

COMPOSITES

Newsletter

January 2010

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From the Chair.....

Introducing the Composites Task Group Newsletter

Although considered to be a fairly new Nadcap Task Group, Composites has been part of Nadcap since 2003 and are now in the sixth year. The Composites Task Group has seen growth and change during the past five years. There have been three Chairs (how the others got out of writing this newsletter I would like to know), 2 Vice Chairs, 2 Staff Engineers and a changing cast of Task Group members. Change is good as it allows us to both draw from the wisdom of members who have been involved from the beginning as well benefit from the perspective of new members who see things with fresh eyes.

What has the Task Group been doing since our inception? The first pilot audit was conducted in January 2004 with a total of 4 audits being performed that year. In 2008 a total of 149 audits were conducted – a dramatic increase that clearly demonstrates the commitment that both subscribers and suppliers have made to support the Nadcap third party accreditation process. The first accreditations were issued in July 2004, and 135 accreditation certificates were issued in 2008. These are clear milestones that speak to the success of the Composites Task Group and the impact Nadcap has had for both suppliers and subscribers.

While all the auditing and accreditation activity was going on the Task Group continued to grow in other areas. In addition to the original Audit Checklist AC7118 (prepreg/adhesive/RFI bonding, metal bonding and core processing), in 2006 a fourth scope (liquid resin processing) was added. The requirement for Audit Standards (AS) were eliminated which helped streamline the process and allows the Task Group to focus more on audit checklist and handbook development and maintenance.

A Sub-Task Group in MTL was started for the testing of non-metallic materials (NMMT). With the support of several members from the Composites Task Group, MTL made a strong effort to champion the development of NMMT related checklists, but due to the complexities of competing requirements between the two Task Groups, the Sub-Task Group found its home back within Composites and still working closely with colleagues in the MTL Task Group to develop additional NMMT checklists and related handbooks.

In regards to the non-metallics testing AC7122 checklist, the first scope AC7122-1 for composites testing was released and several successful audits have been conducted and accreditations issued.

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Nadcap Meeting Schedule

2010	Location
22 – 26 February	Rome, Italy
21 – 25 June	Singapore
18 – 22 October	Pittsburgh, PA - USA



Composite Newsletter – Want to be on the Circulation?

The Composites newsletter is published periodically throughout the year. The newsletters are read by the Nadcap Subscribing Members, Suppliers, Auditors and anybody that happens to click on the latest Composites newsletter on the PRI website (www.pri-network.org).

The aim of the newsletter is to communicate information relating to Composites within the Nadcap program to improve the process and to promote the sharing of best practices at all levels.

Have you stumbled across the Composites Newsletter by chance? Want to receive it on a regular basis? Keep up-to-date with the latest Nadcap Composites information by getting added to the distribution list! To receive notification when a new edition has been published, please e-mail Linda Bliss at lbliss@sae.org with your name, company and email address.

Welcome to the Premier Issue

The purpose of this newsletter is to facilitate the communication of ideas, requirements, and information regarding the Composites Task Group and its affiliated sub-groups.

The Composites Task Group is responsible for the following checklists:

AC7118 – Composites

AC7122 – Non-Metallic Testing

AC7124 – Non-Metallic Materials.

This issue will introduce each of the checklists and provide a summary of its purpose.

From the Chair.....

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There has been strong growth in both subscriber and supplier participation in this global organization. Meetings held in the America, Europe and Asia have provided opportunities for attendance by suppliers and subscribers from all of these sectors. Nadcap has moved from 4 meetings per year to 3 which makes for a very full Task Group agenda. Of course, the work goes on year round and I want to thank all of you (who are often working 2 or 3 different jobs for your respective employers) for the time and effort that you continue to make on behalf of the Task Group. Composites often faces unique challenges due to the many different subscriber specification requirements rather than the common industry standards that other commodities have available. It certainly provides for some passionate debates which keeps things interesting.

With the launch of this newsletter, I encourage and invite participation from anyone who has a topic or issue to share. Moving forward, you can look for this newsletter to address successes, challenges and future of the Composites Task Group.

Regards,

Mike Bemis

To Nadcap or not to Nadcap: that is the question

Composites Atlantic Limited (CAL) has over eighty (80) different customers, each with their own specifications, requirements, control methods and data recording requirements. This means cross-training employees to recognize the different customer requirements and standards.

Then, in 2006 along comes Nadcap! All of a sudden, CAL was mandated by Bombardier and Boeing to follow Nadcap. What did that mean?

It was very difficult to understand at first why Nadcap was being required. After all, for each customer, CAL was following the procedures and passing customer audits, so why get “Nadcap-ized”?

What were the benefits? What headaches lay ahead?

CAL observed three constructive results:

1. Standardization
2. Employee Fulfillment
3. Customer confidence

1. Standardization

The cost of investment was to standardize our job cards (Travelers) for over 80 customers. Even though some customers did not mandate Nadcap, by deploying the standard formatting plant wide, cross-training no longer had the guess work.

Nadcap also made customers more aware of the requirements. It leveled the playing field amongst competing companies. The message was clear: if you did not follow, you would wallow.

2. Employee Fulfillment

When CAL deployed Nadcap in production, in order to make sure that all “bases” were covered, all 266 employees were involved. Small teams were set up in each workcenter with ownership in fulfilling the action items.

We educated, nurtured and succeeded in the accomplishment of accreditation. Nadcap was not integrated as a Prime or Management mandate; it was integrated as a team going to the finish line. We all were winners.

3. Customer confidence

In the end, a worry-free customer is happy customer. Being Nadcap accredited demonstrates to the customer that CAL is committed to their procedures and wants to do business with them.

To this day, the only customer audits that taken place are process qualification and First Article Inspections (FAI). There have been no “sustaining” process audits since Nadcap accreditation.

Top 10 AC7118 Findings

Top 10 Paragraphs Overall

- This chart shows the top paragraphs that are referenced in an NCR.
- This data includes data from NUCAP audits and is representative of the audits conducted in that timeframe.
- 8 January 2007 to 16 October 2009.

Top 10 Paragraphs Overall

11.3.2 - Are documented work instructions available to the operator and does the procedure(s) accurately reflect the manufacturing process? (Including the proper sequence)

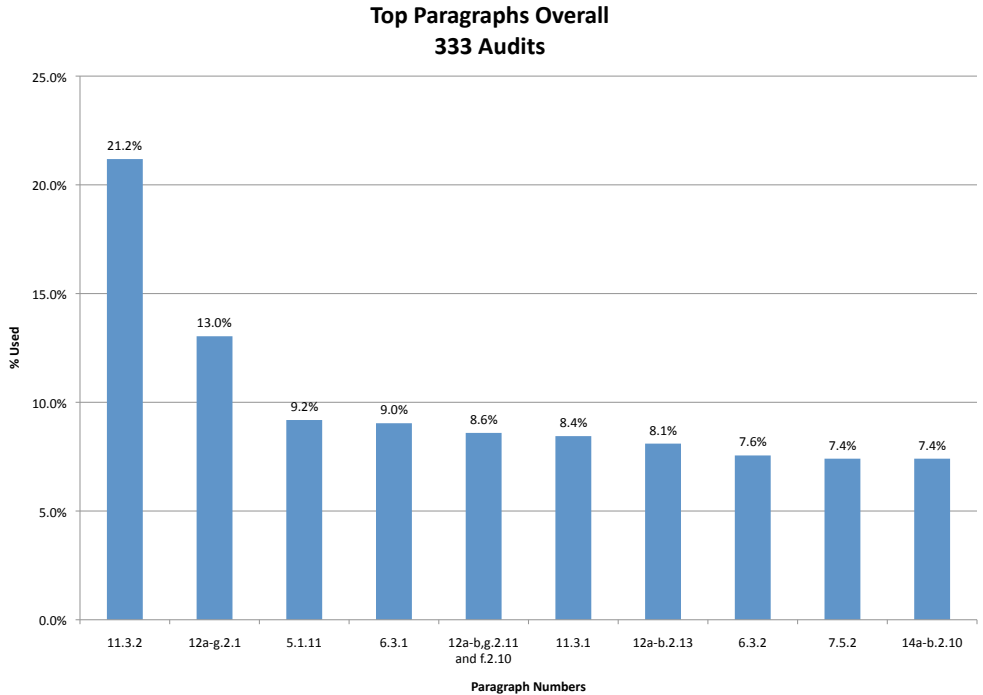
12a-g.2.1 - Do the specification/drawing/design requirements and revision on the purchase order match the received material?

5.1.11 - Are materials stored in a manner to prevent damage or contamination?

6.3.1 - Is there a documented procedure which defines the environmental conditions and prohibited materials for processing in the EMA?

12a-b,g.2.11 and f.2.10 - Are rolls of prepreg materials stored and handled in such a manner to prevent damage to the material?

11.3.1 - Is the manufacturing and/or inspection record complete and followed for all work performed?



12a-b.2.13 - Are rolls of prepreg materials stored and handled in such a manner to prevent damage to the material?

6.3.2 - Is there a documented procedure describing the actions to take when specified temperature/humidity requirements are exceeded?

7.5.2 - Are tools/containers protected from mold release contamination?

14a-b.2.10 - Are rolls/kits of adhesive film and prepreg materials (i.e., cloth, tape, etc.) stored and handled in such a manner to prevent damage to the material and cold flow of resin?

NCRs by Section

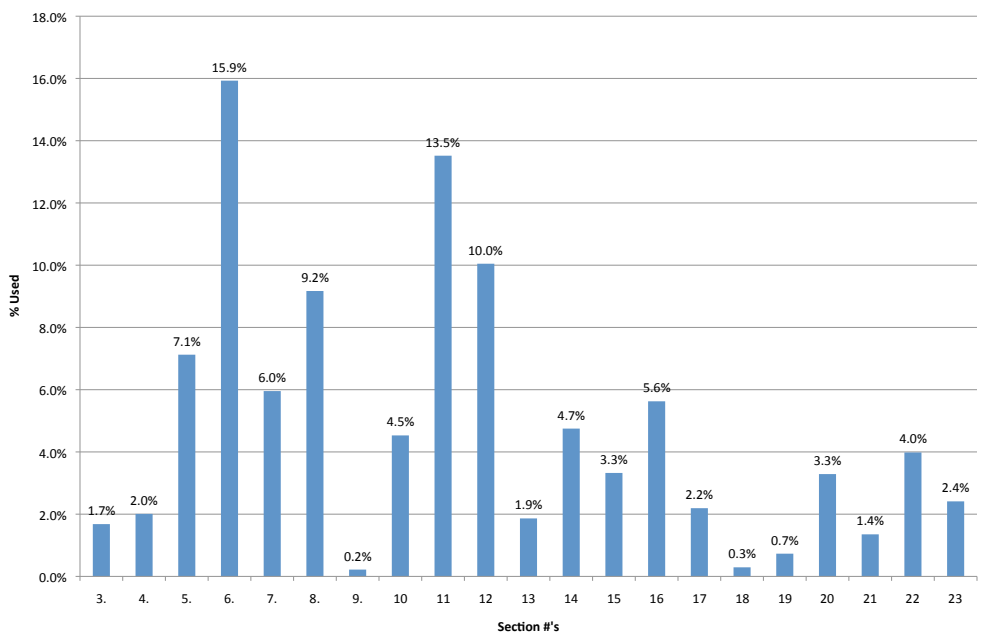
- This chart shows how often a paragraph from that section was referenced in an NCR.
- This data includes data from NUCAP audits and is representative of the audits conducted in that timeframe.
- 08 January 2007 – 16 October 2009

Section Titles

- Supplier Information
- General Quality System Requirements
- Material Control
- Facilities and Equipment
- Tooling
- General Fabrication Procedures
- Trimming and Drilling
- Process Control/Re-Validation Testing

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Overall Sections 333 Audits



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- | | | |
|---|---|--|
| 11. Job Audit Common Requirement | 15. Job Audit for Core Processing | 21. Job Audit for Machining, Trimming, Drilling Operations |
| 12. Job Audit for Receiving Quality Control | 16. Job Audit For Lay-up/Laminating and Secondary Bonding | <ul style="list-style-type: none">• Manual Process• Numerical Controlled Process |
| <ul style="list-style-type: none">• Prepreg• Adhesive• Core• Detail Parts• Dry Fiber and Fabric• Preforms and Braids• Resin | 17. Job Audit for Cure Preparation | 22. Job Audit for Miscellaneous Bonding Operations |
| 13. Job Audit for Tool Preparation | 18. Job Audit for Resin Preparation and Mixing | 23. Job Audit for Process Control/ Re-Validation Testing |
| 14. Job Audit for Pattern Cutting and Kitting | 19. Job Audit for Liquid Resin Infusion | <ul style="list-style-type: none">• Mechanicals• Physicals• Thermal/Analytical |
| <ul style="list-style-type: none">• Manual Process• Numerical Controlled Process | 20. Job Audit for Cure | |
| | <ul style="list-style-type: none">• Autoclave• Oven• Heated Press or Press with Heated Tool• Stand Alone, Ambient or Heated Tool | |

Procedure Highlight – Supplier Merit

The purpose of this column is to educate and inform the suppliers about Nadcap procedures and items of interest for the Composite Task Group. In future issues this section may feature topics such as reviews of revised procedures or major additions to the AC7118. All feedback and questions are welcome. Please send any comments to the Composites Staff Engineer, Rebekah Braun (rbraun@sae.org), and she will pass them on to the columnist. As questions and feedback are received, they will be considered for focus and discussion in future issues.

The focus in this edition is the Nadcap Supplier Merit Program. NOP-008 (found at www.eAuditNet.com under “View User Documents”) provides detail regarding this program. The intent is to reward those suppliers that are in strict compliance to the checklist requirements by extending the time between audits and thus reducing cost.

Initially audits are 12 months apart. Once merit is achieved the time extends first to 18 months and then to 24 months based on the

criteria within NOP-008. It is important to note that each audit is assessed against the merit criteria and the supplier will receive the level of merit based on that assessment. So it is possible to have been on 24 month merit and then to fall back to either 18 or 12 month merit if exemplary performance is not maintained.

If all requirements are met a supplier can achieve 18 month accreditation on the 3rd audit and 24 month accreditation on the 5th audit.

Merit criteria fall into three categories:

1. Successful completion of current and previous audit
2. No escapes
3. Time Taken to Process Audit

The criteria for 18 month merit consideration and 24 month merit consideration do differ so always refer to NOP-008 for specific details on the Merit requirements.

AC7122 and AC7124 News

The AC7122 has recently gone through a restructuring. In the original release of the checklists the AC7122 contained all the general requirements and the AC7122-1 contained testing specific job audits for testing of Composites. In an effort to improve the flow of the checklist and the visibility of the testing capability at a Supplier, the original AC7122-1 has been broken out into five testing specific checklists; AC7122-1A – Mechanical Testing, AC7122-2 – Physical Testing, AC7122-3 – Chemical Testing, AC7122-4 –

Thermal Analysis and AC7122-5 – Flammability. These documents have been sent out for ballot and comments are scheduled to be resolved at the February 2010 Nadcap meeting in Rome, Italy.

The AC7124 development has made great progress and the first Pilot Audit has been scheduled for March 2010. Any necessary revisions will be made based on feedback from the Pilot Audit and the documents will be circulated for a second ballot.

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