

eQuaLearn® Newsletter

WELCOME TO THE EQUALEARN NEWSLETTER.

The newsletter is released quarterly and features technical and other articles of interest.

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March 2019

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eQuaLearn has introduced a new webinar about heat treatment control and inspection



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Check the schedule to see which of the free training sessions will benefit you the most



Chemical Processing Open Discussion Forum

A review of the session held at the Nadcap meeting in New Orleans in February 2019

What do you want to read about?

The intent of the eQuaLearn newsletter is to provide timely, valuable and interesting content to support the Nadcap community to continually improve their operations. If there is a specific topic you would like to read about, please tell us via email to eQuaLearn@p-r-i.org.

Heat Treatment

Control and Inspection

ONE OF THE FEATURES OF ANY SPECIAL PROCESS IS THAT PRODUCT RELEASE RELIES ON THE CONTROL AND INSPECTION OF ASPECTS THAT DO NOT AFFECT THE PERFORMANCE OF THE PARTS.

The aim of all heat treatment is to change the properties of the parts in some way. Since we are unable to fully evaluate these changes by inspecting the parts, we are forced to control and inspect other parameters.

In the same way that heat treaters need some understanding of the processes they are performing (i.e., hardening, aging, annealing), inspectors and technicians who are releasing the parts also need to understand what has been done and what can go wrong. They should understand what the process is trying to achieve and what properties are important so that variations and discrepancies can be noted and acted upon.

eQuaLearn's new course, [Heat Treatment Control and Inspection](#), addresses this issue. This course is aimed at anyone who is engaged in or responsible for evaluating heat treatments and the parts that have

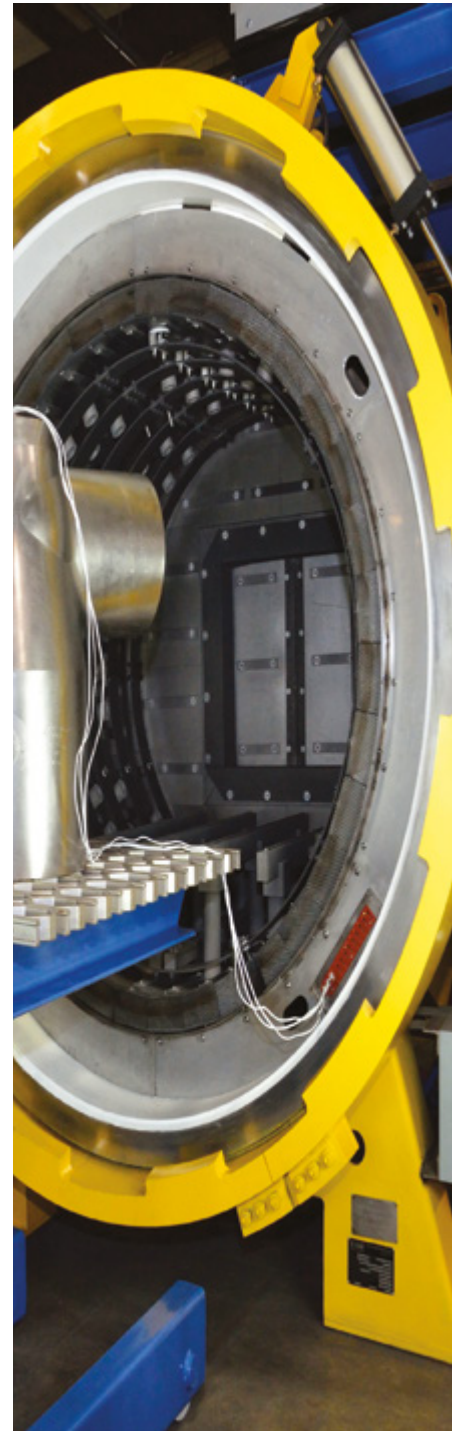
been processed. The objective of the course is to ensure that inspectors and technicians understand both what they are doing as well as the context for the work and the reasons and background that make certain checks necessary.

The primary context and all the examples are focused on aluminum heat treatments; however, the information would be of interest to all.

The [Heat Treatment Control and Inspection](#) webinar training begins with a brief survey of the metallurgy of heat treatment, explaining why high temperature solution and water quench make some metals soft (aluminum) and other metals hard (alloy steels). Also, clarifying why small (5°C/10°F) temperature excursions above the defined range during treatment can destroy aluminum parts, but probably do not matter for steels.

Then the furnace type or construction becomes the next topic. In most companies, employees are only familiar with the furnace types they see every day. Understanding that furnaces and ovens can vary greatly and the fact their ovens may be 'unusual' or 'different' will have an impact on the significance of the tests being done.

The basic types of heat transfer are



described along with their impact of on all stages of heat treatments – heating, holding and cooling.

Knowing how heating and cooling works then leads to measurement of the process. We manage heat treatment by locking down a recipe and then controlling and monitoring the process conditions – temperature and time. Evaluating these relies on pyrometry and the rules of AMS2750 which would require a couple days to describe. This webinar highlights the essential tests needed – calibrations, SAT, TUS - and places them in context.

Having done a heat treatment, someone must review what happened. That means not 'which program was run' but 'what times and temperatures, etc., were achieved'. This is often overlooked, so we present the parameters that require checking or confirming for each thermal cycle.

Finally, and the importance is not to be minimized, the role of the traditional testing is described. Tensile tests, hardness, conductivity, metallography and even visual inspection all have a role. Exactly how each test is performed in detail is, like pyrometry, too involved at this stage.

The variations of equipment and product forms means that it would take at least one day to cover just the majority of possibilities. However, the role of each test, why it is being done, and how the tests interact to identify and clarify problems that may affect batches are described and defined. For example, and built on the underlying metallurgy, knowing that same hardness can often be found under different heat treatment conditions leads to the other tests that may be

The aim of all heat treatment is to change the properties of the parts in some way.

needed to fully evaluate a product.

eQuaLearn's [Heat Treatment Control and Inspection](#) webinars will be conducted on 8 May 2019, 10 July 2019, and 3 December 2019.

Registration can be completed on the eQuaLearn website.

For additional information on Heat Treatment Control and Inspection, Introduction to Pyrometry or any other eQuaLearn training, please [contact](#) a team member.

Article written by:
Martin Bridge, eQuaLearn Instructor
and Lead Nadcap Heat Treat Auditor



Involved with Nadcap heat treat?



Did you know the Nadcap Heat Treat AC7102/2S has been revised? These changes are addressed in detail in eQuaLearn's [Nadcap Audit Preparation- Heat Treating](#) course. Upcoming training dates and locations include Toulouse, France on 1-2 April 2019, Pittsburgh, PA on 29-30 April 2019 and Qingdao, China on 27-29 May 2019.

Nadcap Audit Preparation

From Newbie to Silverback



YOU ARE THRILLED BY YOUR NEW JOB AS A QUALITY MANAGER WHICH PROMISES SO MUCH NEW AND EXCITING PROJECTS TO CHALLENGE YOU.

This is great you think, as everything you will be responsible for is being explained by Human Resources. Somewhere in that list of “new things”, you overheard the term “Nadcap” but didn’t really make much of it. Just another acronym!

That is until the notification arrives

in your email advising you of the recertification to Nadcap is required within a few months (providing you updated your contact email in your eAuditNet profile).

This is where reality checks in. If you’re lucky, your predecessor did a good job at maintaining the stringent requirements imposed by the Nadcap certification. But, most likely, there is a reason why you have this job and he/she doesn’t anymore!

Getting ready for a Nadcap audit is no easy task. There are a few ways to prepare, but there are two common approaches. The first being, you rely on what was done, presume peoples

are doing what they were supposed to, and hope for the best.

The second approach would be to check everything as though the audit was being conducted for the first time, and this would include multiple checks, such as touching the answer, validating responses, comparing it with the audit criteria, including validation with the Auditor’s Handbook (if available). I would choose the second approach every time, as I can be confident that the audit will go well.

The concept is simple, either you thoroughly prepare prior for an audit and have a great result, or you can

Impacted by Nadcap MTL update?



Nadcap Materials Testing Laboratory AC7101/1 REV G was released on 28 January 2019. These changes are addressed in detail in eQuaLearn's [Nadcap Audit Preparation-Metallic Materials Testing Laboratories](#) course. Upcoming training dates and locations include Torrance, CA on 14-15 May 2019, Nagoya, Japan on 3-5 July 2019, and Pittsburgh, PA on 22-23 August 2019.

potentially have a bad audit and work very hard after trying to move forward.

I can already hear you say: "Why would I bother doing all this preparation beforehand, if the Auditor will simply indicate the places that need work?"

Good question! Due to the stringent requirements for response delays and allotted cycles, chances are that you may fail an audit because of a lack of preparation, and your inability to identify the proper Root Cause and Corrective Action (RCCA) to close the audit's findings. Not to mention you will look bad towards your Subscribers and Customers.

This is where eQuaLearn comes in. eQuaLearn offers three webinar courses, Nadcap Audit Preparation, Internal Audit Systems Overview, and RCCA Nadcap Style, that will help you achieve your goal of a successful Nadcap Audit. These trainings apply to most audits, either be Nadcap or Quality Systems. The Nadcap Audit Preparation Course (NAP) will help you structure your

pre-audit preparation and ensure you won't miss a step. With this training, the guess work, or "artistic approach", has been removed from audit preparation. eQuaLearn has turned this process into a science whereby a step-by-step approach will guide you to a successful audit and increase your confidence of being "audit ready" anytime required.

Also, eQuaLearn offers two additional webinar trainings, [Internal Audit Systems Overview](#) and [RCCA Nadcap Style](#). These webinars were designed to deepen your knowledge of two of the fundamentals of Quality Systems Management. [Internal Audit Systems Overview](#) provides you with the tools to help prevent findings and even though you have made every effort in preparation and prevention, nobody is impervious to audit findings. Therefore, [RCCA Nadcap Style](#) will allow you to respond to Nadcap findings and reach your ultimate goal, your Nadcap certification.

You are not the only person in your organization working towards the goal of achieving a successful audit.

Why not make your colleagues stakeholders into this endeavor and demonstrate what has to be done before your audit by attending the Nadcap Audit Preparation course? Group training by an outside organization is one of the most efficient ways to indoctrinate new working habits or knowledge into an organization.

eQuaLearn provides factual training by subject matter experts who often are or were a Nadcap Auditor or Quality Manager themselves. You can benefit from years of experience from both sides of the fence, it is an investment well worth the efforts.

But what do the silverbacks have to do with this? Getting back to the title, it is easy to understand why the Nadcap Audit Preparation course would be a life saver for newbies, but what does the silverbacks have to do with this?

Silverbacks are mainly referenced as the most experience leader in a social group, well in this case, the gorillas! In our case, I could reference leaders with experience, specifically the Quality Managers that have been

conducting the audits for years. In turn, this may sometimes cause them to be less fearful of an audit, thinking everything is under control, since there has been no major Non Conformances (NCR) in the two-year spans since the last audit.

Moving forward, you now have achieved the difficult task of obtaining the highest reward in the Merit program by being a top-notch organization for a continuous six years in a row. But, unbeknown to you, your company has suffered restructuring in the last two years. This included many staff changes, which were implemented to accommodate the strategic goals set upon by the organization, including reorganizing the Quality department to be more efficient and leaner. We all know what this means, more work for the remaining staff.

Consequently, you now are left with more work and fewer people to complete the work. Since you rely on the fact that you have achieved merit and you had no major NCRs for awhile, you decide to “wing it” and accelerate the internal audit process and rely on a “people should know” approach. In the audit world, this approach is a big No-No! As a lot of audit failures occur after a lapse of two years from the Merit program, we tend to forget the urgency and the rigor required to maintain an organization to Nadcap standards. In addition to this, the requirements for a Nadcap Audit are dynamic and will evolve overtime, either in their strict or acceptable interpretation. A refresher course, such as the Nadcap Audit Preparation, for you and your team will re-emphasize the different

requirements set upon by Nadcap and make you remember the first section of this article; work before the audit on your own schedule or be excruciated by a merciless time master.

The best reason to attend the Nadcap Audit Preparation course is the trainer’s experience and knowledge. For a very reasonable cost, you have access to renowned and experienced individuals that will invite you on numerous occasions to pick their brain on the given subject and all this at no extra cost.

eQuaLearn, with WebEx technology, offers these courses as webinars that include interactive interfaces which enable you to benefit from the same level of knowledge and understanding on the subject at hand without those pesky airport searches and extended flight time, all this directly in the comfort of your 60 hertz sun (more commonly known as your computer screen).

In conclusion, the best advice I can give you is: come often, come prepared. Please visit the eQuaLearn website for upcoming training dates and a complete list of all eQuaLearn webinar trainings. See you next class!

Article written by: Guy Levasseur,
Quality Instructor for eQuaLearn.



eQuaLearn Membership

[eQuaLearn Membership](#) is a prestigious association with an international organization dedicated to developing quality professionals and improving special process technical skills. Membership is a powerful and efficient way to support the need for continuous staff development and improved productivity. Membership is available for anyone interested in advancing their learning in the quality or special process field. If you are a quality manager, engineer, or employee in any department related to quality or special processes, there is an eQuaLearn membership level to help you and your company meet your educational goals. eQuaLearn Membership provides a way for both companies and individuals to achieve their professional development goals.

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Free Training at the June 2019 Nadcap Meeting in Paris, France

Would you like to attend an eQuaLearn training free of charge? [Registration](#) is now open for training during the Paris, France Nadcap Meeting! eQuaLearn will be providing seven complimentary courses in June 2019 in Paris. For any additional questions regarding training, please contact an eQuaLearn team member at eQuaLearn@p-r-i.org or visit our website www.eQuaLearn.com.

Free Training Schedule in Paris, France

Course Title	Course Summary	When
Nadcap Audit Preparation	Provides a complete overview of Nadcap requirements related to the audit.	June 3 (2:00pm-5:00pm)
Chemical Processing Open Discussion Forum	A panel of several Subscribing Voting Members of the Nadcap Chemical Processing Task Group, Chemical Processing Staff Engineers, and a Chemical Processing Auditor will address the following topics in an open discussion forum: <ul style="list-style-type: none"> • Review of the Top Non Conformance Responses • Review of Significant Audit Criteria Sections • How to do a Nadcap Audit (Auditor's Perspective) • How to Manage a Nadcap Audit (Supplier's Perspective) • Open Question & Answer Session (Subscribers, Staff Engineer's and a Nadcap Auditor will be available to address questions) 	June 3 (1:00pm-5:00pm)
Nadcap Penetrant (PT) & Magnetic Particle (MT) Self-Audit Risk Assessment	Reviews the potential failure modes of some of the most common findings associated with penetrant and magnetic particle Audit Criteria, and the associated Non-Destructive Testing quality system questions in the AC7114. This is a dynamic course focusing on predicting the failure modes of common findings starting from AC7114, through the AC7114/1 and AC7114/2.	June 4 (9:00am-12:00pm)
Root Cause Corrective Action (RCCA) Nadcap Style	Provides a clear understanding of the basic concepts of (RCCA) and application of how to apply those concepts to eliminate errors and defects. This training also provides a basic understanding of the requirements needed to respond to a Nadcap audit non-conformance (NCR).	June 4 (2:00pm-5:00pm)
Contract Review for Aerospace Suppliers	Shows Contract Review as a multi-disciplinary process which should ensure that all potential problems are identified and addressed before any commitment to supply is made. This course describes what must be done. The requirements are explained and illustrated by discussions around common problems and weaknesses. Participants will receive a certificate of completion.	June 4 (9:00am-5:00pm)
Internal Audit Systems Overview	Assists in the process of building an internal audit system and how to structure the key elements of the system for success while also explaining the vital relationship between Quality and Management.	June 5 (9:00am-12:00pm)
Heat Treating Control & Inspection	Provides a summary of the controls and checks expected during aerospace heat treatment, including batch and periodic tests. The context of these controls is explained through the introduction and clarification of the underlying metallurgy and the important parameters affecting heat treatment. The controls required, for both processes and parts, are introduced and described.	June 5 (2:00pm-5:00pm)
Process Failure Modes and Effects Analysis (PFMEA)	Presents the use of PFMEA as a part of Advanced Process Quality Planning in the Aerospace Industry, as suggested by the IAQG and required by vehicle builders. It describes the concepts of PFMEA, how it fits into Quality Planning, how it contributes to Risk Management. Participants will receive a certificate of completion.	June 5 (9:00am-5:00pm)
Nadcap Audit Preparation (in French)	Provides a complete overview of Nadcap requirements related to the audit.	June 6 (2:00pm-5:00pm)

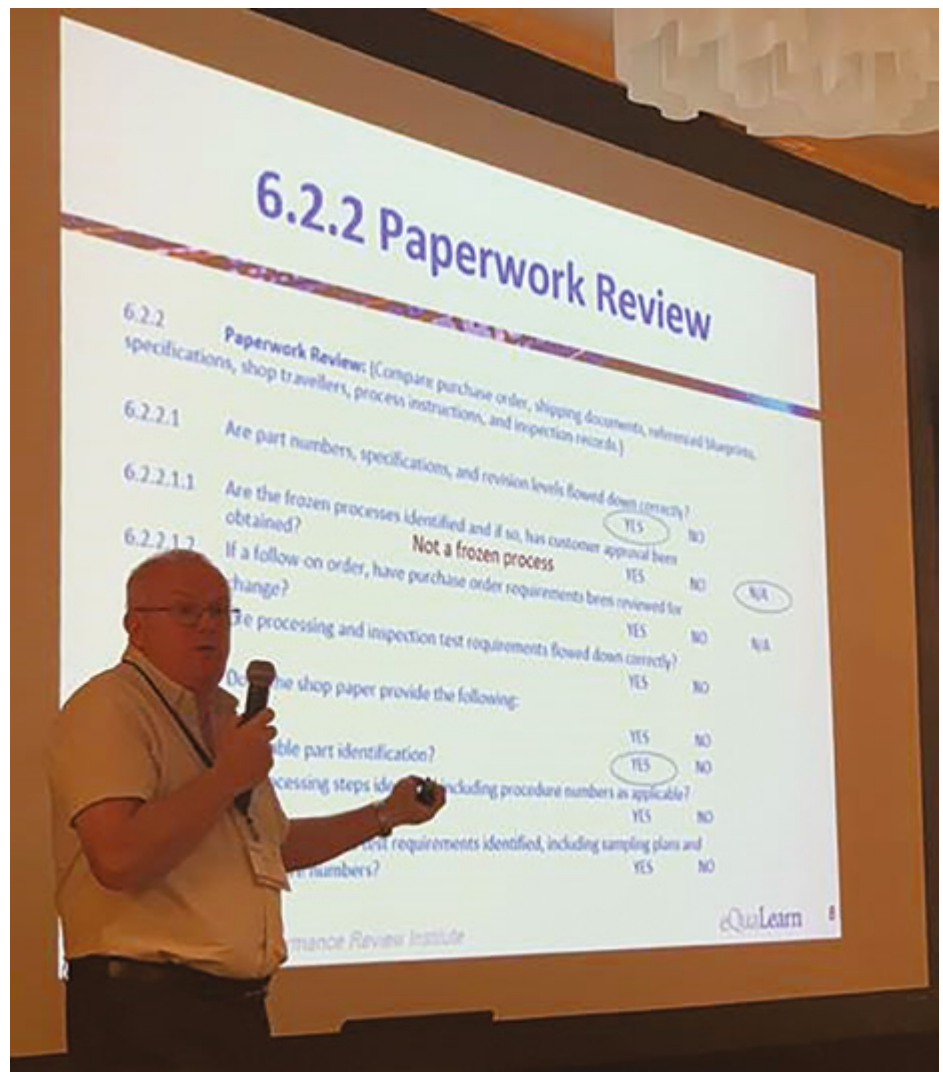
Chemical Processing Open Discussion Forum

“An excellent overview of the common failures observed by auditors and approaches to counteract them.”

TO SUPPORT NADCAP CHEMICAL PROCESSING SUPPLIERS, EQUALEARN PILOTED A FOUR-HOUR CHEMICAL PROCESSING OPEN DISCUSSION FORUM ON 18 FEBRUARY 2019 AT THE NEW ORLEANS, LA NADCAP MEETING.

The purpose of the Forum was to provide participants the opportunity to pose questions on topics related to Nadcap Chemical Processing Audits. Chemical Processing Staff Engineers, a Nadcap Chemical Processing Lead Auditor, and 18 Subscribing Voting Members of the Chemical Processing Task Group were available for open group discussion on various topics and individual discussion at the end of the Forum.

The Forum began with the review of major Chemical Processing NonConformances (NCRs) presented by Ethan Akins, Chemical Processing



Staff Engineer. He reviewed the most common paragraphs and issues that NCR's were written against in 2018. Many of the NCRs reviewed are repeats from prior years. For example, AC7108 Paragraph 3.6.5 had the most NCRs written against it for audits conducted in 2018. This same paragraph had the 3rd highest NCRs in 2017. The presentation was intended to make suppliers aware of the common NCRs and use the information presented when preparing for their audit.

The second presentation was delivered by Nigel Cook, Lead Chemical Processing Staff Engineer. He highlighted the major sections in the AC7108 Audit Criteria:

- Contract and Specification Review and Flow Down to Internal Documents
 - Job Documentation and Recording of Process Parameters
 - Selection, Training and Competence of Personnel
 - Control of Process Solutions
 - Housekeeping and Maintenance
- Nigel provided clarification and tips on the main audit criteria of Chemical Processing and how to conform to the requirements. He pointed out that 20% of audits had a "No" answer for "Having operations/tasks that affect conformity to chemical process requirements (e.g. planning, processing, inspection) been carried out correctly?", in 2018. This relates to conducting proper job audits as part of the self-audit and ensuring the process steps are properly defined.

Tips on conducting job audits as part of the self-audit in preparation for a Nadcap Audit was the next topic on the agenda. Neil Cowan, Lead

Nadcap Chemical Processing Auditor and eQualLearn instructor, shared his experiences as a Nadcap Auditor in relation to performing job audits. He gave the audience an idea of how auditors perform job audits and the relation to some of the most common NCR's found during audits.

The final topic was addressed by Christine Nesbitt, Chemical Processing Staff Engineer. Christine is a former Chemical Processing and Materials Testing Lab supplier. Her presentation was given from a supplier's perspective regarding how to prepare for a Nadcap Audit. Christine covered topics of completing and uploading the self-audit, preparing employees for an audit, and job audit selection with the use of the job tracker.

The floor was then open to the 67 participants for a question and answer session. One major topic of discussion was participant's NCRs. The discussion was general to the topic of the NCRs but helped to direct the participants in proper interpretation of the checklist requirements and prevention of similar issues. Participants were also able to have one-on-one discussion with Subscribers.

eQualLearn will be holding the next Chemical Processing Open Discussion Forum on 3 June 2019 from 1:00-5:00pm CEST at the Paris, France [Nadcap Meeting](#). Registration for this Forum is now available on the [eQualLearn website](#).

Please [contact](#) an eQualLearn team member if you have any questions.



Our Team

If you are registered to attend the Nadcap meeting in Paris, France in June 2019, please visit the eQualLearn Helpdesk to discuss public, hosting or onsite training opportunities with the team.



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For any additional questions regarding training, please contact an eQualLearn team member at eQualLearn@p-r-i.org or visit our website www.eQualLearn.com.



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