a procedure for maintenance that covers the following elements, including frequency of testing?

This question takes up over half a page in the Audit Criteria as it has a table with seven bullet points and the expectations depend on if cutting oil or water-soluble coolants are in use. Auditees do not have to test everything listed but they do have to document what they are doing for each item. It also needs to meet both the manufacturer recommendations and any customer requirements. Frequently, items on the list are missed and not covered at all. In the most recent Audit Criteria revision, "Storage" was added to the list. This is in regard to the storage of the coolant prior to putting it in the machine. Some coolants have requirements on shelf life and temperature for storage. The Auditee needs to make sure they have addressed these.

**2.2.1.1:** Did the Auditee upload a copy of their completed self-audit to eAuditNet at least 30 days prior to the audit – utilizing the version of the checklist(s) applicable to this audit?

Frequently, this is not done on time. Be aware that eAuditNet system time stamps this and notes in red if it is not uploaded on time. Sometimes, NCRs are raised against this question because the Auditee did not use the correct version of the Audit Criteria.

### Bonus Question

Finally, although it is not a top NCR, AC7126 question #4.2 asks if the corrective action from the previous audit has been implemented. In other words, it is essential Auditees verify that everything in their systems proves that corrective action(s) from previous audit(s) are effective and that a similar nonconformance will not be repeated. If an NCR is found to be recurring, it will result in two major NCRs regardless of the significance of the issue: one for the issue itself and one for the failure of the corrective action system. In CMSP, most audits are two days long and if there are three majors in two days the audit will be balloted for failure.

### Final Recommendation

If you are accredited in CMSP or thinking about getting CMSP accreditation, and have additional questions, please contact Mike Graham.



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## 2020 BEIJING NADCAP MEETING: A PRIORITY FOR THE SUPPLIER SUPPORT COMMITTEE (SSC)

Nadcap is going to Asia in 2020 and will hold a full Nadcap meeting in Beijing between 24-27 February 2020. This article intends to highlight the Supplier Support Committee (SSC) added value during this meeting.

### The SSC added value to Asian Suppliers

The aerospace manufacturing industry in Asia has been growing fast in recent years with a large and fast-increasing number of Suppliers having received/receiving Nadcap accreditation. However, Asian Suppliers within the Nadcap program in general account for a relatively small proportion and their participation rate is quite low.

The Nadcap Management Council (NMC) is committed to improving the situation and has been promoting Nadcap activities in Asia on multiple levels. In 2020, the traditional February Nadcap meeting will be held in Asia.

To help Asian Suppliers be better represented within the Nadcap program, and to provide them with more support and assistance, a specific SSC Asian support group was established. The group's goal – "make Asian Suppliers' voice heard and offer more help" – is to explain to Asian Suppliers the benefits of participating in Nadcap activities, and ultimately increase their numbers within Nadcap. *"Nadcap is a treasure that can offer considerable value to Suppliers and the SSC is one the most effective mean among many to approach Nadcap"* commented Lei Bao, Vice President of NCS Testing Technology Co., Ltd, and SSC representative for Asia.

During each Nadcap meeting, the SSC holds activities targeted at both first-time and experienced Suppliers. Some of the activities are listed below:

- SSC Leadership Team Opening Reception
- Supplier Tutorial
- Keys to a Successful Audit
- eAuditNet Tutorial for Supplier
- How to become a Supplier Voting Member
- The SSC General Meeting

Although the activities to be held during 2020 Nadcap meeting in Beijing have not yet been finalized, it is expected that some special activities that target Asian

Suppliers' needs will be carried out.

### Lei Bao's perspective on the Beijing Nadcap meeting

This is the second time that a Nadcap meeting is held in Asia, the first time was back in 2006. Asia has experienced rapid growth since the last Nadcap meeting held there, and it has now become a key region for Nadcap. Coming back to Asia for the February 2020 Nadcap meeting marks a first step to strengthening Nadcap's footprint in Asia. We should make sure that we lay a foundation for the future of Nadcap in Asia.

The Asian civil aircraft manufacturing industry has been growing rather rapidly in recent years. The special process quality control mechanism of Nadcap is a recognized program and is widely sought after by Asian Suppliers. However, due to constraints on culture, language barrier, and geographical location, Asian Suppliers still find it difficult to keep up with all Nadcap activities – especially attending Nadcap meetings.

As the 2020 Nadcap is being held in Beijing, I expect there will be many Chinese Suppliers attending. Being a member of SSC, and the SSC leader for the Asian region, I will be available throughout the meeting and will also assist the SSC in supporting Asian Suppliers to make sure they all get what they expect from this meeting.

### Why should US/European companies attend?

For US/European aerospace manufacturing companies, attending the Beijing Nadcap meeting provides opportunities to get to know Asian Suppliers. Many Chinese Suppliers will attend the meeting as well as many Suppliers from other regions in Asia – they have all been expecting Nadcap meetings to come to Asia and the opportunity to exchange with the biggest industry players.

Finally, we hope the 2020 Asian Nadcap meeting will be successful and meet all parties' expectations so that we can make it a commitment for the future and hold Asian Nadcap meetings regularly.

# NADCAP NEWSLETTER

## EAUDITNET SUBSCRIBER SUPPLIER ALIGNMENT

Created in 2002, eAuditNet is a web-based, intuitive workflow software system which assists Auditees through their Nadcap audit(s). The eAuditNet team is constantly working to enhance the system, based upon customer, Auditor and internal user feedback.

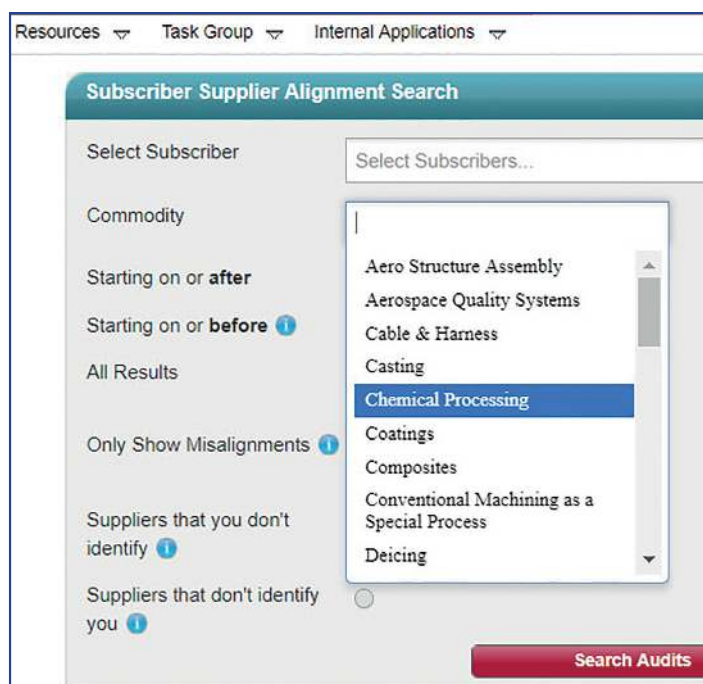
In January 2019, the eAuditNet team released a new feature called "Subscriber Supplier Alignment". This article intends to guide users through the process of using this new feature as well as clarifying its benefits.

The first and main objective of this new feature is to increase the visibility of misalignments if, at any time, the Subscriber and Auditee are inconsistent with who is processing Subscribers' work. Examples of such inconsistencies include the following:

1. An Auditee does work for a Subscriber, but the Auditee did not identify the Subscriber as a customer on a commodity specific audit within eAuditNet
2. An Auditee does work for a Subscriber, but the Subscriber customer has not yet identified the Auditee has a company who is processing the Subscriber's work

While the above is the main objective of this new feature, the "Subscriber Supplier Alignment" feature is also designed to:

- **Give the Auditee more visibility to Subscribers** as this feature now enables PRI staff, Nadcap Auditors and Nadcap Subscribers to easily find Auditees that do work for specific Subscriber(s) and if the Subscriber has identified the Auditee as such in eAuditNet. To view misalignments, Subscribers can use the "Subscriber Supplier Alignment" application



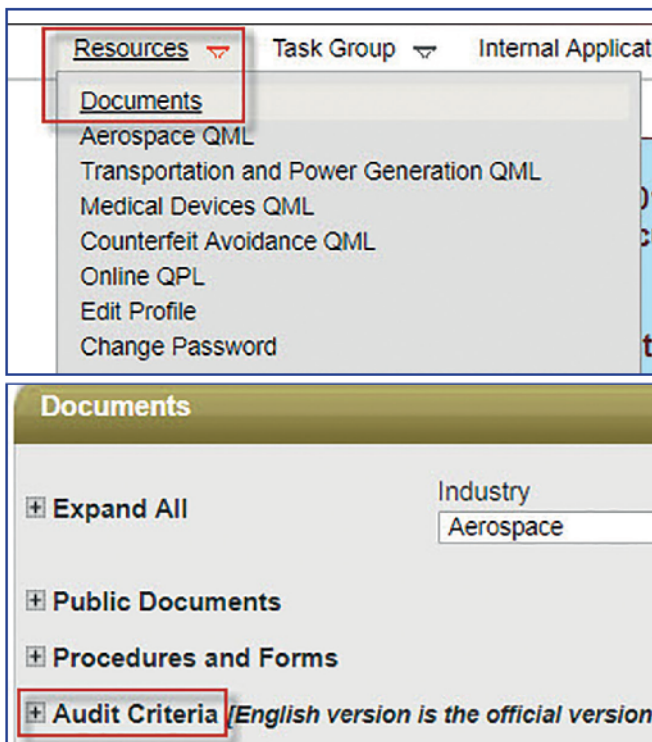
as shown above to perform a search, based upon specific search criteria.

The search results will be displayed as shown below, highlighting the following:

- Auditees that have identified the Subscriber as a customer, but the Subscriber has not identified the Auditee
- Auditees that have not identified the Subscriber as a customer, but the Subscriber has identified the Auditee as a customer who processes their work.

Complete search results can be downloaded into an Excel spreadsheet for easier data analysis.

Selected Subscriber: [Redacted]		Commodity: CT		Starting on or after: 04/06/2016		Starting on or before: 02/09/2019		Search Type: Only Misalignments	
Displaying 9 of 9 records.									
Auditee	Suppliers that you don't identify	Suppliers that don't identify you	Commodity Name	Audit No.	Start	End			



- **Facilitate scope selection**, especially for commodities that use supplemental u-sheets. U-sheets are Audit Criteria (AC – formerly called checklists) additional information/requirements which are specific to each Nadcap Subscriber. U-sheets can be found in eAuditNet, under Resources / Documents / Audit Criteria / The Commodity you are interested in / ACXXXXS or ACXXXX-XS, as shown above.

U-sheets are not required in the scope of an audit. However, if an Auditee has indicated they perform work for a Subscriber but has not included the Subscriber-specific u-sheet within the scope of their audit, the coordinating Subscriber will be notified of the missing u-sheet(s) and will generally contact the Auditee to clarify the situation.

- **Support job audit selection** as the feature helps identify what work has been performed for specific Subscribers during previous audits.

- **Increase accuracy of reports**, particularly the Subscriber Aerospace Qualified Manufacturers List (QML), where Subscribers have the option to target specific companies that have identified the Subscriber as their customer.

While the intent of this article is to provide Nadcap users with an overview of the Subscriber Supplier Alignment process and well as its benefits, tutorials have also been created, outlining the complete process. Each tutorial can be found in eAuditNet via working through the steps below:

- **Auditee Access:** Resources / Documents / Public Documents / eAuditNet / User Guides/Tutorials / Auditee/Supplier Guides / eAuditNet Subscriber Supplier Alignment Tutorial - Auditee Access
- **Subscriber Access:** Resources / Documents / Public Documents / eAuditNet / User Guides/Tutorials / Subscriber Guides / eAuditNet Subscriber Supplier Alignment Tutorial - Subscriber Access
- **Auditor Access:** Resources / Documents / Public Documents / eAuditNet / User Guides/Tutorials / Auditor Guides / eAuditNet Subscriber Supplier Alignment Tutorial - Auditor Access

The eAuditNet team is committed to providing you with the highest level of service. If you have any further questions or comments regarding the Subscriber Supplier Alignment enhancement, please feel free to contact the eAuditNet Support Team at [eAuditNetSupport@p-r-i.org](mailto:eAuditNetSupport@p-r-i.org) at any time.

A complete staff directory can also be found in eAuditNet by selecting the link to “Contact Us” located in the top-right corner of the screen.

## NADCAP NEWSLETTER

# OPERATING PROCEDURE (OP) 1114 - TASK GROUP OPERATION

Task Groups play a vital role within the Nadcap program – one could even argue that they are the main driver of the program! This statement may be hard to believe and understand, especially for companies that do not attend Nadcap meetings, but per Operating Procedure (OP) 1114 – Task Group Operation, Task Groups are appointed by the Nadcap Management Council (NMC) and are responsible for a defined commodity.

All Nadcap Task Groups are organized following the criteria below:

- They are made of both Subscriber and Supplier representatives, with PRI staff, generally Staff Engineer(s), providing assistance in the administration of Task Group activities.
- They must have at least a Chairperson, and where possible a Vice-Chairperson and a Secretary, with term limits for these roles to be defined in the Task Group's OP 1114 – Task Group Operation Appendix

Crucial to the Nadcap program, some of the main Task Groups responsibilities are described below:

### 1. Defining accreditation scope and audit duration

A Task Group's audit scope is defined in their Preliminary Questionnaire (sfrm-xx) and the guidelines for audit duration are defined in sfrm-16 Nadcap Audit Grading Criteria.

The Preliminary Questionnaires are typically broken down into processes and sub-processes and indicate the Audit Criteria that would be required for specific process accreditation. When selecting your audit scope, it is also worth checking to see if specific supplements also need to be selected. Some Task Groups use Audit Criteria Supplements which include additional questions and may be required by some Subscribers – see the Audit Criteria section later in this article for details.

sfrm-16 Nadcap Audit Grading Criteria provides guidance on determining audit duration. It is only guidance because audit duration may be longer or shorter based on specific information or previous

history. For example, if the previous audit had a large number of NCRs, the next audit may be made longer to ensure the Auditor has sufficient time to verify the corrective actions from the previous audit.

### 2. Defining and approving Audit Criteria

There are three levels of Audit Criteria, the Base Checklist (AC7XXX), Slash Sheets (AC7XXX/X) and Supplements (AC7XXX/XS). The base checklist contains common requirements, the slash sheets contain additional process specific requirements and the supplements contain additional requirements to a slash sheet that are specific to certain Subscribers.

All Task Groups must follow OP 1119 – Audit Criteria Development when developing/revising their Audit Criteria (AC) and OP 1120 – Audit Criteria Agreements when Audit Criteria are shared amongst two or more Task Groups. You can find a detailed article about these two procedures in the Nadcap newsletter Volume 4 – Issue 1.

### 3. Development of procedures and documents

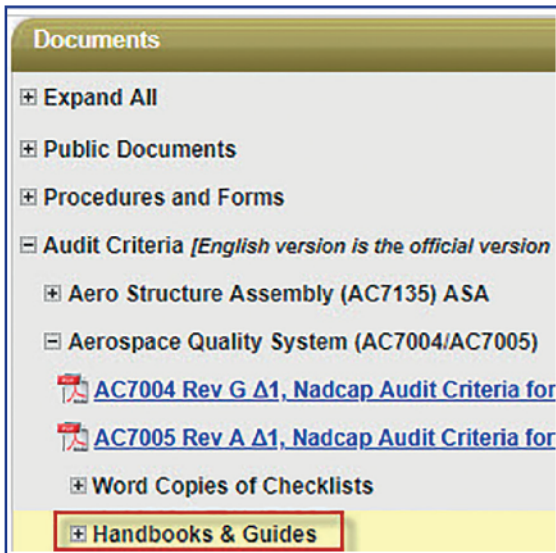
The Task Groups are required to maintain their Audit Criteria, Operating Procedure Appendices (OP 1114 and OP 1116), Audit Handbooks and Preliminary Questionnaires as applicable.

OP 1114 – Task Group Operation Appendix provides specific Task Group requirements that are in addition to the standard Operating Procedure requirements.

OP 116 – Auditor Staffing Appendix defines specific Auditor qualification requirements for that Task Group.

Audit Handbooks, if developed by a Task Group, contain details and examples on how to comply with the Audit Criteria requirements. If a Task Group has an Audit Handbook, which most do, they can be found in eAuditNet under Resources / Documents / Audit Criteria / the commodity you are interested in / Handbook & Guides as shown on the next page – changes are

reviewed during Task Group meetings which generally



happen at Nadcap meetings.

#### 4. Auditor selection, approval, training and consistency

Task Groups must comply with OP 1116 – Auditor Staffing as well as its appendix when selecting, approving and training Nadcap Auditors. A detailed article on this Nadcap OP is available in the November 2018 Nadcap newsletter. Task Groups must also comply OP 1117 – Auditor consistency – a full article on this OP can be found in the July 2018 Nadcap newsletter.

#### 5. Audit process, including audit review and accreditation review/approval

For the Nadcap audit process, Task Groups are required to define a process to evaluate compliance with aerospace/defense requirements to ensure process capability when aerospace/defense production work is not available at the time of the audit and/or when the Auditee has no Subscriber customers.

It is important to note that while initial audits have to include all applicable questions from the relevant Audit Criteria (AC) based on the scope of accreditation, subsequent audits may include only sample questions over a series of audits. If this is the case, it must be defined in OP 1114 – Task Group Operation Appendix.

Audit review and accreditation is carried out per OP 1106 – Audit Report Processing. The NMC has delegated

the audit accreditation process to the relevant Task Groups, who themselves may further delegate the accreditation process to Auditor Report Reviewers per OP 1115 – Delegation of Audit Report Review.

It is important to note that audit failure and merit (term of accreditation; merit can be for 18-month or 24-month) must be in accordance with OP 1110 – Audit Failure and OP 1111 – Merit Program. A detailed article about the Merit Program can be found in the July 2017 Nadcap newsletter.

Task Group Subscriber Voting Members are responsible for reviewing an audit package for completeness and correctness. They consider completion of checklist, number and type of job audits, closure of nonconformance(s) (NCRs), accreditation term, and more – it is a case-by-case evaluation. During this review, the Subscriber Voting Members may request a Verification of Corrective Action audit (VCA) as defined in their OP 1114 – Task Group Operation Appendix.

#### 6. Maintaining metrics and taking decisions based on those metrics

All Nadcap Task Groups are required to compile and maintain metrics, which are defined either by the Task Group directly or by the NMC.

Task Groups are required to hold a meeting at least once per year, or as defined by the NMC. Generally, these meetings happen during the Nadcap meetings, which is one of the reasons why attending Nadcap meeting is deemed to be so important by the Nadcap community. Participation at Task Group meetings by Subscriber and Supplier members is essential for the consistent operation of the Task Group as they discuss and make decisions on documentation (Audit Criteria, Procedures, Handbooks, and more depending on Task Groups), review metrics, develop information communication bulletins and more.

Details of future Nadcap meetings are available on the PRI website at [www.p-r-i.org](http://www.p-r-i.org).

## NADCAP NEWSLETTER

# SELF-AUDITS: HOW EFFECTIVE ARE THEY?

As part of the Nadcap Management Council (NMC) "Audit Effectiveness" initiative, a requirement to perform self-audits prior to the Nadcap on-site audit was added to OP 1105 – Audit Process" as well as the Nadcap Audit Criteria (AC) back in May 2017. The purpose of this requirement is to:

1. Ensure the Auditee has conducted a thorough assessment against the Nadcap requirements prior to the on-site audit and has enough time to correct identified issues before the Auditor arrives.
2. Improve the efficient use of time during the Nadcap audit by identifying in advance where evidence of compliance with each Audit Criteria question is located.

The following is an excerpt from OP 1105:

*4.1 The Auditee shall complete a self-audit, including job audits as required by the Task Group, using the applicable Audit Criteria associated with the audit scope for initial, add scope, and reaccreditation audits.*

*4.1.1 The self-audit shall document where the evidence of compliance (e.g. procedure, checklist, etc.) may be found, for each requirement as applicable.*

*4.1.2 If the self-audit documentation identifies any nonconformance(s), the Auditor will confirm that the nonconformance(s) has been addressed and is fully compliant at the time of the on-site audit.*

*4.1.3 The self-audit shall be uploaded to eAuditNet at least 30 days prior to the scheduled start date.*

Following the issuance of the procedural requirement, questions were added to the core (main) Nadcap Audit Criteria by each Task Group to assess compliance with these requirements.

Now that Nadcap has an adequate history on this requirement, the NMC requested feedback from

key stakeholders. Two surveys were issued to assess whether the Auditees and Auditors believed the requirement for self-audits was useful and asked for their input.

### Supplier Support Committee (SSC) Auditee Survey

In April 2019, the Supplier Support Committee (SSC) surveyed the Supplier Community. The following are the tabulated results of the 15% response rate received:

78% of the respondents agreed that the requirement to submit the self-audit 30 days prior to the on-site audit is helping them to ensure that their company is better prepared for the Nadcap Audit.

The top four reasons given were:

- 54% "it enables me to better prepare for my audit by completing the checklist."
- 19% "it helped to identify and correct NCRs prior to the audit."
- 18% "it helped to have a better understanding of the checklist questions prior to the audit."
- 4% "it gave our company an opportunity to solicit support from other departments prior to the audit"

Top four reasons respondents disagreed:

- 20% "I already understand the checklist and know what I need to do."
- 19% "I am required to submit too much documentation."
- 13% "the Auditor did not look at/use the self-audit."
- 4% "I did not like being forced to perform a self-audit"

### Auditor Survey

In December 2018, a survey was issued to Auditors to





obtain feedback on their experience with self-audits. Highlights from the responses received are:

- 95% think the self-audit is improving the efficiency of the on-site Nadcap audit, which is a relative indicator of preparedness and reduces the time spent trying to locate evidence.
- 95% use this completed self-audit information prior to or during the audit as it provides insight in determining audit areas that should have increased Auditor attention. Also, this is a good tool to ensure the Auditee understands the requirement and for the Auditor to better understand the Auditee.
- 91% said they believe the requirement to submit the self-audit 30 days prior to the on-site audit is helping to ensure Auditees are better prepared for the Nadcap Audit. This reinforces the need to perform a self-assessment prior to the audit and greater objectivity with the requirement to identify where objective evidence of compliance is located.
- 63% consider that Suppliers are completing the self-audits properly. Note that some Suppliers do not understand questions or do not answer them correctly: they do not reference the document/ location where evidence of compliance is located, job audits are not being performed as part of the audit.
- 51% recommend process improvements to make the self-audits more effective, focusing on:

a) Education:

- Make sure Auditees are aware of the Audit Handbook or other reference materials
- Make sure Auditees are aware of the requirement to perform a job audit
- Timing of submittal

- Perform an in-depth self-audit

- b) Require paragraph numbers to be referenced along with procedures for evidence of compliance
- c) Create a program that allows the self-audit to be completed on-line

#### Key “take-aways” from this data

**Review the applicable Audit Handbook**, available in eAuditNet under Resources / Documents / Audit Criteria desired / Handbooks & Guides, as part of the self-audit.

The majority of Task Groups publish an Audit Handbook which provides clarification on the most commonly asked questions. Task Groups often publish additional resource/reference materials under Resources / Documents / Public Documents / Task Groups. These typically include the top nonconformances’ (NCRs), Auditor Advisories, Nadcap Meeting Presentations, Technical Presentations, and more.

**Perform an objective assessment of compliance to each question.** Reference the Audit Handbook for any clarifications. If you are not sure what the question is asking, contact your Staff Engineer – contact details are under the “Contact Us” tab in eAuditNet.

**Identify the location where evidence of compliance is located for all Audit Criteria questions.** This could be in a physical location (e.g. calibration lab, shipping and receiving office), procedure/paragraph, form #XXXX, computer file/software, etc.

**Complete job audit(s) as part of the self-audit.** The majority of Audit Criteria questions are answered during the Nadcap audit through completion of job audits. The job audit requirements are either defined in the Task Group Audit Criteria themselves or in their OP 1114 – Task Group Operating Appendices. Note: If the job is Export Controlled, it must still be included with

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## NADCAP NEWSLETTER

# SELF-AUDITS: HOW EFFECTIVE ARE THEY?

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the submitted self-audit, however data fields must not include technical data and should be redacted or answered "EC/LR".

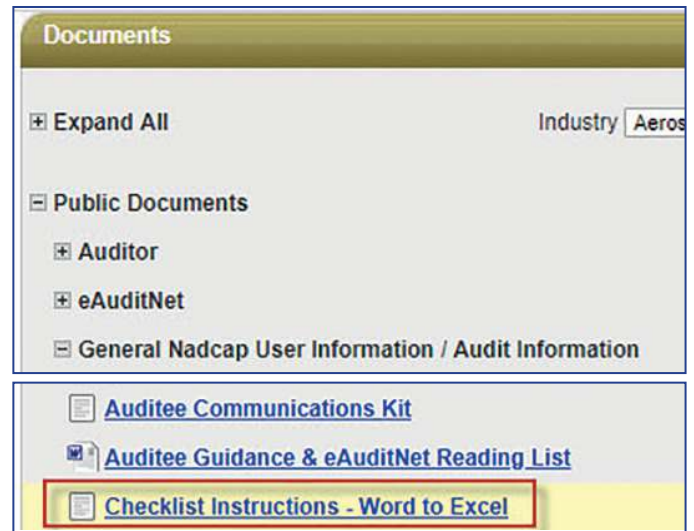
**Correct any nonconformance(s) prior to the Auditor's arrival.** If the nonconformance is corrected prior to the Nadcap audit, it will not result in an NCR. If it has been identified but corrective actions have not been implemented, it will be written as a nonconformance by the Auditor. Nadcap recommends the self-audit be performed 90-120 days prior to the Nadcap audit to allow enough time to address any issues identified.

**Make sure the completed self-audit** (including all applicable Audit Criteria and job audits) **is submitted to eAuditNet at least 30 days prior to the start date of the on-site audit.** It is important to note that this is 30 days and not one month prior to the audit. Recently, there was some confusion due to February being a short month. Auditors are required to write an NCR if the self-audit is uploaded less than 30 days prior to the start of the on-site audit.

### What format is required for performing a self-audit?

Nadcap doesn't define a required format. However, the self-audit must be performed using all the applicable Audit Criteria in effect at the time of the audit. Any format is acceptable provided that all Audit Criteria questions are included, utilizing the same verbiage, and can quickly be shown to the Auditor as being the correct revision. Some Auditees may find it useful to use a Microsoft Excel version of Nadcap Audit Criteria for performing self-audits. Guidelines on how to create an Excel version are in eAuditNet under Resources / Documents / Public Documents / General Nadcap User Information / Audit Information / Checklist Instructions – Word to Excel as shown on the next here.

Audit Criteria are available in eAuditNet in "PDF" and Microsoft Word® formats. PDF and Microsoft Word® versions are located under Resources / Documents / Audit Criteria / TASK GROUP.



Some Auditees print the Audit Criteria, complete it manually, then scan and upload the completed document to eAuditNet. Others complete the Audit Criteria electronically and upload the file to eAuditNet. Both methods are acceptable.

### What if I have an issue uploading the Self-Audit?

Contact [eAuditNetSupport@p-r-i.org](mailto:eAuditNetSupport@p-r-i.org). They will be happy to assist you and/or remove documents for you.

### Who can see the uploaded Audit Criteria?

The Auditee and Auditor have the ability to open the attachments. The Staff Engineer/Assigned Reviewer can see that files have been attached but cannot open them.

### What happens to the uploaded checklists?

Once the audit closes or 120 days have elapsed – whichever comes first – the files are deleted.

If you have any questions, please contact the appropriate Staff Engineer for your Task Group.



### **EQUALIFIED - AEROSPACE QUALIFICATIONS**

eQualified is a global industry managed program which has created a new system for aerospace manufacturing personnel qualification. Industry experts work collaboratively to create Bodies of Knowledge (which are free to download), and corresponding assessments. The program also approves Training Providers to deliver technical courses aligned with the Bodies of Knowledge.

eQualified, governed by the eQualified Management Council, consists of Technical Review Boards led by industry volunteers from companies like Honeywell Aerospace, Rolls-Royce, Solar Atmospheres, and Collins Aerospace. Current Review Boards and sub-teams are Additive Manufacturing, Brazing, Chemical Processing, Coatings Applicator, Composite Repair, Heat-Treating, and Welding.

eQualified runs an information desk at Nadcap meetings and in September 2019 will be inviting feedback from industry on its future development path through a survey.

Follow us on LinkedIn or join our general mailing list to stay up to date. Email us at [eQualified@p-r-i.org](mailto:eQualified@p-r-i.org) for more information or to find out how you can get involved.

### **HELP US IMPROVE NADCAP**

The Nadcap program is always looking for improvements. While PRI staff work hard to keep up with this goal and your expectations, we welcome any feedback which could help us improve the program further for the benefit of the entire Nadcap community.

Contact us at [continuousimprovement@p-r-i.org](mailto:continuousimprovement@p-r-i.org) with any feedback on how to improve the Nadcap program.

### **EQUALEARN AT NADCAP MEETINGS**

At the October 2019 Nadcap meeting in Pittsburgh, eQuaLearn will change the way we deliver training. We will be implementing a new registration process to ensure participation and deliver a better customer experience. To secure your course registration, a \$50 USD fee will be applied at the time you register to attend the course. After the course, you will be refunded with a \$50 USD discount voucher which can be redeemable on a future eQuaLearn course.

If you have any questions or feedback, please feel free to contact us at [eQuaLearn@p-r-i.org](mailto:eQuaLearn@p-r-i.org).

### **CHANGING TO EMAIL DISTRIBUTION**

Based on the results of a recent customer survey, we will be changing the way we distribute the Nadcap newsletter. Starting in 2020, we will no longer mail out hard copies of the newsletter; instead, we will release it via email. A copy will continue to be posted to the PRI website as well. To make sure that you continue to receive the Nadcap newsletter, please add [prinadcap@p-r-i.org](mailto:prinadcap@p-r-i.org) to your "Safe Senders" list.

## NADCAP NEWSLETTER

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This newsletter, and past issues, are available to download on the PRI website at <http://p-r-i.org/nadcap/>

Please contact PRI at [privacy@p-r-i.org](mailto:privacy@p-r-i.org) if you no longer wish to receive the Nadcap newsletter.