



161Thorn Hill Road
Warrendale, PA 15086-7527

AUDIT CRITERIA

AC7117/1 REV. A

Issued 2006-11

Revised 2014-09

Superseding AC7117/1

TO BE USED ON AUDITS STARTING ON OR AFTER JANUARY 18, 2015

Nadcap
AUDIT CRITERIA FOR
COMPUTER CONTROLLED PEENING

Editorial Change made to 8.2 on October 15, 2015

1. SCOPE

- 1.1 This audit criterion is used to survey a facility seeking Nadcap accreditation for the computer controlled shot peening method. This process method checklist shall be used in conjunction with AC7117.

2. GENERAL INSTRUCTIONS

- 2.1 See AC7117 Section 2.

3. SUBSCRIBER SPECIFIC SUPPLEMENTS

SECTION NA

- 3.1 Instructions for the Auditors

- 3.1.1 In completing the prime specific assessment, Auditors are instructed to respond with a "YES" or "NO" to address compliance with each statement or requirement. For any negative responses, the Auditor must clearly indicate if the "NO" reflects noncompliance with respect to existence, adequacy, and/or compliance. Existence relates with documented procedure or policy, and compliance relates to evidence of effective implementation. The "NA" option is only used when the question is not applicable to the Supplier process. Choosing the "NA" option requires an explanation note.

- 3.1.2 The Auditor shall only apply the questions in the supplemental checklist only to the Suppliers who specify the Customer end-users in the AC7117 audit scope selection herein.

- | | |
|--|---|
| <input type="checkbox"/> U0 – User Unknown | <input type="checkbox"/> U8 – Airbus |
| <input type="checkbox"/> U10 – GE Aviation | <input type="checkbox"/> U11 – The Boeing Company |
| <input type="checkbox"/> U00 – None | |

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3.2	U8 – Airbus Supplement <i>Note: If no computerized shot peening is performed for Airbus check the box to collapse the U8 section.</i>	SECTION NA		
3.2.1	(U8) Where the arc height is outside the required range/tolerance, do procedures describe appropriate actions to identify the cause and take corrective action?	YES	NO	
3.2.2	(U8) Do procedures require re-verification of intensity after a significant change in the process?	YES	NO	
3.2.3	(U8) Is peening equipment either: Fitted with separators and classifiers; Without classifiers but which are fitted with separators which remove fines and it can be demonstrated that there is minimal risk of non-conformance immediately prior to the next scheduled re-assessment and/or shot replacement interval; or Without classifiers and/or separators and with specific written authorization by Airbus?	YES	NO	
3.2.4	(U8) Is new steel shot conditioned before use?	YES	NO	
3.2.5	(U8) Does the Supplier have a procedure for shot additions?	YES	NO	
3.2.6	(U8) Does the Supplier's procedure ensure that coverage does not exceed 500%?	YES	NO	
3.3	U10 – GE Aviation Supplement <i>Note: If no computerized shot peening is performed for GE Aviation check the box to collapse the U10 section.</i>	SECTION NA		
3.3.1	(U10) Do the Supplier's procedures prevent the use of centrifugal wheel and manual peening for GE Aviation parts?	YES	NO	
3.3.2	(U10) Do the Supplier's procedures verify if there is a requirement of coverage maps for GE Aviation?	YES	NO	
3.3.3	(U10) If required, does the Supplier have a coverage map for the part and do the peened parts meet the coverage map?	YES	NO	NA
3.3.4	(U10) Are GE Aviation parts being peened during the computerized job audit(s), processed on a shot peen machine that does not use centrifugal wheel peening?	YES	NO	NA
3.3.5	(U10) Do the Supplier's procedures ensure that Almen Saturation curves are re-run for each GE Aviation process every twelve (12) months?	YES	NO	
3.3.6	(U10) Has the Almen saturation curve(s) for GE Aviation parts being peened during the computerized job audit(s), been re-run within the previous twelve months?	YES	NO	NA
3.4	U11 – The Boeing Company Supplement <i>Note: If no computerized shot peening is performed for The Boeing Company check the box to collapse the U11 section.</i>	SECTION NA		

3.4.1	(U11) Do computer controlled and monitor equipment parameters for The Boeing Company parts being peened during the computerized job audit(s) meet the requirements of PSD 8-19 Method and Table X?	YES	NO	NA
3.4.2	(U11) Does the Supplier use distilled water in the wet glass slurry medium?	YES	NO	NA
3.4.3	(U11) Are the Supplier's personnel that are performing or inspecting shot peening operations certified as required in BSS 7630 Table I?	YES	NO	NA
3.4.4	(U11) Does the certification training for the Supplier's shot peening operators meet the requirements of BSS 7630 Sec.5?	YES	NO	NA
3.4.5	(U11) Does the re-certification interval meet The Boeing Company requirements of twelve (12) months?	YES	NO	NA

4. EQUIPMENT

4.1	General			
4.1.1	Does peening equipment have the capability of mechanically moving the shot stream and/or the workpiece?	YES	NO	
4.1.2	Does the integral screening equipment classify 100% of the media prior to returning the media to the nozzle?	YES	NO	NA
4.1.3	Is the slurry volume of beads maintained per applicable Customer specifications during wet glass peening?	YES	NO	NA
4.1.4	Is shot screening equipment integral to the shot peening media reclaim system so that the media is classified continuously?	YES	NO	
4.1.5	Is equipment designed such that the media will not be propelled toward the part unless the part and nozzle/wheel motions are also operating?	YES	NO	
4.1.6	Is equipment equipped with continuous monitoring capability for each of the required process parameters?	YES	NO	
4.1.7	Is equipment equipped with the capability to shut down the process when monitored parameter limits are exceeded?	YES	NO	

5. ALMEN

No additional audit criteria.

6. MEDIA

No additional audit criteria.

7. PERSONNEL

7.1 Operator Qualification

7.1.1	Does the Supplier's training and evaluation program of applicable personnel require the demonstration of proficiency in setting and controlling shut down limits for their equipment?	YES	NO
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8. GENERAL PROCEDURES

8.1 Records

8.1.1	Does the Supplier have written procedures to ensure the identity of the specific operator; time, date of start and completion is recorded and retrievable?	YES	NO
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8.1.2	Does the Supplier have written procedures to manually or electronically record all required operations, inspections, and tests on the traveler?	YES	NO
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8.1.3	Is a record of shut down details generated for each occurrence of automatic shut down?	YES	NO
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8.2	<p>Software Quality Assurance</p> <p><i>For the purpose of this check sheet, "software" is intended to only cover part-specific process control software (e.g. NC Programs). This section applies to Suppliers and processes where the approved process controls are based, at least partially, on a stored and retrieved program or program listing. Typically, these programs are loaded and executed on the peening machine.</i></p>	SECTION NA	
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8.2.1	Is there a written procedure for the control of software?	YES	NO
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8.2.2	Is each program uniquely identified?	YES	NO
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8.2.3	Is there a revision history maintained of changes to a program?	YES	NO
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8.2.4	Is the program revision identified in the router or operation sheet/work instruction to allow operator to verify against the control header?	YES	NO
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8.2.5	Is there an approval process for new and modified programs?	YES	NO
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8.2.6	Is new or changed program validation (1 st piece) approved by quality and records maintained in accordance with the Suppliers quality system and Customer requirements?	YES	NO
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8.2.7	Are the storage requirements for software programs used to control and monitor the product defined and preserved in a way to prevent loss?	YES	NO
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8.2.8	Is there a system in place to prevent unauthorized changes to a program after first piece inspection has been completed and approved?	YES	NO
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8.2.9	Is there a system in place to prevent access to obsolete software?	YES	NO
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9. JOB AUDIT #1

9.1 Job Information

9.1.1 Jobs should be chosen according to the NMSE Job Audit Selection Guideline.

9.1.2 Complete the following and then check the Supplier's information (technique sheets, travelers) against the purchasing requirements.

9.1.2.1 Job Identity/Number: _____

9.1.2.2 Technique ID: _____

9.1.2.3 Generic Part Description: _____

9.1.2.4 Part Number and Revision level (if applicable): _____

9.1.2.5 Immediate Customer: _____

9.1.2.6 End User (Prime) (If known): _____

9.1.2.7 Purchase Order/Revision Level: _____

9.1.2.8 Part Quantity: _____

9.1.2.9 Serial/Lot Numbers (if provided): _____

9.1.2.10 Start Date of Job: _____

9.1.2.11 Processing Specification and Revision Level: _____

9.1.2.12 Special Purchase Order Requirements: _____

9.1.2.13 Is the job audit part live production, demonstration or previously processed? _____

9.1.2.14 What Export Control Status did the Supplier identify the part as being? _____

9.1.2.15 What status did the Auditor(s) identify themselves as being in the opening meeting? (Restricted to US Export Controlled or Unrestricted to US Export Controlled) _____

9.2 Customer Requirements

9.2.1 Are the engineering requirements provided from the purchase order, or in a variety of other forms, flowed down to the shop? YES NO

9.2.2 Are media Size and Type flowed down to the shop floor? YES NO

9.2.3	Are intensity and Strip Type flowed down to the shop floor?	YES	NO	
9.2.4	Are peening required areas, optional areas, and/or prohibited areas flowed down to the shop floor?	YES	NO	
9.2.5	Is the amount of part coverage flowed down to the shop floor?	YES	NO	NA
9.3	Implementation of Supplier Procedures			
9.3.1	Is the peening operation at this facility performed in the correct sequence as allowed by the traveler?	YES	NO	
9.3.2	Have the required Customer approval(s) been obtained for the current technique sheet?	YES	NO	NA
9.3.3	Are all operations, inspections, and tests performed prior to peening recorded on the traveler or electronic form, stamped, signed, or initialed and including date?	YES	NO	
9.3.4	If there are changes in travelers and/or technique sheets, are they approved and dated by authorized personnel?	YES	NO	NA
9.3.5	Do the personnel who are performing computerized peening operations and final inspections have the required training and qualification?	YES	NO	
9.3.6	Do all gages used to measure parameters in the technique sheet have current calibration identification?	YES	NO	
9.3.7	Are gages that are not calibrated labeled as "reference only" or similarly marked?	YES	NO	NA
9.3.8	Are Almen, part holding, masking, and nozzle fixtures compliant to applicable specifications?	YES	NO	
9.3.9	Is the operator capable of identifying equipment malfunctions?	YES	NO	
9.3.10	Does the operator know how to proceed when there is an equipment malfunction or automatic shut down?	YES	NO	
9.4	Pre-Processing			
9.4.1	Does the Supplier visually inspect the area to be peened for the absence of sharp edges, corrosion, contamination or damage prior to peening and were appropriate actions taken?	YES	NO	
9.4.2	Do the pre-peening cleaning methods used conform to the Customer requirements?	YES	NO	NA
9.4.3	During the job audit, the Auditor shall witness the following pre-processing tasks.			
9.4.3.1	Did the operator and/or appropriate personnel demonstrate proficiency in applying the masking requirements to the parts?	YES	NO	NA

9.4.3.2	Did the operator and/or appropriate personnel demonstrate proficiency in equipment and fixture usage?	YES	NO	
9.4.3.3	Did the operator and/or appropriate personnel demonstrate proficiency in the use of Almen gage and Almen strip?	YES	NO	
9.4.3.4	Did the operator and/or appropriate personnel demonstrate proficiency in the use of Almen strip fixtures?	YES	NO	
9.4.3.5	Did the operator and/or appropriate personnel demonstrate proficiency in calculating the resultant arc height (if pre-bow compensation method is used)?	YES	NO	NA
9.4.3.6	Did the operator and/or appropriate personnel demonstrate proficiency in nozzle/wheel position setup?	YES	NO	
9.4.3.7	Did the operator and/or appropriate personnel demonstrate proficiency in understanding saturation curves?	YES	NO	
9.4.3.8	Did the operator and/or appropriate personnel demonstrate proficiency in media sampling which accurately represents the condition of the shot stream media?	YES	NO	
9.5	Processing			
9.5.1	Did the in-process media quality inspection meet the Customer requirements for media type?	YES	NO	NA
9.5.2	Did the in-process media quality inspection meet the Customer requirements for screens?	YES	NO	NA
9.5.3	Did the in-process media quality inspection meet the Customer requirements for sieve analysis results?	YES	NO	NA
9.5.4	Did the in-process media quality inspection meet the Customer requirements for shape sample inspection area?	YES	NO	NA
9.5.5	Did the in-process media quality inspection meet the Customer requirements for actual unacceptable shape?	YES	NO	NA
9.5.6	Did in-process media quality inspection results for this job audit meet all Customer specified requirements?	YES	NO	NA
9.5.7	Are periodic media quality inspections performed at the required intervals?	YES	NO	
9.5.8	Is the slurry volume of beads maintained per applicable specifications during wet glass peening?	YES	NO	NA
9.5.9	Are parts processed in accordance with a technique sheet?	YES	NO	

9.5.10	Does the technique sheet or traveler document all relevant operations performed by the operator?	YES	NO	
9.5.11	Do the Almen fixture locations represent the surfaces to be peened?	YES	NO	NA
9.5.12	Does the Almen fixture being used provide the same number, type, location, and orientation of the Almen strips described in the technique sheet?	YES	NO	
9.5.13	If shaded strips are used, does the Supplier have approval to use them?	YES	NO	NA
9.6	Technique Sheet and Shop Floor Discipline			
9.6.1	Is the job audit part number specified on the technique sheet and correctly followed in production?	YES	NO	
9.6.2	Is the job audit technique sheet revision controlled and correctly followed in production?	YES	NO	
9.6.3	Are job audit part program(s) with revision identified on the technique sheet and being followed in production?	YES	NO	NA
9.6.4	Are approvals from both Supplier and Customer on the job audit technique sheet and does the technique sheet have required approvals?	YES	NO	NA
9.6.5	Are part specific tooling and fixtures identified on the technique sheet and correctly followed in production?	YES	NO	
9.6.6	Are Almen fixtures identified on the technique sheet and correctly followed in production?	YES	NO	
9.6.7	Is part masking identified on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.8	Is the identification of peening equipment listed on the technique sheet and correctly followed in production?	YES	NO	
9.6.9	Is number of nozzles or wheels listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.10	Is air pressure or wheel speed listed on the technique sheet and correctly followed in production?	YES	NO	
9.6.11	Is nozzle size listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.12	Is air jet size listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.13	Is part rotation or translation rate listed on the technique sheet and correctly followed in production?	YES	NO	NA

9.6.14	Are setup sketches or photos listed on the technique sheet and is the observed set up in the job audit accurately described?	YES	NO	
9.6.15	Is nozzle or wheel translation speed listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.16	Is travel direction, and travel distance to the part listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.17	Is nozzle or wheel position to the part listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.18	Is the part orientation setup relative to the machine listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.19	Is shot flow control listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.6.20	Is shot flow value listed on the technique sheet and correctly followed in production?	YES	NO	
9.6.21	Is part peening time (or cycles) listed on the technique sheet and correctly followed in production?	YES	NO	
9.6.22	Is almen strip peening time (or cycles) listed on the technique sheet and correctly followed in production?	YES	NO	
9.6.23	Is media size, hardness, and type listed on the technique sheet and correctly followed in production?	YES	NO	
9.6.24	Is required intensity and test strip type listed on the technique sheet and correctly followed in production?	YES	NO	
9.6.25	Is the amount of coverage listed on the technique sheet and correctly followed in production?	YES	NO	NA
9.7	Process Validation			
9.7.1	Does the Supplier process substantiation data include a saturation curve consisting of a minimum of 4 points (not including "0" point) for each intensity determination location?	YES	NO	
9.7.2	Does the Supplier process substantiation data include intensity verification tests performed at required intervals?	YES	NO	
9.7.3	Does the Supplier process substantiation data include appropriate actions (e.g. accept/reject) based on the job audit Almen strip readings?	YES	NO	
9.7.4	(INST) Verify the following values for two Almen locations or if applicable a single location at two times for the job audit part.			

9.7.4.1	Are the observed Almen strip locations used to verify the intensity correctly located?	YES	NO	
9.7.4.2	Is the observed Almen strip type used to verify the intensity correct?	YES	NO	
9.7.4.3	Is the observed intensity value compliant to the Customer intensity requirement?	YES	NO	
9.7.4.4	Is the observed intensity verification range compliant to requirements?	YES	NO	
9.7.4.5	Is the observed initial Almen reading compliant to requirements?	YES	NO	
9.7.4.6	Is the observed final Almen reading compliant to requirements?	YES	NO	NA
9.7.5	(INST) For one of the job audits, the Auditor shall witness the generation of saturation curve data and media inspections to verify that the following are correct.			
9.7.5.1	Does the generation of the saturation curve utilize of a minimum of 4 points for each intensity determination location (not including the zero point)?	YES	NO	
9.7.5.2	Are the practices of the latest revision of SAE J443 followed?	YES	NO	
9.7.5.3	Does the media inspection verify shot size by sieve analysis or wet glass verification by bead slurry concentration?	YES	NO	
9.7.5.4	Does the media inspection verify shot fracture counts and shape inspection; or wet glass verification by bead slurry fines concentration?	YES	NO	
9.8	Post Peening Inspection			
9.8.1	Did the operator and/or appropriate personnel demonstrate proficiency during the inspection of fluorescent tracer?	YES	NO	NA
9.8.2	Did the operator and/or appropriate personnel demonstrate proficiency during part inspection for coverage using magnification and other inspection aids?	YES	NO	
9.8.3	Is final inspection for coverage and effectiveness of applicable masking performed?	YES	NO	
9.8.4	Is the coverage inspected visually on all parts (100%) or in accordance with an approved sampling plan?	YES	NO	
9.8.4.1	(INFO) Record the frequency of inspection:	_____		
9.8.5	Are part serial numbers maintained throughout the peening operation?	YES	NO	NA
9.8.6	Do the post-peening cleaning methods used conform to the Customer requirements?	YES	NO	NA

9.8.7	Were parts handled, stored, and transported in a manner to prevent damage?	YES	NO	
9.8.8	Did final inspection result in the proper disposition of the part(s) audited?	YES	NO	
9.8.9	Did an inspection check that the part is free from media debris (internal and external), masking residue, edge rollover, and handling damage and were appropriate actions taken?	YES	NO	
9.8.10	Is the traveler properly completed prior to the part continuing to the next operation or shipment to the Customer?	YES	NO	
9.8.11	When required, does the certification that is returned to the Customer meet the Customer requirements?	YES	NO	NA
9.8.12	(INFO) If YES record the Certification number here:			_____

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10.	JOB AUDIT #2	SECTION NA	
10.1	Job Information		
10.1.1	Jobs should be chosen according to the NMSE Job Audit Selection Guideline.		
10.1.2	Complete the following and then check the Supplier's information (technique sheets, travelers) against the purchasing requirements.		
10.1.2.1	Job Identity/Number:	_____	
10.1.2.2	Technique ID:	_____	
10.1.2.3	Generic Part Description:	_____	
10.1.2.4	Part Number and Revision level (if applicable):	_____	
10.1.2.5	Immediate Customer:	_____	
10.1.2.6	End User (Prime) (If known):	_____	
10.1.2.7	Purchase Order/Revision Level:	_____	
10.1.2.8	Part Quantity:	_____	
10.1.2.9	Serial/Lot Numbers (if provided):	_____	
10.1.2.10	Start Date of Job:	_____	
10.1.2.11	Processing Specification and Revision Level:	_____	
10.1.2.12	Special Purchase Order Requirements:	_____	
10.1.2.13	Is the job audit part live production, demonstration or previously processed?	_____	
10.1.2.14	What Export Control Status did the Supplier identify the part as being?	_____	
10.1.2.15	What status did the Auditor(s) identify themselves as being in the opening meeting? (Restricted to US Export Controlled or Unrestricted to US Export Controlled)	_____	
10.2	Customer Requirements		
10.2.1	Are the engineering requirements provided from the purchase order, or in a variety of other forms, flowed down to the shop?	YES	NO
10.2.2	Are media Size and Type flowed down to the shop floor?	YES	NO
10.2.3	Are intensity and Strip Type flowed down to the shop floor?	YES	NO

10.2.4	Are peening required areas, optional areas, and/or prohibited areas flowed down to the shop floor?	YES	NO	
10.2.5	Is the amount of part coverage flowed down to the shop floor?	YES	NO	NA
10.3	Implementation of Supplier Procedures			
10.3.1	Is the peening operation at this facility performed in the correct sequence as allowed by the traveler?	YES	NO	
10.3.2	Have the required Customer approval(s) been obtained for the current technique sheet?	YES	NO	NA
10.3.3	Are all operations, inspections, and tests performed prior to peening recorded on the traveler or electronic form, stamped, signed, or initialed and including date?	YES	NO	
10.3.4	If there are changes in travelers and/or technique sheets, are they approved and dated by authorized personnel?	YES	NO	NA
10.3.5	Do the personnel who are performing computerized peening operations and final inspections have the required training and qualification?	YES	NO	
10.3.6	Do all gages used to measure parameters in the technique sheet have current calibration identification?	YES	NO	
10.3.7	Are gages that are not calibrated labeled as "reference only" or similarly marked?	YES	NO	NA
10.3.8	Are Almen, part holding, masking, and nozzle fixtures compliant to applicable specifications?	YES	NO	
10.3.9	Is the operator capable of identifying equipment malfunctions?	YES	NO	
10.3.10	Does the operator know how to proceed when there is an equipment malfunction or automatic shut down?	YES	NO	
10.4	Pre-Processing			
10.4.1	Does the Supplier visually inspect the area to be peened for the absence of sharp edges, corrosion, contamination or damage prior to peening and were appropriate actions taken?	YES	NO	
10.4.2	Do the pre-peening cleaning methods used conform to the Customer requirements?	YES	NO	NA
10.4.3	During the job audit, the Auditor shall witness the following pre-processing tasks.			
10.4.3.1	Did the operator and/or appropriate personnel demonstrate proficiency in applying the masking requirements to the parts?	YES	NO	NA

10.4.3.2	Did the operator and/or appropriate personnel demonstrate proficiency in equipment and fixture usage?	YES	NO	
10.4.3.3	Did the operator and/or appropriate personnel demonstrate proficiency in the use of Almen gage and Almen strip?	YES	NO	
10.4.3.4	Did the operator and/or appropriate personnel demonstrate proficiency in the use of Almen strip fixtures?	YES	NO	
10.4.3.5	Did the operator and/or appropriate personnel demonstrate proficiency in calculating the resultant arc height (if pre-bow compensation method is used)?	YES	NO	NA
10.4.3.6	Did the operator and/or appropriate personnel demonstrate proficiency in nozzle/wheel position setup?	YES	NO	
10.4.3.7	Did the operator and/or appropriate personnel demonstrate proficiency in understanding saturation curves?	YES	NO	
10.4.3.8	Did the operator and/or appropriate personnel demonstrate proficiency in media sampling which accurately represents the condition of the shot stream media?	YES	NO	
10.5	Processing			
10.5.1	Did the in-process media quality inspection meet the Customer requirements for media type?	YES	NO	NA
10.5.2	Did the in-process media quality inspection meet the Customer requirements for screens?	YES	NO	NA
10.5.3	Did the in-process media quality inspection meet the Customer requirements for sieve analysis results?	YES	NO	NA
10.5.4	Did the in-process media quality inspection meet the Customer requirements for shape sample inspection area?	YES	NO	NA
10.5.5	Did the in-process media quality inspection meet the Customer requirements for actual unacceptable shape?	YES	NO	NA
10.5.6	Did in-process media quality inspection results for this job audit meet all Customer specified requirements?	YES	NO	NA
10.5.7	Are periodic media quality inspections performed at the required intervals?	YES	NO	
10.5.8	Is the slurry volume of beads maintained per applicable specifications during wet glass peening?	YES	NO	NA
10.5.9	Are parts processed in accordance with a technique sheet?	YES	NO	

10.5.10	Does the technique sheet or traveler document all relevant operations performed by the operator?	YES	NO	
10.5.11	Do the Almen fixture locations represent the surfaces to be peened?	YES	NO	NA
10.5.12	Does the Almen fixture being used provide the same number, type, location, and orientation of the Almen strips described in the technique sheet?	YES	NO	
10.5.13	If shaded strips are used, does the Supplier have approval to use them?	YES	NO	NA
10.6	Technique Sheet and Shop Floor Discipline			
10.6.1	Is the job audit part number specified on the technique sheet and correctly followed in production?	YES	NO	
10.6.2	Is the job audit technique sheet revision controlled and correctly followed in production?	YES	NO	
10.6.3	Are job audit part program(s) with revision identified on the technique sheet and being followed in production?	YES	NO	NA
10.6.4	Are approvals from both Supplier and Customer on the job audit technique sheet and does the technique sheet have required approvals?	YES	NO	NA
10.6.5	Are part specific tooling and fixtures identified on the technique sheet and correctly followed in production?	YES	NO	
10.6.6	Are Almen fixtures identified on the technique sheet and correctly followed in production?	YES	NO	
10.6.7	Is part masking identified on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.8	Is the identification of peening equipment listed on the technique sheet and correctly followed in production?	YES	NO	
10.6.9	Is number of nozzles or wheels listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.10	Is air pressure or wheel speed listed on the technique sheet and correctly followed in production?	YES	NO	
10.6.11	Is nozzle size listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.12	Is air jet size listed on the technique sheet and correctly followed in production?	YES	NO	NA

10.6.13	Is part rotation or translation rate listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.14	Are setup sketches or photos listed on the technique sheet and is the observed set up in the job audit accurately described?	YES	NO	NA
10.6.15	Is nozzle or wheel translation speed listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.16	Is travel direction, and travel distance to the part listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.17	Is nozzle or wheel position to the part listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.18	Is the part orientation setup relative to the machine listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.19	Is shot flow control listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.6.20	Is shot flow value listed on the technique sheet and correctly followed in production?	YES	NO	
10.6.21	Is part peening time (or cycles) listed on the technique sheet and correctly followed in production?	YES	NO	
10.6.22	Is almen strip peening time (or cycles) listed on the technique sheet and correctly followed in production?	YES	NO	
10.6.23	Is media size, hardness, and type listed on the technique sheet and correctly followed in production?	YES	NO	
10.6.24	Is required intensity and test strip type listed on the technique sheet and correctly followed in production?	YES	NO	
10.6.25	Is the amount of coverage listed on the technique sheet and correctly followed in production?	YES	NO	NA
10.7	Process Validation			
10.7.1	Does the Supplier process substantiation data include a saturation curve consisting of a minimum of 4 points (not including "0" point) for each intensity determination location?	YES	NO	
10.7.2	Does the Supplier process substantiation data include intensity verification tests performed at required intervals?	YES	NO	
10.7.3	Does the Supplier process substantiation data include appropriate actions (e.g. accept/reject) based on the job audit Almen strip readings?	YES	NO	

10.7.4	(INST) Verify the following values for two Almen locations or if applicable a single location at two times for the job audit part.			
10.7.4.1	Are the observed Almen strip locations used to verify the intensity correctly located?	YES	NO	
10.7.4.2	Is the observed Almen strip type used to verify the intensity correct?	YES	NO	
10.7.4.3	Is the observed intensity value compliant to the Customer intensity requirement?	YES	NO	
10.7.4.4	Is the observed intensity verification range compliant to requirements?	YES	NO	
10.7.4.5	Is the observed initial Almen reading compliant to requirements?	YES	NO	
10.7.4.6	Is the observed final Almen reading compliant to requirements?	YES	NO	NA
10.7.5	(INST) For one of the job audits, the Auditor shall witness the generation of saturation curve data and media inspections to verify that the following are correct.			
10.7.5.1	Does the generation of the saturation curve utilize of a minimum of 4 points for each intensity determination location (not including the zero point)?	YES	NO	
10.7.5.2	Are the practices of the latest revision of SAE J443 followed?	YES	NO	
10.7.5.3	Does the media inspection verify shot size by sieve analysis or wet glass verification by bead slurry concentration?	YES	NO	
10.7.5.4	Does the media inspection verify shot fracture counts and shape inspection; or wet glass verification by bead slurry fines concentration?	YES	NO	
10.8	Post Peening Inspection			
10.8.1	Did the operator and/or appropriate personnel demonstrate proficiency during the inspection of fluorescent tracer?	YES	NO	NA
10.8.2	Did the operator and/or appropriate personnel demonstrate proficiency during part inspection for coverage using magnification and other inspection aids?	YES	NO	
10.8.3	Is final inspection for coverage and effectiveness of applicable masking performed?	YES	NO	
10.8.4	Is the coverage inspected visually on all parts (100%) or in accordance with an approved sampling plan?	YES	NO	
10.8.4.1	(INFO) Record the frequency of inspection:	_____		
10.8.5	Are part serial numbers maintained throughout the peening operation?	YES	NO	NA

10.8.6	Do the post-peening cleaning methods used conform to the Customer requirements?	YES	NO	NA
10.8.7	Were parts handled, stored, and transported in a manner to prevent damage?	YES	NO	
10.8.8	Did final inspection result in the proper disposition of the part(s) audited?	YES	NO	
10.8.9	Did an inspection check that the part is free from media debris (internal and external), masking residue, edge rollover, and handling damage and were appropriate actions taken?	YES	NO	
10.8.10	Is the traveler properly completed prior to the part continuing to the next operation or shipment to the Customer?	YES	NO	
10.8.11	When required, does the certification that is returned to the Customer meet the Customer requirements?	YES	NO	NA
10.8.12	(INFO) If YES record the Certification number here:			_____

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11.	JOB AUDIT #3	SECTION NA
11.1	Job Information	
11.1.1	Jobs should be chosen according to the NMSE Job Audit Selection Guideline.	
11.1.2	Complete the following and then check the Supplier's information (technique sheets, travelers) against the purchasing requirements.	
11.1.2.1	Job Identity/Number:	_____
11.1.2.2	Technique ID:	_____
11.1.2.3	Generic Part Description:	_____
11.1.2.4	Part Number and Revision level (if applicable):	_____
11.1.2.5	Immediate Customer:	_____
11.1.2.6	End User (Prime) (If known):	_____
11.1.2.7	Purchase Order/Revision Level:	_____
11.1.2.8	Part Quantity:	_____
11.1.2.9	Serial/Lot Numbers (if provided):	_____
11.1.2.10	Start Date of Job:	_____
11.1.2.11	Processing Specification and Revision Level:	_____
11.1.2.12	Special Purchase Order Requirements:	_____
11.1.2.13	Is the job audit part live production, demonstration or previously processed?	_____
11.1.2.14	What Export Control Status did the Supplier identify the part as being?	_____
11.1.2.15	What status did the Auditor(s) identify themselves as being in the opening meeting? (Restricted to US Export Controlled or Unrestricted to US Export Controlled)	_____

11.2	Customer Requirements			
11.2.1	Are the engineering requirements provided from the purchase order, or in a variety of other forms, flowed down to the shop?	YES	NO	
11.2.2	Are media Size and Type flowed down to the shop floor?	YES	NO	
11.2.3	Are intensity and Strip Type flowed down to the shop floor?	YES	NO	
11.2.4	Are peening required areas, optional areas, and/or prohibited areas flowed down to the shop floor?	YES	NO	
11.2.5	Is the amount of part coverage flowed down to the shop floor?	YES	NO	NA
11.3	Implementation of Supplier Procedures			
11.3.1	Is the peening operation at this facility performed in the correct sequence as allowed by the traveler?	YES	NO	
11.3.2	Have the required Customer approval(s) been obtained for the current technique sheet?	YES	NO	NA
11.3.3	Are all operations, inspections, and tests performed prior to peening recorded on the traveler or electronic form, stamped, signed, or initialed and including date?	YES	NO	
11.3.4	If there are changes in travelers and/or technique sheets, are they approved and dated by authorized personnel?	YES	NO	NA
11.3.5	Do the personnel who are performing computerized peening operations and final inspections have the required training and qualification?	YES	NO	
11.3.6	Do all gages used to measure parameters in the technique sheet have current calibration identification?	YES	NO	
11.3.7	Are gages that are not calibrated labeled as "reference only" or similarly marked?	YES	NO	NA
11.3.8	Are Almen, part holding, masking, and nozzle fixtures compliant to applicable specifications?	YES	NO	
11.3.9	Is the operator capable of identifying equipment malfunctions?	YES	NO	
11.3.10	Does the operator know how to proceed when there is an equipment malfunction or automatic shut down?	YES	NO	
11.4	Pre-Processing			
11.4.1	Does the Supplier visually inspect the area to be peened for the absence of sharp edges, corrosion, contamination or damage prior to peening and were appropriate actions taken?	YES	NO	

11.4.2	Do the pre-peening cleaning methods used conform to the Customer requirements?	YES	NO	NA
11.4.3	During the job audit, the Auditor shall witness the following pre-processing tasks.			
11.4.3.1	Did the operator and/or appropriate personnel demonstrate proficiency in applying the masking requirements to the parts?	YES	NO	NA
11.4.3.2	Did the operator and/or appropriate personnel demonstrate proficiency in equipment and fixture usage?	YES	NO	
11.4.3.3	Did the operator and/or appropriate personnel demonstrate proficiency in the use of Almen gage and Almen strip?	YES	NO	
11.4.3.4	Did the operator and/or appropriate personnel demonstrate proficiency in the use of Almen strip fixtures?	YES	NO	
11.4.3.5	Did the operator and/or appropriate personnel demonstrate proficiency in calculating the resultant arc height (if pre-bow compensation method is used)?	YES	NO	NA
11.4.3.6	Did the operator and/or appropriate personnel demonstrate proficiency in nozzle/wheel position setup?	YES	NO	
11.4.3.7	Did the operator and/or appropriate personnel demonstrate proficiency in understanding saturation curves?	YES	NO	
11.4.3.8	Did the operator and/or appropriate personnel demonstrate proficiency in media sampling which accurately represents the condition of the shot stream media?	YES	NO	
11.5	Processing			
11.5.1	Did the in-process media quality inspection meet the Customer requirements for media type?	YES	NO	NA
11.5.2	Did the in-process media quality inspection meet the Customer requirements for screens?	YES	NO	NA
11.5.3	Did the in-process media quality inspection meet the Customer requirements for sieve analysis results?	YES	NO	NA
11.5.4	Did the in-process media quality inspection meet the Customer requirements for shape sample inspection area?	YES	NO	NA
11.5.5	Did the in-process media quality inspection meet the Customer requirements for actual unacceptable shape?	YES	NO	NA
11.5.6	Did in-process media quality inspection results for this job audit meet all Customer specified requirements?	YES	NO	NA

11.5.7	Are periodic media quality inspections performed at the required intervals?	YES	NO	
11.5.8	Is the slurry volume of beads maintained per applicable specifications during wet glass peening?	YES	NO	NA
11.5.9	Are parts processed in accordance with a technique sheet?	YES	NO	
11.5.10	Does the technique sheet or traveler document all relevant operations performed by the operator?	YES	NO	
11.5.11	Do the Almen fixture locations represent the surfaces to be peened?	YES	NO	NA
11.5.12	Does the Almen fixture being used provide the same number, type, location, and orientation of the Almen strips described in the technique sheet?	YES	NO	
11.5.13	If shaded strips are used, does the Supplier have approval to use them?	YES	NO	NA
11.6	Technique Sheet and Shop Floor Discipline			
11.6.1	Is the job audit part number specified on the technique sheet and correctly followed in production?	YES	NO	
11.6.2	Is the job audit technique sheet revision controlled and correctly followed in production?	YES	NO	
11.6.3	Are job audit part program(s) with revision identified on the technique sheet and being followed in production?	YES	NO	NA
11.6.4	Are approvals from both Supplier and Customer on the job audit technique sheet and does the technique sheet have required approvals?	YES	NO	NA
11.6.5	Are part specific tooling and fixtures identified on the technique sheet and correctly followed in production?	YES	NO	
11.6.6	Are Almen fixtures identified on the technique sheet and correctly followed in production?	YES	NO	
11.6.7	Is part masking identified on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.8	Is the identification of peening equipment listed on the technique sheet and correctly followed in production?	YES	NO	
11.6.9	Is number of nozzles or wheels listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.10	Is air pressure or wheel speed listed on the technique sheet and correctly followed in production?	YES	NO	

11.6.11	Is nozzle size listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.12	Is air jet size listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.13	Is part rotation or translation rate listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.14	Are setup sketches or photos listed on the technique sheet and is the observed set up in the job audit accurately described?	YES	NO	NA
11.6.15	Is nozzle or wheel translation speed listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.16	Is travel direction, and travel distance to the part listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.17	Is nozzle or wheel position to the part listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.18	Is the part orientation setup relative to the machine listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.19	Is shot flow control listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.6.20	Is shot flow value listed on the technique sheet and correctly followed in production?	YES	NO	
11.6.21	Is part peening time (or cycles) listed on the technique sheet and correctly followed in production?	YES	NO	
11.6.22	Is almen strip peening time (or cycles) listed on the technique sheet and correctly followed in production?	YES	NO	
11.6.23	Is media size, hardness, and type listed on the technique sheet and correctly followed in production?	YES	NO	
11.6.24	Is required intensity and test strip type listed on the technique sheet and correctly followed in production?	YES	NO	
11.6.25	Is the amount of coverage listed on the technique sheet and correctly followed in production?	YES	NO	NA
11.7	Process Validation			
11.7.1	Does the Supplier process substantiation data include a saturation curve consisting of a minimum of 4 points (not including "0" point) for each intensity determination location?	YES	NO	
11.7.2	Does the Supplier process substantiation data include intensity verification tests performed at required intervals?	YES	NO	

11.7.3	Does the Supplier process substantiation data include appropriate actions (e.g. accept/reject) based on the job audit Almen strip readings?	YES	NO	
11.7.4	(INST) Verify the following values for two Almen locations or if applicable a single location at two times for the job audit part.			
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11.7.5.3	Does the media inspection verify shot size by sieve analysis or wet glass verification by bead slurry concentration?	YES	NO	
11.7.5.4	Does the media inspection verify shot fracture counts and shape inspection; or wet glass verification by bead slurry fines concentration?	YES	NO	
11.8	Post Peening Inspection			
11.8.1	Did the operator and/or appropriate personnel demonstrate proficiency during the inspection of fluorescent tracer?	YES	NO	NA
11.8.2	Did the operator and/or appropriate personnel demonstrate proficiency during part inspection for coverage using magnification and other inspection aids?	YES	NO	
11.8.3	Is final inspection for coverage and effectiveness of applicable masking performed?	YES	NO	
11.8.4	Is the coverage inspected visually on all parts (100%) or in accordance with an approved sampling plan?	YES	NO	

11.8.4.1	(INFO) Record the frequency of inspection:	_____		
11.8.5	Are part serial numbers maintained throughout the peening operation?	YES	NO	NA
11.8.6	Do the post-peening cleaning methods used conform to the Customer requirements?	YES	NO	NA
11.8.7	Were parts handled, stored, and transported in a manner to prevent damage?	YES	NO	
11.8.8	Did final inspection result in the proper disposition of the part(s) audited?	YES	NO	
11.8.9	Did an inspection check that the part is free from media debris (internal and external), masking residue, edge rollover, and handling damage and were appropriate actions taken?	YES	NO	
11.8.10	Is the traveler properly completed prior to the part continuing to the next operation or shipment to the Customer?	YES	NO	
11.8.11	When required, does the certification that is returned to the Customer meet the Customer requirements?	YES	NO	NA
11.8.12	(INFO) If YES record the Certification number here:	_____		

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