

ROLLS-ROYCE CORP.

Expires: January 31, 2011



Subscriber Holding
Nadcap User Compliance and Audit Program
(NUCAP)
Certificate & Scope of Approval



February 11, 2010

Mr. Tom Brandenburg
Rolls-Royce Corp.
2355 S. Tibbs Avenue #N16B
Indianapolis, Indiana 46241

Dear Mr. Brandenburg:

Your facility has been approved for NUCAP. Please note that your NUCAP certificate is valid until **January 31, 2011**. Accordingly, we have enclosed your certificate(s) of approval, your scope of approval, and logo sheet.

Please note that if any changes occur within your company (i.e., ownership, key managerial staff, equipment, company name, quality manager, address, etc.) that may affect your capability or scope of approved activities, you are required to notify PRI Staff by completing the "Notification of Change/Request for Revised Certification" form located in [eAuditNet.com/Resources/Public Documents/General Documents](http://eAuditNet.com/Resources/Public/Documents/General Documents), immediately.

We would like to congratulate you on your achievement in meeting the stringent requirements of NUCAP Approval.

If you have any questions concerning the NUCAP Process, please contact PRI Headquarters at (724)772-1616.

Sincerely,

A handwritten signature in black ink, appearing to read "Arshad Hafeez". The signature is fluid and cursive.

Arshad Hafeez
Executive Director- Global Business Operations & Corporate Strategies

AH/emmm
Enclosures
Certificate(s)
Scope of Approval
Logo Sheet



In accordance with Program Document PD3000, to the revision in effect at the time of the audit, this certificate is granted and awarded by the authority of the Nadcap Users Compliance and Audit Program (NUCAP) Management Council to:

ROLLS-ROYCE CORP

at

See Attached Supplement

They have demonstrated conformance and are awarded approval for specific services, listed in the Scope of Approval to the revision in effect at the time of the audit for:

***Chemical Processing, Coatings, Heat Treating, Non-Destructive Testing,
Nonconventional Machining, Surface Enhancement and Welding***

Expiration Date: January 31, 2011

Certificate Number: 132188

Issue Date: February 11, 2010

A handwritten signature in black ink, appearing to read "W. G. Wagner". The signature is written in a cursive style and is positioned above a horizontal line.

William G. Wagner, Vice President and General Manager



SCOPE OF APPROVAL NUCAP

**Approval Date: February 11, 2010
Expiration Date: January 31, 2011**

**Audit #132188
Certificate #132188**

**Rolls-Royce Corporation
Plant 5
2355 South Tibbs Avenue
Indianapolis, Indiana 46241**

**Chemical Processing, Coatings, Heat Treating, Nondestructive Testing,
Nonconventional Machining, Surface Enhancement and Welding**

In recognition of the successful completion of the PRI evaluation process, approval is granted to this facility to perform the following:

Chemical Processing (AC7108) – Audit #131391

AC7108 Rev C- Nadcap Audit Criteria for Chemical Processing (to be used on or BEFORE 3-Oct-09)

Chemical Cleaning-Acid Cleaning
Chemical Cleaning-Alkaline Cleaning
Chemical Cleaning-Semi-Aqueous Cleaning
Chemical Cleaning-Solvent Cleaning
Chemical Cleaning-Titanium Cleaning-Acid
Chemical Cleaning-Titanium Cleaning-Alkaline
Conversion/Phosphate Coatings-AMS 2473
Conversion/Phosphate Coatings-AMS 2475
Conversion/Phosphate Coatings-AMS 2481
Conversion/Phosphate Coatings-AMS 2485
Conversion/Phosphate Coatings-Other
Copper Plating-AMS 2418
Copper Plating-Other
Electroless Plating Nickel-AMS 2404
Electroless Plating Nickel-AMS 2405
Electropolishing - Other
Etch (AC7108/2 MUST ALSO BE SELECTED)
Nickel Plating-AMS 2403

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Paint/Dry Film (AC7108/1 MUST ALSO BE SELECTED)
Silver Plating-AMS 2410
Silver Plating-AMS 2412
Stripping-Other

AC7108/1 Rev A - Nadcap Audit Criteria for Painting & Dry Film Coatings (1)
Paint - Other
Paint/Dry Film Coatings-Other

AC7108/2 Rev A - Nadcap Audit Criteria for Etch Processes (Blue Etch Anodize, Local, Macrostructure, Nital, Pre-Penetrant, Temper) (to be used on or BEFORE 13-Mar-10)
Temper Etch

Coating (AC7109) – Audit #131392

AC7109/1 - Thermal Spray:
Oxy/Fuel Powder Spray
Plasma Thermal Spray

AC7109/3 - Diffusion Coating Process:
Slurry Process – Dip
Slurry Process – Spray

AC7109/4 - Stripping:
Chemical

AC7109/5 - Coating Evaluation Laboratory Practices:
Hardness - Rockwell
Metallography
Specimen Preparation
Thickness – Mechanical
Thickness – Metallographic
Thickness – Customer Specification / Other
Visual- Microscopic

Heat Treating (AC7102) – Audit #131432

AC7102 - Cryogenic Treatments
Die/Press Quenching
Nickel and Cobalt Alloys: Customer Specification / Other
Nitriding - AC7102/4 must also be selected
Plating
Stainless Steels, Precipitation Hardening: Customer Specification / Other
Stainless and PH Stainless Steels: Customer Specification / Other
Steels: (Normalize, Anneal, Stress Relieve, or Temper), Customer Specification
Other
Titanium Alloys: (Age, Anneal, and/or Duplex Anneal, & Stress Relieve),
Customer Specification / Other
Vacuum Heat Treating: Customer Specification / Other

AC7102S - Supplemental Audit Criteria for Heat Treating
U00-None

AC7102/1 - Brazing:

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- Furnace
- Vacuum Furnace
- AC7102/3 - Carburizing:
 - Customer Specification / Other
- AC7102/4 - Nitriding:
 - Customer Specification / Other
- AC7102/5 - Nadcap Audit Criteria for Hardness Testing for Heat Treating
 - (M1) Brinell Hardness
 - (M2) Rockwell Hardness
- AC7101/3 - Materials Test Lab – Mechanical Testing:
 - (A) Room Temperature Tensile
- AC7101/4 - Materials Test Lab – Metallography & Microhardness:
 - (L) Metallography (General)
 - (L5) Near Surface Examinations – Microhardness
 - (L6) Near Surface Examinations – Diffusion Coatings
 - (L7) Near Surface Examinations – IGA/IGO

Nondestructive Testing (AC7114 / AC7114S) – Audit #131468

- AC7114S Rev D - Supplemental Audit Criteria for Nadcap NonDestructive (NDT) Suppliers Accreditation Program Audit Criteria
 - S-U6 Rolls-Royce Corporation
- AC7114/1 - Liquid Penetrant Survey
- AC7114/1S - S-U6 Rolls-Royce Corp
- AC7114/2 - Magnetic Particle Survey
- AC7114/2S - S-U6 Rolls-Royce Corp
- AC7114/4 - Radiography
- AC7114/4S - S-U6 Rolls-Royce Corp

Nonconventional Machining (AC7116) – Audit #131445

- AC7116/3 - Electrical Discharge Machining EDM: Sinker, Wire
- AC7116/4 - Laser Beam Machining LBM: Cutting

Surface Enhancement (AC7117) – Audit #131443

- AC7117/2 - Automated
- AC7117/5 - Manual

Welding (AC7110) – Audit #131394

- AC7110/1 - Brazing:
 - Baseline (All Audits)
 - Torch (Additional Requirements)
- AC7110/3 - Electron Beam Welding:
 - Baseline (All Audits)
- AC7110/4 - Resistance Welding:
 - Baseline (All Audits)

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- Projection Welding
- Seam Welding
- Spot Welding
- Shear Testing (Additional Requirements)
- AC7110/5 - Fusion Welding:
 - Baseline (All Audits)
 - Automatic / Semi-Automatic (Additional Requirements)
 - Titanium (Additional Requirements)
 - Filler Materials (Additional Requirements)
 - Processes Using Gas (For example GTAW, PAW) (Additional Requirements)
 - Tack Welding (Additional Requirements)
- AC7110/9 - Percussion Stud Welding:
 - Baseline (All Audits)
 - Automatic Capacitor Discharge Machines (Additional Requirements)

Welding (AC7110) – Audit #131394 – (Cont'd.)

- AC7110/12 - Welder/Welding Operator Qualification:
 - Baseline (All Audits)
 - Qualification of Titanium Welders (Additional Requirements)
- AC7110/13 - Metallographic Evaluation of Welds:
 - Evaluation of Welder / Welding Operator Qualifications
 - Evaluation of Fusion Welds
 - Evaluation of Electron Beam / Laser Welds
 - Evaluation of Resistance Welds

**Rolls-Royce Corporation
Plant 8
2001 South Tibbs Avenue
Indianapolis, Indiana 46241
Satellite Facility of Plant 5**

**Chemical Processing, Heat Treating, Nondestructive Testing,
Nonconventional Machining and Welding**

In recognition of the successful completion of the PRI evaluation process, approval is granted to this facility to perform the following:

Chemical Processing (AC7108) – Audit #131433

AC7108 - Chemical Cleaning:
Acid
Alkaline
Solvent
Titanium (Acid, Alkaline)
Ultrasonic
Conversion/Phosphate Coatings:
AMS 2485
Plating:
Copper – Customer Specification / Other
Stripping: Customer Specification

Heat Treating (AC7102) – Audit #131390

AC7102 - Brazing - AC7102/1 must also be selected
Carburizing - AC7102/3 must also be selected
Cryogenic Treatments
Steels:
(Normalize, Anneal, Stress Relieve or Temper)
(Quench and Temper – Commercial)
Customer Specification
Vacuum Heat Treating: Customer Specification
AC7102/S - Supplemental Audit Criteria for Heat Treating
U00 – None
AC7102/1 - Brazing: Vacuum Furnace
AC7102/3 - Carburizing: Customer Specifications / Other
AC7102/4 - Nitriding: Customer Specification / Other
AC7102/5 - Hardness Testing for Heat Treating:
(M2) Rockwell Hardness
AC7101/4 - Materials Testing – Metallography & Microhardness:
(L) Metallography (General)
(L6) Near Surface Examinations – Diffusion Coatings
(L7) Near Surface Examinations- IGA/IGO

NonDestructive Testing (AC7114 / AC7114S) – Audit #131470

- AC7114/1 - Liquid Penetrant Survey
- AC7114/1S - S-U6 Rolls-Royce Corp
- AC7114/2 - Magnetic Particle Survey
- AC7114/2S - S-U6 Rolls-Royce Corp
- AC7114/4 - Radiography
- AC7114/4S - S-U6 Rolls-Royce Corp

Nonconventional Machining (AC7116) – Audit #131444

- AC7116/3 - Electrical Discharge Machining (EDM):
 - Sinker
 - Wire

Welding (AC7110) – Audit #131393

- AC7110/5 - Fusion Welding:
 - Baseline (All Audits)
 - Filler Materials (Additional Requirements)
 - Processes Using Gas (For Example GTAW, PAW) (Additional Requirements)
- AC7110/12 - Welder/Welding Operator Qualification
 - Baseline (All Audits)

Approval Date: February 11, 2010
Expiration Date: January 31, 2011

Audit #132188
Certificate #132188

**Single Crystal Operations (SC)
Division of Rolls-Royce Corporation
5601 Fortune Circle
Indianapolis, Indiana 46241**

Nondestructive Testing

In recognition of the successful completion of the PRI evaluation process, approval is granted to this facility to perform the following:

NonDestructive Testing (AC7114 / AC7114S) – Audit #131469

AC7114 Rev C - Nadcap NonDestructive Testing (NDT) Suppliers Accreditation Program Audit Criteria

AC7114S Rev D - Supplemental Audit Criteria for Nadcap NonDestructive (NDT) Suppliers Accreditation Program Audit Criteria
S-U6 Rolls-Royce Corporation

AC7114/1 Rev C - Nadcap Audit Criteria for NonDestructive Testing Facility Penetrant Survey

AC7114/1S Rev D - Supplemental Audit Criteria for Nadcap Audit Criteria for NonDestructive Testing Facility Penetrant Survey
S-U6 Rolls-Royce Corporation

Approval Date: February 11, 2010
Expiration Date: January 31, 2011

Audit #132188
Certificate #132188

DEVIATION SUMMARY

NO DEVIATIONS

Open NUCAP Deviations Submitted to PRI on Jan 26, 2009

Process	Plant Location	Checklist Number	Checklist Paragraph	Details of Deviation	Planned Action	Planned Implementation Date	Deviation Submitted to Nadcap Task Group
Heat Treat	Plt 8	(AC7102/5)	(9.2, 10.3, 11.5.3, 11.7, 11.7.1, 11.8, 11.9, 13.2.1,)	Hardness blocks have too many indentations, block serial numbers are not recorded in log book, measured and converted values are not recorded, hardness values are recorded as a range or individual values. Test block does not designate tolerance. Periodic checks are not recorded. Procedure does not require periodic check prior to each test run using same set-up and same operator. Procedure does not address periodic test out-of-tolerance condition.	Implement TRN F.2.9-1A at Plant 8.	3/31/2009	N/A
Heat Treat	Plt 8	AC7102E	9.1.1.1	Not all furnaces have operating manuals.	Implement EOIs (Equipment Operator Instructions) at Plant 8.	3/31/2009	N/A
Heat Treat	Plt 8	AC7102E AC7102/5	9.2.1-9.2.4 5.3, 5.4, 5.5	No effective PM schedule in Plant 8 HT area. No PM on hardness testers and maintenance is not recorded.	Implement PM schedule. Implement record of maintenance performed on hardness testers.	3/31/2009	N/A
Heat Treat	Plt 8	AC7102E	9.4.1-9.4.3	No procedure for flow meters at Plant 8 exists.	Implement flow meters into an existing procedure or create a new one.	3/31/2009	N/A
Heat Treat	Plt 8	AC7102D (AC7102/3A)	9.7.1-9.7.2 2.1.1-2.1.4, 9.10, 9.11, 9.12	No procedure for carbon controls at Plant 8 exists. Currently there is no procedure in place to perform periodic carbon potential tests.	Implement carbon controls into an existing procedure or create a new one.	3/31/2009	N/A
Heat Treat	Plt 8	AC7102E	9.14.1-9.14.5	Plant 8 has very few if any loading diagrams and no requirement to examine for integrity, repair, etc.	Implement loading diagrams and fixture examination into an existing procedure or create a new one.	3/31/2009	N/A
Heat Treat	Plt 8	AC7102E	10.5.3-10.5.4	Chart speed is not being verified annually to within +/-3 minutes per hour.	Implement requirements of PCI 1960 at Plant 8.	3/31/2009	N/A
Heat Treat	Plt 8	AC7102E	10.6.3	Freezer and quench tank have not had an SAT performed on them yet as required by PCI 1960.	Perform SAT on freezer and quench tank and put into Gagelnsite recall system.	3/31/2009	N/A
Chem Processes	Plt 5	AC7108C	4.5.3	Currently solution constituents are in True Chem and individual PCIs, not in one matrix.	Revise PCI 1962 and Supplement 1 to contain all solution constituents and parameters.	3/31/2009	N/A
Chem Processes	Plt 5	AC7108C	5.1.2.1, 5.3.4	Current tank labels are not all accurate.	Apply temporary labels with correct information. Procure permanent labels through Environmental.	3/31/2009	N/A
Chem Processes	Plt 5	AC7108C	5.4.3.3	Chart Recorder speeds are not currently being verified annually to +/- 3 minutes/hour. (See NCR #1 from AC7102 Audit)	Write procedure and begin verifying chart speeds per AMS 2750D.	2/15/2009	N/A
Chem Processes	Plt 5	AC7108C	5.7.2, 5.7.4	Off-set distances and visual inspections are not being specified or recorded.	Add to applicable travel cards.	3/31/2009	N/A
Chem Processes	Plt 5	AC7108C	5.14.8	Strip procedure does not include an inspection of stripped component following strip operation.	Add to PCIs (including PCI 2999)	3/31/2009	N/A
Chem Processes	Plt 8	AC7108C	3.3.1f.1, 3.3.1h., 3.3.1i.1.4	No operation step or procedure identified for incoming inspection of hardware incoming to chemical processes. All logical steps are not grouped and signed off. All required process parameters are not recorded on shop travelers.	Update travel cards to include incoming inspection of hardware, all logical groups of steps and all process parameters recorded. Replacing current travel card system with CAPP.	3/31/2009	N/A
Chem Processes	Plt 5,8	AC7108C	4.4.2, 4.4.4, 4.4.5	No log for test failures, replacement tests, non-conforming tests, re-tests etc. Test log not reviewed at least quarterly for trends and any corrective actions applied to negative trends.	Develop log and incorporate procedure for reviewing log and responding accordingly.	3/31/2009	N/A

Open NUCAP Deviations Submitted to PRI on Jan 26, 2009

Process	Plant Location	Checklist Number	Checklist Paragraph	Details of Deviation	Planned Action	Planned Implementation Date	Deviation Submitted to Nadcap Task Group
SE	Plt 5	AC7117, AC7117/2, AC7117/5	6.4.2, 9.4.10d., 9.4.9e.	Media shape is not currently checked on in-use shot.	Add requirement to applicable SLP.	3/31/2009	N/A
NM	Plt 8	AC7116/3	3.1a, d 8.3c, d, f 9.3c, d, f 10.3c, d, f	A calibration procedure exists for meters and gages (including amps, volts, and conductivity). Calibrations have not been performed but have been requested through the R-R metrology group. There is no calibration plan for external capacitor on Current EDM machine. There is no calibration plan or performed calibration verifying operation of the power supply on Charmilles wire EDM machine.	Develop calibration plans, where required, and perform calibrations.	3/31/2009	NA
Weld	Plt 8	AC7110/5	8.2, 8.3, 9.1	Plant 8 inspection procedures do not specifically address visual inspector qualifications.	Revise Plant 8 inspection procedure to include a paragraph to address specific visual inspector qualification requirements.	3/31/2009	N/A
Weld	Plt 8	AC7110/5	10.1, 10.2	There is no procedure or recall system for preventative maintenance of Plant 8 weld equipment.	Create PM schedule for Plant 8 equipment.	3/31/2009	N/A