AC7108 Rev E Review

Nigel Cook

October 2011, Pittsburgh

Checklist Criteria

- NOP-002 was amended to define criteria to be used when creating checklist requirements.
- Task Groups were actioned to review their present checklists and remove/amend questions that did not meet this criteria.
- Nadcap is not an engineering standards organization. The Nadcap audit criteria shall not create additional requirements or mandate specific method of compliance. Audit Criteria shall be developed in a cost effective approach in accordance with the following:.

Checklist Criteria

- Nadcap is not an engineering standards organization. **The Nadcap audit criteria shall not create additional requirements or mandate a specific method of compliance**. Audit Criteria shall be developed in a cost effective approach in accordance with the following:
- The establishment of audit criteria that is based upon industry standards, where not ambiguous, and includes requirements common among Subscribers where the specifics of meeting that requirement may vary.
- The program shall include provisions for auditing of Subscriber unique/specific requirements.

Nadcap

Checklist Criteria

- Quality system questions shall be utilized to test for compliance and not for existence of quality system elements, except for audit criteria which are designed to assess quality system existence, adequacy and compliance.
- Job audits shall be used to demonstrate compliance to audit criteria, customer requirements, and internal Supplier procedures.
- The Nadcap accreditation program shall promote continual improvement philosophies through non-prescriptive means for compliance and address recurring industry issues and quality improvements through the relevant standards making bodies.

Nadcap

Significant Changes

- Continuous Process Improvement.
- Training and Evaluation of Personnel.
- Internal Audit.
- Test Matrix.
- Solution Analysis.
- Logical Group of Steps – Buy-Off
- Note: Although these sections have changed significantly the changes concern the removal of a defined method of compliance. In most cases suppliers will not need to amend previously compliant procedures and practices.

Nadcap

3.1.1 - Continuous Process Improvement

- 3.1.1.1 Has the supplier identified what chemical process data shall be collected and analysed in order to identify opportunities for improvement? YES NO
  - *Compliance Assessment Guidance: See AS9100 section 8.1 & 8.4. Such data may include inspection rejects, customer rejects/complaints, key characteristics and process capability data.*
- 3.1.1.2 Is there evidence that the identified data is collected and analysed? YES NO
- 3.1.1.3 If the data has shown an opportunity for improvement in the Chemical Process area is the process improvement in progress or has it been implemented? YES NO NA
  - *Compliance Assessment Guidance: NA applies if the analysis has shown the best opportunities are in non-chemical process areas.*

Nadcap

3.2 - Training, Qualification, and Evaluation of … Personnel

- 3.2.1 Has the competency for all personnel functions affecting conformity to chemical process requirements been defined, including processing personnel, testing/inspection personnel and planning personnel? YES NO

- 3.2.2 For those functions identified in 3.2.1, do records show that training or other actions were taken to achieve the necessary competence? YES NO

- 3.2.3 Is there evidence that the effectiveness of these actions was evaluated? YES NO

- 3.2.4 Have operations/tasks that affect conformity to chemical process requirements (e.g. planning, processing, inspection) been carried out correctly? YES NO

Nadcap

3.11 – Internal Audit

- 3.11.1 Does the supplier's internal audit schedule include all chemical processes. YES NO
  - *CAG: There should be a schedule/system to ensure that each chemical process is audited over a defined period of time. There is no requirement to audit each process each year.*
- 3.11.2 Does the audit schedule, or process checklists, ensure that support processes (e.g. solution analysis, lot testing, periodic testing) are also audited? YES NO
- 3.11.3 Are internal Chemical Process audits carried out as planned, by personnel knowledgeable of the process and by personnel not directly responsible for the process?
- Contd.

3.11 – Internal Audit (contd)

- 3.11.4 Do records indicate that corrective action was, or is being, taken for Chemical Process internal audit findings? YES NO
  - *CAG: Only the implementation of corrective actions and follow-up shall be reviewed; judgement on the correctness of the corrective actions is not permitted.*

Nadcap

4.1.1 – Process Control (Test Matrix)

- 4.1.1 Does the Supplier have a Process Control System for assuring compliance to specification testing requirements? YES NO
- 4.1.2 Does the Process Control System contain or reference the following information: YES NO
- 4.1.2.1 All applicable specifications, including revision level? YES NO
- 4.1.2.2 Applicable batch/lot testing including any deviations to the test requirements? YES NO
- 4.1.2.3 Applicable periodic testing, including any deviations to the test requirements? YES NO
- 4.1.2.4 Frequency of tests? YES NO
- Contd.

4.1.1 – Process Control (contd)

- 4.1.2.5 Test piece material, quantity and dimensional requirements as applicable? YES NO
- 4.1.2.6 Test method specification? YES NO
  - *Compliance Assessment Guidance: The Test Matrix shown in the Audit Handbook is an example system for achieving this. Applicable specifications include those which the supplier has identified as available to be included in their audit.*

Nadcap

4.5.3 – Solution Analysis

- 4.5.3 Is there a procedurally defined control system to ensure solution composition is maintained within specification/technical datasheet requirements and a system for adjusting frequency of analysis based on rate of change? YES NO
  - *Compliance Assessment Guidance: The system will need to ensure the composition limits of all applicable specifications/technical datasheets are accounted for.*
  - *Specification identified contaminants are considered to be composition requirements.*
  - *PH and conductivity are considered to be composition requirements.*
  - *ARP4992 is an example of a system for controlling solution composition based on rate of change.*
  - *When permitted by specification alternative methods to solution analysis may be used to control a process solution, e.g. etch rate, specific gravity, refractive index, dump when ineffective based on a defined control test.*
- Contd.

4.5.3 – Solution Analysis

- Do the solution control **records** contain the following information for each tank monitored:……

Appendix B - Referee Magnification

- Various places in Appendix B
- Does the procedure specify a method to determine the disposition of suspect indications? YES NO
- *Compliance Assessment Guidance: Referee magnification, see AC7108 section 2.4 is an example method of disposition.*

- REFEREE MAGNIFICATION: A higher magnification than that required by the standard inspection procedure. A referee magnification is used to assess an indication when examination at the normal inspection identifies a suspect indication but is unable to establish whether is meets acceptance criteria,

Appendices

- Appendix A (Process Improvement) – Remains as a placeholder but content deleted.
- Appendix B (Test Methods) – Remains.
- Appendix C (Test Matrix) – Remains as a placeholder and references the audit handbook.
- Appendix D (Recorded Data) – Remains.
- Appendix E (Buy-Off Steps) – Remains.
- Appendix F (Solution Matrix) - Remains as a placeholder and references the audit handbook.
- Appendix G (Table 1) – New (Replaces previous Nadcap Table 1)

Buy-Off: Previously Known as Logical Grouping of Steps

Previous Checklist Requirements

- AC7108D section 3.3.1(f) requires, “A step for each process performed with applicable internal process/or inspection procedure numbers including as applicable”
- AC7108D para 3.3.1(h) requires, “Each step, or logical group of steps in the process flow, is signed off and dated by the operator as completed” *See Appendix E for the definition of logical grouping.*
- AC7108E defines the minimum requirements for buy-off of processing and inspection steps.

Buy-Off Concept Had to Address:

- Buy-off traceable to the person who has done the operation or their authorised representative.
- Recording of process parameters.
- Recording of inspection results.
- Operations that may be done by more than one person, e.g. Masking, inspection of large sample sizes.
- Process steps that may be started by one person and finished by another, e.g. Chrome Plating, De-embrittlement.

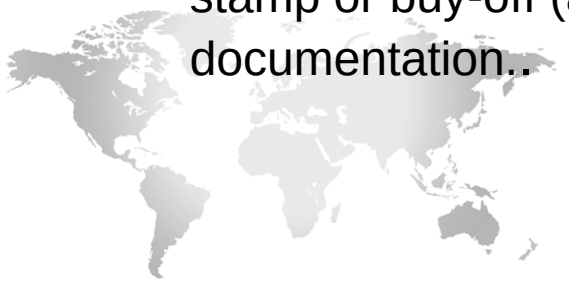
New Buy-Off Requirements

- Four minimum buy-off steps as applicable: receipt inspection; processing; lot inspection; and final inspection. (Potentially just 2 for a manufacturer)
- Further breakdown of a buy-off step is required if different people carry out different process steps within a minimum buy-off step.
- Inspection data treated like variable data; AC7108E defines recording requirements (5.19.2).
- Heat Treatment steps at a temperature greater than 250F (121C) have their own buy-off.

Nadcap

Buy-Off - Checklist Changes

- 2.4 – New Definition
  - BUY-OFF: A recorded declaration by a qualified/approved person, or their authorised designee/representative, that they have worked to the defined instructions and that any related records are true and accurate. The recorded declaration can take many forms (e.g. electronic badge reader, stamp, signature) but must only trace back to a single individual. Where an authorised designee/representative is used to buy-off for other individuals then this shall be defined by internal procedures. If an inspection step is carried out by more than one person there must be a record of what each person has inspected but a single representative may buy-off the complete step per internal procedure requirements. To show the status of product or product-related materials, parts, processes, assemblies, tests, operations and documentation. When product or product-related materials, parts, processes, assemblies, tests, operations and documentation is completed the responsible individual can stamp or buy-off (also referred to as sign-off) the shop paper or documentation..



Buy-Off - Checklist Changes

- 3.3.1 (f) - A step for each process performed, defining the required operator controlled process parameters/ranges and referencing applicable internal process/or inspection procedure numbers including as applicable:
- 3.3.1(f)12 - Post-processing steps including cleaning, de-masking and removal of fixturing and racking.
- 3.3.1(f)14 - In-process and final tests and inspections
- Contd.

Buy-Off - Checklist Changes

- 3.3.1(h) -Each step, or buy-off step in the process flow, is bought off and dated?
  - *Compliance Assessment Guidance: See section 2.4 and Appendix E for the definition of buy-off.*
- 3.3.1(i) - ..., specified process parameters which are controlled by the operator are recorded and bought off for each lot of parts processed, including:

Buy-Off - Checklist Changes

- 3.3.1(k) – Lot inspection and test results are recorded and bought off by the person carrying out the inspection/test or their designee/representative.
  - *Compliance Assessment Guidance: Where more than one person carries out an inspection step the inspection records shall identify each person, however, the inspection step on the traveller may be bought off by a single designee/representative per internal instructions.*

Buy-Off - Checklist Changes

- 5.19.1 Does the supplier utilize “first piece”/”lot” and “in process” inspection, as required, to verify the process?
- 5.19.2 Do the lot inspection and lot test recording requirements require sufficient data to be recorded to demonstrate that the sample size and acceptance criteria were fully met, and are traceable to the person(s) who actually did the inspection/test?
  - *Compliance Assessment Guidance: Recording of just an average may not be acceptable to demonstrate each item measured met the acceptance requirement. In process checks, e.g. coating thickness, that are done to aid processing do not require recording.*

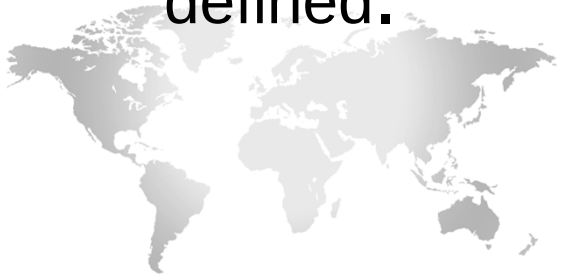
Nadcap

Buy-Off - Checklist Changes

- Appendix E – Minimum buy-off steps.

  This Appendix identifies the process and inspection steps that can be combined into a single buy-off when carried out by the same person

  If a step(s) have been started by one person and finished by another person then each person must buy-off by applying a stamp or signature/initial sign-off and dated for the step(s) or portion of the step they have done, unless an alternative responsibility is clearly defined.



Buy-Off - Checklist Changes

- Appendix E – Minimum buy-off steps (contd).

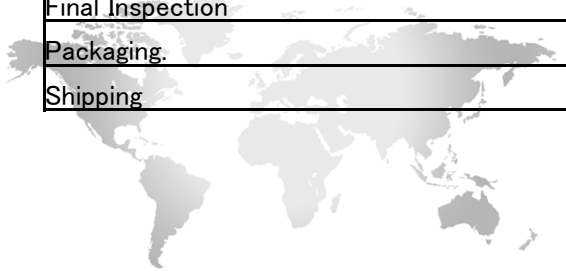
  Thermal treatments at temperatures of greater than 250°F (121°C) require a separate buy-off.

  If the sequence of steps contains more than one main process, e.g. conversion and paint, then each main process must have a buy-off.

  <see table on next slide>

Buy-Off - Checklist Changes

Potential Process Steps	Buy-Off Requirement
Incoming inspection	Buy-Off Step
Pre-process cleaning method(s)	Buy-Off Step -These steps can be combined into a single buy-off unless otherwise required above.
Pre-coat thermal treatment (If greater than 250°F (121°C) this requires a buy-off).	
Masking	
Fixturing, racking	
/ Alkaline Clean.	
Rinse and Water Break Free Test (Note: The WBF test requires a positive recognition, e.g. a tick box.)	
Etch Clean / Deox / Activation	
Rinse and Water Break Free Test (Note: The WBF test requires a positive recognition, e.g. a tick box.)	
Strike / Prime	
Process: (e.g. Anodize, Conversion, Passivate, Electroplating, Painting, Etching …).	
Drying (If greater than 250°F (121°C) this requires a buy-off).	
Post-process cleaning methods	
Post-coating thermal treatment (If greater than 250°F (121°C) this requires a buy-off).	
Lot Inspection and Testing e.g. Adhesion, Thickness, Visual.	Buy-Off Step -These inspections / tests can be combined into a single buy-off unless otherwise required above. Also see 5.19.2
Final Inspection	Buy-Off Step - These steps can be combined into a single buy-off unless otherwise required above.
Packaging.	
Shipping	



Nadcap

AC7108 Rev E

Questions??

Nadcap