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COVID-19'S EFFECT ON PRI/NADCAP



While the aerospace industry pushes through the coronavirus pandemic, it is important that the highest levels of quality are maintained throughout all Nadcap-accredited processes.

By JASON SCHULZE

At this point in 2020, we have all felt the effects of the COVID-19 pandemic both personally and professionally. As of the writing of this article, there have been nearly 10 million cases with more than 220,000 deaths in the U.S. alone [1], and, according to the CDC, cases in the U.S. are rising. For more than nine months now, we have seen its effect on our economy and business alike. For thermal processors in the aerospace industry who are Nadcap accredited, there have been frequent questions regarding anything from audit scheduling and auditor/supplier safety to audit extensions. With that, PRI and its staff have not been immune to the effects either.

I recently spoke with Scott Klavon, the director of the Nadcap Program and Aerospace Operations at Performance Review Institute about the effect the COVID-19 pandemic has had on PRI and Nadcap as well as suppliers. We discussed ways to mitigate potential issues as we work through this pandemic.

How has COVID affected the Nadcap program?

COVID-19 has had a profound impact on the number of Nadcap audits conducted in 2020. Despite the challenges presented by COVID-19 such as governmental travel/access restrictions, auditee site access restrictions and auditor cancellations, the Nadcap program is on track to successfully conduct more than 4,000 face-to-face audits in 2020.

How has the COVID situation affected audit scheduling? What sort of actions has PRI had to take to mitigate scheduling issues?

The COVID situation has had a significant impact on audit scheduling with the need to reschedule audits coming from a number of directions:

- › Travel restrictions imposed by regional or national authorities, making journeying to the auditee facility impossible.
- › Quarantine rules imposed by regional or national authorities, making the impact of conducting a particular audit so significant on the rest of the audits scheduled that it is impractical to carry out.
- › Auditees experiencing operational issues requesting audits to be rescheduled/canceled.
- › Auditors unable to travel due to being located in places with shelter-at-home orders or similar, having recently traveled to locations that subsequently declare high transmission rates or with concerns related to travel.

PRI scheduling has had to be creative in their approach to find workarounds and satisfy as many of our customers as possible, while prioritizing the safety and wellbeing of all Nadcap audit participants. This has necessitated measures such as rescheduling audits to group them according to location and relative to the auditor's prior location. With the situation evolving rapidly around the world, even within national borders, this requires continual focus and audit schedule adjustment.

If audits need to be delayed, what is the typical extension period

SCOTT KLAVON BIO

Scott Klavon is the director of the Nadcap Program and Aerospace Operations at Performance Review Institute.

Klavon has overall management responsibility for the Nadcap program as well as responsibility for identifying additional aerospace sector needs and creating industry managed solutions.

Prior to joining PRI, Klavon held a broad variety of positions at SAE International over a 22-year career culminating with a position as part of the executive management team. During Klavon's tenure at SAE,



the majority of his time was spent focused on management of SAE's Aerospace Standards program.

Klavon helped lead the SAE aerospace standards program to become the largest aerospace consensus standards development program in the world. Prior to joining the staff at SAE, Klavon was an aviation maintenance engineer at the Naval

Aviation Depot Pensacola supporting U.S. Navy and Marine Corps H-1 aircraft. Klavon began his professional career as a commissioned officer in the U.S. Navy.

Klavon holds a Bachelor of Science degree in Aerospace Engineering from The Pennsylvania State University and is a graduate of the University of Pennsylvania Wharton School Executive Development Program.

Klavon is an Associate Fellow of the American Institute of Aeronautics & Astronautics, a Fellow of the Royal Aeronautical Society, and served as a Board of Director for the American National Standards Institute. Klavon is a Chartered Engineer in the United Kingdom.

(i.e. three months, six months, etc.)?

At this time, the process defined in Operating Procedure (OP) 1107 is being followed. The staff engineer has the ability to grant up to a three-month extension, and the task group can grant additional extensions up to a year total from the original expiry date.

A key point, however, is that extensions do not change the scheduling quarter or expiry date of the next audit. For example, if an accreditation is set to expire on April 30, 2020, and a six-month extension was granted due to the next audit being audit of quarter, the expiration would still be April 30, 2021 if the audit received a 12-month accreditation; it's not based on the extension date.

If suppliers need to reschedule their audits due to COVID related issues, is the reschedule fee being waived?

Between March and October 2020, the reschedule fee was waived

for all COVID-related Nadcap audit rescheduling and cancellation requests. In October, an adjustment was made, permitting only audits that had to be rescheduled or canceled due to governmental or travel restrictions to be exempted from the reschedule fee.

In addition, COVID-19-related requests to reschedule audits prior to 30 days of the audit start date, where there are no governmental or travel restrictions, will incur a reduced fee to cover the associated costs. Meanwhile, COVID-19-related requests to cancel audits within 30 days of the audit start date, where there are no governmental or travel restrictions, will incur the standard fee as defined in the Auditee Agreement (s-fm-1103).

Are virtual audits being discussed?

PRI is working with the Nadcap Management Council to explore how we can continue to meet the needs of our customers during these challenging times. Virtual audits are one potential solution.

The Nadcap Management Council continues to drive toward identifying the optimal solution for the current circumstance. In the meantime, companies holding Nadcap accreditation have been able to request an accreditation extension of up to 12 months. This pre-

factors are taken into account, such as the availability of the qualified auditors, location of the auditors relative to the auditee, local and national COVID-related restrictions, and pre- and/or post-travel quarantine requirements.

Has the COVID situation affected staff engineers in any way, and if so, how?

There has long been a goal to have PRI staff engineers qualified as Nadcap auditors, and many of them are. They are subject to the same requirement to conduct a minimum number of audits per year in order to maintain their qualified auditor status, as the other auditors are. During this COVID period, they have been fulfilling that requirement and supplementing the existing auditor capacity as needed. With fewer Nadcap audits being conducted compared to recent years, they have also had the opportunity to spend time on process improvements and other value-added activities.

What can auditees do to ensure the audit scheduling and auditing process run smooth through the COVID situation?

As the COVID-19 pandemic evolves, the safety and wellbeing of all our stakeholders remain our highest priority.

Where it becomes apparent to the auditee that the audit will not be able to take place as scheduled, we are asking that they communicate that to PRI as soon as possible. This not only facilitates our audit administration but means that we may be able to offer the auditor replacement work and satisfy another customer by offering them that audit slot.

As we continue to conduct onsite audits in locations where the situation permits, we have a shared responsibility with the auditees to do as much as we can to mitigate the risk to all audit participants. We have asked that auditees assure the following measures are in place while the auditor is onsite:

- › Require anyone who will be in contact with, or working close to, the auditor to wear face masks.

- › Maintain social distancing; ensure that meeting rooms and the shop floor permit adequate spacing.

- › Respect the request of the auditor to social distance; the auditor must be able to move around freely on the shop floor to conduct the audit.

- › Wash hands frequently with soap and water; use an alcohol-based hand sanitizer if soap and water aren't available.

- › Minimize the need for the auditor to handle physical items such as documents; provide them electronically where possible.

- › Provide a clean work area for the auditor that should be re-sanitized at least once every 24 hours where possible.

What sort of safety precautions are auditors taking on site?

We have asked our employees and independent contractors who are conducting Nadcap audits to observe the following precautions:

- › Wear a face mask while onsite.

- › Maintain social distancing.

- › Respect the request of the auditee to social distance.

- › Adhere to travel restrictions and quarantine rules.

- › If they feel ill or have flu-like, respiratory, or other symptoms, consider self-quarantine and/or stay at home; avoid exposure to those presenting the above symptoms.

COVID-19 SAFETY MEASURES

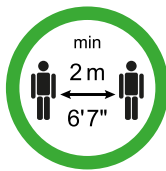
10 IMPORTANT DO'S AND DON'TS



Wash hands thoroughly



Use soap or hand sanitizer



Keep safe distance from other people
min 2 m
6'7"



Stay at home if possible



Use face mask or respirator



Avoid large crowds



Do not meet infected or sick people



Do not touch your face: mouth, eyes, nose



Do not travel unless necessary



Do not touch the front part of a mask

vents accreditations lapsing, but it can only be a temporary answer as it extends the period of time where the facility has not had a Nadcap audit. This obviously creates risk for all stakeholders – from the special processors to the OEMs – so it is not ideal. It is also accreditation time “borrowed” against the next accreditation period, meaning that the time between the next two audits will be reduced. Again, this is not desirable in ordinary circumstances, but these are unusual times.

Some auditors are of retirement age and are at higher risk. Being that auditors are a major resource, has PRI seen a decline in auditors accepting assignments? If so, how has PRI managed this?

Nadcap auditors are independent contractors who have spent their careers developing their expertise within their special process field in the aerospace industry. They enjoy the opportunity that the Nadcap program provides: to travel, to maintain their industry knowledge and professional network, and to control their own work schedule.

PRI has coordinated with them to ensure that they, along with other Nadcap audit participants, are as safe as possible. A number of

- › Avoid large-scale gatherings.
- › Avoid contact with livestock and wild animals.
- › Wash hands frequently with soap and water; use an alcohol-based hand sanitizer if soap and water aren't available.
- › Handle physical items such as documents as little as possible; request them electronically where possible.

Is the COVID situation affecting suppliers' ability to respond to audit NCRs?

NCR responses are required to follow the requirements of OP 1106, which does not allow for extensions on response time. The cumulative delinquency day system – which permits up to 45 additional days – is available for those who are unable to respond by the required due date. This system is used in place of the ability to grant extension.

However, exceeding seven cumulative days of delinquency prohibits the ability to achieve 24-month merit, exceeding 14 cumulative days of delinquency restricts the ability to obtain 18-month merit, and exceeding 30 cumulative days of delinquency could result in failure. However, Nadcap Task Groups have the ability to consider the current pandemic situation when making determination on merit and failure.

I am a PRI Training Lead Instructor and teach multiple courses. So far this year, I have had the opportunity to facilitate two online courses for Introduction to Pyrometry, which went well. Has PRI seen a decline in PRI Training course attendees through this COVID Situation?

As with the Nadcap program, PRI Training has been affected by the inability of individuals – both instructors and learners – to travel due to restrictions related to COVID. As you indicate, PRI Training was able to pivot relatively quickly to virtual training where the trainer and the learners are in separate locations, and the training is conducted live online. We are pleased to report that overall, demand for our training has remained high, and, in some cases, offering the courses online has allowed us to support a broader global audience.

Face-to-face training is still taking place where circumstances allow. We are being guided by local and governmental rules and guidance. Our customers and instructors and venue support are able to offer training with comprehensive social distancing measures in place. Private in-house training, where a number of people from the same company are trained at the company site, provides an even safer option, as only the instructor is new to the venue.

We recently also piloted a blended model where some of the learners were in the same room as the instructor, and others were participating virtually. This is, in a way, the optimal solution as it allows people to benefit from the training in the way that best meets their own needs while complying with COVID-related restrictions.

Being that the annual PA PRI/Nadcap meeting was held virtually in 2020, did PRI see any challenges when compared with the face-to-face meeting normally held?

Conducting Nadcap meetings virtually is not a new idea. It is something that has been considered for a number of years, and in fact, the Nadcap Management Council and Task Groups regularly hold their own meetings virtually in between the face-to-face Nadcap

meetings that have traditionally taken place three times per year. COVID hastened the implementation of full Nadcap meetings online. This has presented challenges, as you would expect. It is a significant shift in the organization and operation of the Nadcap meetings. In addition, Nadcap meetings are very interactive, with a large volume of subscribers and suppliers actively engaging in discussions for the betterment of the Nadcap program, the audit criteria, and much more. Facilitating these discussions online instead of face-to-face is a challenge. As Nadcap is a global program, another key challenge has been that the meeting times have not been ideal for participants in some parts of the world. We are grateful for the professionalism and support of our stakeholders as we adapt our practices for optimal online meetings.

If I can focus on a specific commodity: the Nadcap Heat Treat Task Group has been working on revising AC7102/8 due to the revision of AMS2750. In attempting to mitigate issues surrounding COVID, has PRI seen any challenges regarding Task Group discussions for the revision of AC7102/8 as well as its release?



The COVID pandemic has not affected the revision of the pyrometry audit criteria – AC7102/8 - to bring it in line with AMS2750 Rev F. The checklist is being reviewed and modified by a Nadcap Heat Treat Task Group sub-team which meets between Task Group meetings, either by call or virtually or similar. This working practice has not been changed by COVID, and the sub-team support remained strong. The Task Group then has the chance to review the checklist and make comments via a formal ballot process and at Task Group meetings, which are being held virtually. The AC7102/8 checklist revision is on schedule.

This is unrelated to COVID, although a question that may come up from time to time. While suppliers should not discuss findings anywhere except eAuditNet, would PRI encourage suppliers to communicate with staff engineers when an interpretation of requirements is needed from the task group?

Absolutely. The staff engineers are a valuable resource prior to, during, and after the Nadcap audit:

- › Before the audit, suppliers are expected to use the Nadcap audit criteria to conduct their self-audit in preparation for the auditor's

visit to their facility. The audit criteria are made available on eAuditNet for that purpose. If questions arise as to how to interpret any part of the audit criteria, it is far better to contact the staff engineer to assure the correct interpretation than waste time on misguided preparation.

› During the audit, if there is a difference of opinion between the auditor and the supplier, the staff engineer can be contacted to make a decision.

› After the audit, there will be contact with the staff engineer in eAuditNet, where the supplier posts responses to any non-conformances identified by the auditor during the audit, and the staff engineer reviews those and poses additional questions as needed. Just like before the audit, if there are interpretation questions, it is recommended to contact the staff engineer directly for clarification. But to be clear, the staff engineers are not able to give you the answer to a non-conformance. There rarely is one answer as so much will depend on your particular facility, procedures, capabilities, and so on.

The Nadcap auditor conference is held annually. How was this accomplished in 2020?

Due to the ongoing COVID-19 pandemic, there continued to be restrictions on travel and large gatherings in the build-up to, and at the time of, the Nadcap auditor conference. Consequently, after consultation with the Nadcap Management Council, PRI canceled the 2020 Nadcap auditor conference. There is great value in holding annual auditor conferences face-to-face, so it was disappointing to miss the opportunity to interact in person with auditors, subscriber representatives, and PRI staff members. In lieu of the 2020 audi-



tor conference, Nadcap Task Groups provided commodity-specific refresher training online.

Is there any other information you would like to share with suppliers that may help us all through this COVID situation while maintaining quality and conformance?

In August 2020, the MedAccred program (which is like the Nadcap program but for medical device manufacturers) published the following guidance for heat treaters in Industrial Heating magazine. It is also relevant for aerospace heat treaters.

MAINTAIN YOUR SELF-AUDIT ACTIVITY

Even if it is limited to a desktop review at this point, ensuring a continued focus on your procedures and records means that they remain front of mind and may help to avoid silly mistakes once normal operations resume. This could be an opportunity for heat treaters to ensure that the following records are current:

- › List of equipment.
- › List of purchased services.
- › List of quality personnel and approved heat-treating personnel on each shift.
- › List of customers and specifications.
- › List of heat-treat specifications that you work to.
- › Copy of internal general procedures for heat-treat processing, pyrometry, and testing/inspection of heat-treated product.
- › Organization chart.
- › Personnel Training.

COMMUNICATE OPENLY AND OFTEN

Your customers, registrar, regulator, suppliers, and other stakeholders want to know how you are doing. The performance of your business affects more than your business. We are all experiencing many of the same challenges, so you may be able to obtain extensions, waivers, etc., to cover you for this period.

ADAPT WHERE POSSIBLE

When “business as usual” is just not an option, work with your customers and regulators to identify what adaptations you can make that enable you to continue to provide the service they need at the level they expect. While you maintain control of any activity granted a temporary deviation from a requirement, avoiding the disaster of not returning to compliance once this situation has passed will be critical for ongoing conformity.

UPDATE YOUR PROCESS CONTROLS

You must be able to demonstrate that you have reviewed the process control requirements for each of your customers and that you have an internal procedure and “system” that documents compliance, including to other testing and controls required by specifications.

Make sure that you have updated your internal documents to reflect any contingencies you have in place for the current situation. Some of the process controls to think about include:

- › Pyrometric Testing.
- › Lot Based or Periodic Tensile Testing.
- › Periodic Metallurgical Testing (e.g. IGO/

IGA Testing, Eutectic Melting, Cladding Diffusion, High Temperature Oxidation, etc.)

- › Decarburization/Surface Contamination Testing.
- › Leak Up Rate Testing.
- › Hydrogen Pick Up Testing.
- › First Lot Forging Qualification Testing.
- › Carburizing and AC7101/4: Gas and/or Ion/Plasma.
- › Metallography / Microhardness.
- › Surface Contamination of Steels (IGA/IGO, Decarburization).
- › Titanium Testing (Alpha case and Hydrogen pickup).

LEARN LESSONS FROM AVAILABLE DATA

The Nadcap program publishes an overview of some common non-conformances that arise in heat-treatment audits. Any heat treater looking for opportunities to assure the robustness of their operation should consider the following:

› Conduct thorough, regular self-audits covering all aspects of your heat treatment and follow up on any concerns with root cause analysis (5 why's or Ishikawa are great tools for this) and implement sustainable corrective actions. Validate that the corrective actions are actually sustainable at a later date.

› In ordinary circumstances, do not limit your self-audit activity to paperwork – spend time on the shop floor observing the operators at work.

› Make sure your internal procedure specifies the method for determining heat-up rate, start of soaking time, end of soaking time, and cooling rate; omitting these details is a common non-conformance in Nadcap audits.

› Keep the calibration of your equipment and associated records up to date. This includes things such as vacuum instruments, flowmeters, dew point meter(s), and the related master gauges.

› Check that instrument calibration records and stickers, and the calibration of primary, secondary standard and field test instruments show conformance to the requirements of AMS2750, or more stringent customer requirements.

› Verify that there is a system in place to review pyrometry procedures and the results of tests (whether performed in-house or by an outside source) to ensure that AMS2750 or more stringent customer requirements are being met.

› Ensure that the internal TUS procedure conforms to the requirements of AMS2750 or more stringent customer requirements and

that temperatures indicated by all furnace thermocouples are recorded and included as part of the TUS record and that the thermocouple correction factors are stated unambiguously and used correctly.

› Validate the internal SAT procedure conforms to the requirements of AMS2750 or more stringent customer requirements and that the SATs are performed on the temperature control and recording systems as required by the applicable instrumentation type, as well as any additional recording systems used for product acceptance in each control zone of each piece of thermal processing equipment.

SUMMARY

While the aerospace industry pushes through this pandemic, it is important that we all maintain the highest level of quality throughout all of our Nadcap accredited processes. PRI staff is working hard to manage their resources and help suppliers by having an open line of communication and maintaining flexibility. 🔥

REFERENCES

[1] [covid.cdc.gov/covid-data-tracker/#cases_casesinlast7days](https://www.covid.cdc.gov/covid-data-tracker/#cases_casesinlast7days)

ABOUT THE AUTHOR

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