Leonardo Helicopters

QRS-104 Special Processes



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QRS-104

Special Processes

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CHANGES LOG

Issue	Revision	Approval Date	Main changes	Interested Paragraphs
00	N/A	April 2015	First Issue – Supersedes IQ S004 rev. C	All
01	N/A	June 2018	Document significantly rewritten and reformatted	All
02	N/A	June 2019	Editorial changes and clarifications Reference to Annex 1 removed	2; 5.2.1; 8 10; Appendix 2
03	N/A	June 2020	Restore of the reference to Annex 1, as independent document published in the Supplier portal Updated Applicability Updated Acronyms New requirement for a test failure procedure Change of requirement about application for DQP renewal Conditions for requalification updated and clarified Clarification about Nadcap accreditation changes to notify to LH Note for Manufacturers Subcontracting Special Processes Addition of Minimum content of the Qualification/Renewal/Requalification Report Inclusion of Table of Special Processes for PZL Products only	1; 2; 10; Annex 1 2 4 5.3 5.4 5.5 5.6 8 Appendix 1 Appendix 2
04	N/A	February 2025	Updated Applicability Updated acronyms and definition Removed sentence about requalification already at 5.5 and introduced requirement on documentation control Interchanged para 5.2.1 and 5.2.2 Updated conditions and wording for the requalification process and added note Clarified requirement about personnel changes	2 4 5.1 5.2.1 and 5.2.2 5.5 5.5

			Introduced PRI EAN Modified para 5.9 and introduced para 5.9.1 and 5.9.2 Updated occurrences for DQP suspension/cancellation/lapse Updated requirements for Sub-tiers of Manufacturers Updated minimum contents of the Qualification/Requalification report Updated tables of LH special processes Update requirements for Service Providers and sub-tiers performing laboratory activities Update DQP form Wording updated	5.6 5.9 6.5 8 Appendix 1 Appendix 2 Appendix 3 All
05	Rev00	November 2026	Updating applicability and table 1 Updating Acronyms and abbreviations Updating LH specification availability and better specifying general requirement Better specifying requalification requirement Better specifying welding personnel requirement Updating and better specifying RFVA requirements and better specifying deviation to WHPS Updating to better specify some minimum information Updating to better specify pyrometry requirements and the possibility to exploit other DQP for laboratory testing activity.	2 4.1 5.1 5.5 5.7.2 7 Appendix 1 Appendix 2

APPLICABLE DOCUMENTS

This document *shall* be applied together with the main document (QRS-01 Quality Requirements for Suppliers) and with the other applicable modules.

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1 Purpose

Purpose of this procedure is to indicate how to proceed if Special Processes are required to produce parts and how to manage their qualification, qualification renewal and requalification. Special Processes *shall* be performed by qualified personnel, utilizing approved equipment, methods and materials.

Qualification is synonymous with *Validation*, to the extent of this procedure.

The LH Special Processes are defined in Appendix 2.

The LH Process Specifications are listed in Annex 1

2 Applicability

This procedure, except paragraph 8, applies to:

- *Subcontractors* suppliers performing Special Processes per LH Process Specifications (see Annex 1), National and International Specifications (MIL, AMS, ASTM etc.), Licensee/Partner/Customer Specifications[1].
- *Manufacturer* Suppliers performing Special Processes per LH Process Specification (see Annex 1)

For *Manufacturer* Suppliers performing Special Processes against International or Proprietary Specifications only paragraphs 5.1, 5.7 and 8 are applicable.

For Suppliers of LH Standard parts please refer to the latest revision of AWTR999.

This procedure is not applicable for Suppliers of raw materials[2] and for the production of Ground Service Equipment and tooling.

Please refer to QRS-01 for definitions of LH Supplier categories.

The requirements for Suppliers performing Special Processes for a LH part are reported in the table below.

[1] Note: National/International specifications and the other LH Engineering technical documentation related to special processes are not listed in Annex 1. The selection to identify a Special Process shall be directly made on the base of the Table of Special Processes in Appendix 2.

[2] Unless working per LH Process Specifications. Forgings and Castings are not classified as raw materials.

Processor (Special Process Supplier)	Direct Customer	Special Process Specification		
		LH Specification	National/ International Specification	Manufacturer's Proprietary Specification
Manufacturer	LH	Nadcap accreditation and DQP[3]	See paragraph 8	See paragraph 8
Subcontractor	LH or a Subcontractor	Nadcap accreditation and DQP	Nadcap accreditation and DQP	N/A
	Manufacturer providing Critical, Primary and Significant Parts	Nadcap accreditation and DQP	Nadcap accreditation or DQP	Nadcap accreditation or Control System[4]
	Manufacturer Providing non Critical Parts (NC)	Nadcap accreditation and DQP	Manufacturer Surveillance	Manufacturer Surveillance

Table 1: Requirements for Suppliers performing Special Processes

3 Effective date

Issue date.

4 Acronyms, definitions and abbreviations

4.1 Acronyms and abbreviations

AWPS	AgustaWestland Process Specification
DCN	Document Change Notice
DQP	Declaration for Qualification of the Process
LH	Leonardo Helicopters
Nadcap	National Aerospace and Defense Contractors Accreditation program
QC	Quality Control
RFVA	Request For Variation Approval
SQA	Supplier Quality Assurance
STA	Specifica Tecnologica Agusta (Agusta Tecnology Specification)

3 For Manufacturer suppliers only, in case a drawing recalls LH process specification just for acceptance criteria, DQP is not required.

4 In case of Sub-tier suppliers without Nadcap accreditation, the Manufacturer shall have an effective Control System in place to qualify, to control and to maintain the special process performed. Evidence of Special Process qualification, control and monitoring shall be attached to the Quality Plan (see QRS-108).

4.2 Definitions

PRI eAuditNet / PRI EAN: Web application to access PRI (Nadcap) data system.

Special Process: Special Processes are those individual processes whose results on the product cannot be completely verified by measurements or objective checks, and where discrepancies can affect in service performance of the parts. Special Processes require approval and review, and *shall* be qualified prior to use. The definition also includes Processes performed with portable equipment/devices or only by personnel where applicable.

5 Requirements

5.1 Introduction

When Special Processes are required by drawings or other Engineering requirements for manufacturing operations or inspections, the Supplier *shall*:

- identify the Special Processes and the applicable process specifications on the manufacturing documentation;
- ensure traceability to the process specification and applicable RFVA on manufacturing documentation;
- written the manufacturing documentation by using a suitable language, wording and level of detail, clearly understandable to the operator involved in the manufacturing operations;
- check all the aspects relevant to the Special Process (such as material, equipment, personnel, procedure and software) so that the produced results are repeatable;
- define the significant operations and process parameters to be controlled during production;
- use only approved sources for Special Processes (LH approved sources are available at the QRS-01 Website).

Special Processes *shall* be qualified before being used.

The Supplier *shall* include in his records the objective evidence of the use of qualified Special Processes.

The Supplier *shall* check all applicable specifications, standards and documentations as per the latest issue of QRS-01.

To consult LH specifications, follow the instruction reported at the QRS-01 website.

To consult WHPS specifications portal, the Supplier shall write an e-mail to: LHUK_Supplier_Portal@leonardo.com. After an internal evaluation, the supplier will receive log-in details.

5.2 Special Process Initial Qualification

It is Supplier responsibility to request the initial Qualification to LH Procurement, specifying the required scope of approval. LH Procurement *shall* inform SQA, who will identify and involve the competent LH Laboratory that will conduct the Special Process assessment, in direct contact with the Supplier for qualification activities.

To apply for qualification, the Supplier *shall*:

- Achieve a LH SQA System approval suitable for Special Processes
- Achieve a Nadcap accreditation if the Special Process is identified by Nadcap, (see Appendix 2) or submit a Nadcap accreditation plan acceptable to LH
- Identify in detail the required scope of approval, in terms of special processes and Process Specifications
- Perform a gap analysis against the applicable process specifications/requirements, and make any implementations needed to achieve and assure compliance.

The Supplier *shall* prepare and submit to LH Laboratory a Qualification Report, according to Appendix 1, as part of the qualification activities.

The LH verifications activities can include visits/assessments at the supplier site, documental checks, testing and any other verifications deemed necessary by the LH Laboratory for the evaluation of the process effectiveness.

Any deviations from the applicable Process Specifications can only be accepted if approved by LH Engineering through RFVA (see paragraph 7).

Alleviations for Nadcap accredited Special Processes are described in paragraph 5.6 for first Qualification, Renewal and Requalification.

5.2.1 Qualification Report

The Qualification Report shall be in accordance with the requirements in Appendix 1 and *shall* be sent directly by the Supplier to the assigned LH Laboratory.
When required by the Process Specification all the applicable technique sheets (Process Card, detailed Work Instructions, etc.) shall be approved by LH prior to work.

Any Technique Sheets for NDT *shall* be managed and approved according to the requirements of Agusta Westland Process Specifications (AWPS).

5.2.2 Approval document: DQP

The document sent to the Supplier by LH to grant Special Process approval is the DQP (see Appendix 3). The DQP *shall* be displayed on the equipment or as close as possible within the facility in relation to layout and nature of the process.

The approval (DQP) has a maximum validity of three (3) years, unless a shorter validity is defined by LH or by contract.

Not approved Special Processes *shall* not be used for LH products.

5.3 Process Controls Testing (maintenance checks)

Every process is subject to a periodical checks program for the maintenance of the qualification in compliance with applicable process specifications and with DQP directives.

Process control tests per applicable specifications/requirements shall be performed under Supplier responsibility.

The process control tests shall be recorded.

In case of deterioration of the system performances observed from the process control testing results, preventive actions shall be put in place before test failures.

In case of test failures, the processor is responsible to ensure appropriate investigations and corrective actions, informing QC of the LH plant if a product impact is suspected. A procedure is required to describe how a test failure shall be managed by the supplier.

The process control tests listed in the DQP should reflect at least the minimum process control tests required by the applicable process specifications. This list on the DQP may be a list of high level callouts to applicable specifications /procedures. In case of conflict with the DQP list, the applicable Process Specifications *shall* prevail and any deviations in the process control testing requirements *shall* be authorized by LH Engineering through deviation (RFVA) according with paragraph 7.

A detailed process control system *shall* be implemented by the Supplier, who is directly responsible for process control testing compliance with Specifications / Engineering requirements.

5.4 Qualification Renewal (applicable only at DQP expiration)

The Supplier who wants to apply for validation renewal *shall* send to the applicable LH Laboratory manager, at least 2 months before the DQP expiry date, the validation report with the contents of Appendix 1.

The validation renewal requires the re-issue of the DQP and *shall* be performed as the initial validation unless differently specified by the applicable specifications.

5.5 Requalification

The requalification of a special process *shall* be performed when at least one of the following conditions occurs:

- Relevant modifications of the special process or of process parameters
- Maintenance operations or equipment modifications that may affect the performances of the equipment
- Equipment change or relocation of one or more equipment (including new equipment and movement of equipment within the facility)
- Inactivity exceeding one year
- Suspension

- Change of Supplier Company name
- Revision of a process specification, issue of a new (superseding) specification or issue of DCN, when applicable
- New RFVA
- Other conditions called out in the applicable process specifications

The revalidation requires the re-issue of the DQP and impact on the process shall be evaluated.

In case of modifications that can clearly affect only specific parameters and not the process in the whole, the testing plan may be focused on those parameters but *shall* demonstrate that the changes do not affect process compliance.

The Supplier *shall* immediately inform, in written form, the LH Laboratory and SQA[5], if at least one of the conditions that require requalification occur and submit all the required documentation.

In case of facility change, the supplier *shall* notify LH prior to start with any relocation and shall collaborate with the Quality Control/LH Laboratory in charge until the end of the activity aiming at re-issuing the DQP.

In case of revision of the process specifications called out in the scope of the DQP or in case of issue of a superseding (new) specification, an assessment for impact on the process *shall* be performed by the Supplier and documented on file as record equivalent to a qualification report. This assessment and any process modification/update *shall* be implemented within six months since the issue date of the specification, unless differently specified in the Process Specification or otherwise authorized by LH Engineering by RFVA.

Changes due to revised specifications that have no impact on the process or in the process control testing do not require the re-issue of the DQP, that will remain valid until the next expiry date.

In case of issue of a new (superseding) specification, the DQP *shall* be re-issued.

Qualified personnel update does not require update of Declaration provided that supplier keep and maintain an updated list of the qualified personnel authorized of the process.

5.6 Nadcap approval

LH mandates Nadcap accreditation to suppliers performing special processes in the applicable Nadcap commodities listed in Appendix 2.

At LH discretion, lack of commitment by the supplier to achieve and maintain a Nadcap accreditation may result in the discontinuation of their LH special process

[5]SQA shall be informed in case of relocation or company name changes only (AWSupplierQualityAssurance.AW@leonardocompany.com).

approval/renewal and validity, or in additional surveillance/quality requirements. The cost of extra surveillance activities, that could be performed using the applicable Nadcap checklist, *will* be charged to the Supplier.

Nadcap accredited LH Suppliers *shall*:

- Clearly indicate LH as Subscriber/Customer in PRI EAN for each Nadcap Audit to be performed;
- Include all the applicable LH supplemental Nadcap checklists in the audit scope;
- Regularly submit LH parts during jobs audits;
- When applicable, clearly indicate the LH Process Specifications used (for example during CP Nadcap Audits).

A current Nadcap accreditation maintained as described above may be a valid justification for reducing LH qualification activities/verifications for DQP and special process surveillance/DQP renewal. In this case, the following alleviations apply:

- The LH Laboratories issuing the DQP may skip the verification of the requirements already part of the Nadcap scope approval, limiting the checks to the specific LH requirements.
- LH may, missing any specific elements of risk or quality issues, waive special process oversight audits/visits for first approval and/or requalification. The DQP renewal may be granted based on an updated list of personnel and equipment.
- For Special Processes per National/International Specifications having these specifications in the audit Scope, a test report (see Appendix 1) can be waived and the DQP granted only based on a current Nadcap accreditation.

Any lapse of Nadcap accreditation and removal of the applicable National/International specifications from the Nadcap scope of approval *shall* be immediately notified by the Supplier to LH SQA and can be the cause of DQP suspension/lapse.

5.7 Personnel Qualification for Special Processes

The Supplier *shall* arrange and keep updated the list of personnel assigned with detail of relevant competence, tasks and any limitations. The personnel *shall* be designated on the basis of minimum performances to be satisfied related to:

- physical fitness for the task,
- documented evidence of the training results and of attended theoretical and practical courses and experience,
- detailed knowledge of the system/equipment and process (theoretical and practical),
- evidence of operational continuity and skill for the task.

All the applicable requirements related to the above *shall* be addressed in a documented supplier procedure, acceptable to LH.

This procedure *shall* flow-down all the applicable requirements (e.g., contractual requirements, process specifications, Nadcap checklists).

This procedure *shall* also address in detail the methods for: physical fitness verification, training, examination, issue of approval and maintenance for the specific skills and records.

The required training and coaching *shall* cover all the applicable process specifications, testing/inspection methods and equipment. The training programs *shall* be addressed to the continuous improvement of the personnel and *shall* also cover specifications and equipment updates.

The supplier is responsible for keeping the list of special process personnel updated, to be submitted to LH at any time upon request and during the visits at the Supplier facility.

The list of the personnel assigned to the special processes and evidence of approval *shall* be submitted to LH as part of the validation report for initial special process validation, revalidation and renewal. The personnel qualified at the time of the qualification *shall* be identified on the DQP or, as alternative, it is acceptable to identify the supplier report where is listed the personnel qualified for the Special Processes. Qualified personnel update does not require update of Declaration provided that supplier keep and maintain an updated list of the qualified personnel authorized of the process.

During the activity performed to approve the supplier Quality Management System and during any surveillance visit, SQA *shall* verify how the supplier qualifies his personnel involved in the Special Processes.

5.7.1 Personnel performing NDT inspection

EN4179 or equivalent NAS410 *shall* be applied as the applicable aerospace standards containing minimum requirements for NDT personnel qualification and approval, unless otherwise specified by applicable engineering requirements and/or purchase order. These requirements are also applicable to Sub-Tiers.

The Responsible Level 3 of a Subcontractor, Manufacturer or Sub-tier of a Subcontractor *shall* be identified and notified to and recognized by LH Responsible Level 3. Detailed instructions are reported in QRS-01 website.

Remark: for all qualification requirements (i.e. formal training, experience, examination, vision test), approval requirements, and annual proficiency of NDT personnel assigned to perform inspections according to AWPS specifications, AWPS009X applies.

5.7.2 Welding personnel

Welders shall be approved and maintained according to AWS.D.17.1 unless otherwise specified by applicable engineering requirements.

5.8 Special Process Equipment management

The Supplier is responsible for assuring that all the equipment is clearly and appropriately identified with ID number of the equipment, description of the process and of every single operation performed in every single station.

Any inactivity of the equipment/process due to maintenance activity *shall* be immediately identified with devices (i.e. visible tables indicating maintenance etc.) that clearly prevent the execution of the process.

The process control tests may not be performed during the process inactivity but *shall* be performed before the re-start of the process, unless there are conditions for loss of qualification.

6 DQP Suspension/Lapse

Supplier DQPs may be suspended or lapsed upon discretion of LH in case of:

- Quality issues related to the approved Special Process
- Change of supplier facility without notification to LH
- Missing process re-validation when the conditions for re-validation occur
- Supplier delays on providing the validation reports that may cause in delay in the DQP renewal beyond the expiration date
- End/interruption of contract or supplier activities for LH
- Suspension of Supplier status of LH approved Supplier.
- Undeclared production process deviations
- Loss of Nadcap Accreditation, where applicable
- Any other violations to this procedure

Lapse and/or suspension of a DQP will cause as consequence the quarantine of the parts and management by concessions.

7 Exceptions to LH Process Specifications (Request for Variation Approvals – RFVA)

Exceptions to applicable LH process specifications[6] *shall* be managed through RFVA using the appropriate form (see QRS-01). The RFVA *shall* be submitted to LH

[6] Such as AWPS, STA, WT.PS and PP.PS.
Deviations to WHPS specifications are governed by WHPS656.

Engineering through the competent LH Laboratory or Quality Control responsible for DQP approval.

The assessment of the RFVA (performed by LH Engineering) could result in approval (full approval or with limitations) or rejection.

The number of an approved RFVA, if implemented, shall be indicated on the manufacturing documentation (e.g., manufacturing operations sequence/manufacturing routings and/or process sheets) ensuring traceability.

Remark: an approved DQP is not a valid document to authorize deviations to Process Specifications without an approved RFVA.

The approved RFVA shall apply exclusively to the process specification for which it has been approved and cannot be applied to any other LH process specification.

An RFVA classified as integrable can be used by anyone, not only by the supplier or plant listed on it.

8 Special Processes performed by *Manufacturer* Suppliers per International or Proprietary Specifications

Manufacturer Suppliers performing Special Processes according to International or Proprietary Specifications on LH articles *shall* have an effective system in place to qualify, control and maintain these special processes. The Supplier *shall* identify the Processes listed in Appendix 2 as Special Processes.

This system *shall* include documented procedures to manage:

- Identification of Special Processes and use for production
- Special Process Qualification
- Special Process Control and maintenance, to make sure the approval is maintained
- Training and Qualification of personnel involved with the process, qualification of equipment, methods and materials

For these Suppliers it is *not required process approval by DQP* granted by LH.

Remark: a current Nadcap accreditation can be considered a valid condition to cover the capabilities above.

The Supplier Capabilities to manage and control these special processes are assessed by SQA during the Supplier Quality approval and during surveillance.

The Supplier Control system mentioned above, with the applicable procedures and with a list Special Processes and Specifications used on LH articles *shall* be described in the Quality Plan for new development products (see QRS-108).

Manufacturer Suppliers can subcontract Special Processes for a LH Part to Sub-tiers suppliers according to Table 1.

9 Records

Record	Retention period
DQP	3 years starting from the date of cancellation/ deletion / superseded / expiry
RFVA	Life Of Product + 3 years
Validation Test Reports	3 years starting from the date of cancellation/ deletion / superseded / expiry

10 Appendixes, Annexes and Forms:

- Appendix 1: Minimum Contents of Qualification/Renewal and Requalification Report
- Appendix 2: Table of Special Processes
- Appendix 3: Declaration for Qualification of the Process (DQP)
- Annex 1: List of LH Special Process Specifications

Appendix 1: Minimum content of the Qualification/Renewal/Requalification Report

Supplier Quality Manager e-mail address

Production site (full address)

List of the applicable specifications

List of the technological specifications applicable for the primary special process (i.e. heat treating) and of all the auxiliary specifications used in support of the primary process (i.e.: testing, calibration, pyrometry, cleaning/degreasing). All specifications with their own revision level and related DCNs (if applicable).

List of the applicable procedures and instructions

List of the internal procedures and instructions governing the Special Process and the auxiliary processes (testing, calibration, cleaning, etc.), with revision level. Includes the qualification of personnel.

Short description of the process

Clearly describe the SP, any sub-processes and relevant information, such as limitations

List of equipment and description:

Fixed and portable equipment, including the following information:

- Identification Number
- Manufacturer
- Type model
- Serial Number
- Functional and geometrical properties
- Measuring/monitoring instruments used for the process and evidence of calibration current

Validation tests

Validation tests requested per applicable specifications to demonstrate compliance, inspections and calibrations, including test reports with evidence of requirements and achieved results.

Consumable materials (see IAQG Dictionary)

List of consumable materials used for the process

Plant layout

Map of the areas where the process is performed with equipment location

List of Qualified Personnel authorized to perform the process

Qualified operators, inspectors, testing personnel, relevant responsible people/supervisors

Evidence of Personnel Qualification

Certificates of qualified personnel (for example NDT and Welding operators/inspectors).

For NDT, the evidence that Responsible Level 3 has been recognized by LH Responsible Level 3 according to QRS-01.

Exceptions/Limitations from the applicable requirements

Any deviations *shall* be clearly declared, including copy of approval documents (i.e.: RFVA) signed by the competent authorities.

Checklists used/verification criteria for supplier NOT Nadcap approved

Copy of the checklist(s) used to demonstrate compliance to the applicable requirements/specifications, filled in with the results of the internal assessment, or other verification criteria used to demonstrate compliance.

For NDT special processes NOT Nadcap approved

Copy of the last self-audit performed using the applicable Nadcap Audit Criteria-AC7114/X.

Nadcap approval

Specify if the process is Nadcap approved or not. If the process is Nadcap approved, the supplier *shall* provide copy of Certificate and the Scope of Accreditation.

Appendix 2: Tables of LH Special Processes

Manufacturing Special Processes	Nadcap Commodity
Heat Treating and thermochemical treatments, stress relieving	HT
Chemical and galvanic treatments for protection and for surface preparation, including brush/touch-up applications. De-embrittlement processes, when applicable, shall be included in the DQP of the main process.	CP
Vacuum metal (cadmium) deposition	CP
Application of solid (dry) film lubricant	CP
Chemical milling	CP
Painting of helicopter blades	CP
Structural bonding, curing and composite manufacturing	COMP
Welding	WLD
ALM process (Additive Layer Manufacturing)	AM
Shot peening	SE
Thermal spray coating	CT
Vapour Deposited Coatings (Physical Vapour Deposition and Chemical Vapour Deposition)	CT/CP
Material surface preparation for bonding[7]	CP/COMP
Brazing	HT/WLD
Electrical Discharge Machining (EDM)	NM
Chemically assisted isotropic super-finishing of metallic materials	Not identified by Nadcap
External thread rolling	Not identified by Nadcap
Thermal coupling/assembly of parts	Not identified by Nadcap
Swaging of flight control rods and connecting rods	Not identified by Nadcap
Impregnation of castings	Not identified by Nadcap
Hot Isostatic Pressing of castings (HIP) – *Hipping* of castings	HT
Application of permanent resin cover	Not identified by Nadcap
Crimping and assembly of electrical cables	Not identified by Nadcap
Inspection (NDT) Special Processes	**Nadcap Commodity**
Radiographic and Radioscopic Testing (RT)	NDT
Etch Inspection Testing (EIT)	NDT/CP
Liquid Penetrant Testing (PT)	NDT
Magnetic Testing (MT)	NDT
Eddy Current Testing (ET)	NDT
Ultrasonic Testing (UT)	NDT
Bond Test by tapping (BT). *For this process only personnel qualification is required (No DQP)*	Not identified by Nadcap

Table 2: LH Special Processes

[7] For hand sanding process only personnel qualification is required

Special Processes for PZL Products only	
Manufacturing Special Processes	**Nadcap Commodity**
Air Painting	CT
Soldering of helicopter system cable connectors	Not identified by Nadcap
Bonding	COMP
Helicopter fuselage sealing	Not identified by Nadcap
Cable end staking	Not identified by Nadcap
Installation and staking of self-lubricating bearings with retaining grooves	Not identified by Nadcap
Pressure line end staking	Not identified by Nadcap
Duralumin push-pull rod end upsetting	Not identified by Nadcap
Reinforcing the holes by rolling	Not identified by Nadcap
Surface strengthening by rolling on lathe	Not identified by Nadcap
Vibration strengthening	Not identified by Nadcap
Manufacture of highly-loaded composite structures	Not identified by Nadcap
Fabrication of glass and carbon composite structures for SW-4 helicopter cabin	Not identified by Nadcap
Riveting	Not identified by Nadcap
Repair processes of damaged surfaces after anticorrosion coating treatment	Not identified by Nadcap

Table 3: Special Processes for PZL Products only

Acronyms:

HT: Heat Treating
CP: Chemical Processing
COMP: Composites
NDT: Non Destructive Testing
WLD: Welding
SE: Surface Enhancement
CT: Coatings
NM: Non-conventional Machining
AM: Additive Manufacturing

Additional remarks:

Within the production documents (cycles or other shop documents), the cycle operations describing or specifying Special Processes *shall* be clearly pointed out (for instance with the letter “S” or underlined or other similar).

Auxiliary processes

Some of the auxiliary processes may be also Special Processes. The focus is on the fact that they cannot be approved with a specific approval (DQP) outside of the primary Special Process). The auxiliary processes cannot be approved by a specific dedicated DQP because they require awareness of the requirements of the main process (e.g. maximum delay time of de-embrittlement after plating).

The following are considered auxiliary processes and cannot be approved by dedicated DQP but shall be assessed and included in the scope approval of the DQP of the main process:

- Cleaning or degreasing as surface preparation for a main process (heat treat, plating, etc.)
- Thermal treatment for hydrogen de-embrittlement after embrittling processes like plating/etching.
- Laboratory testing and inspections (hardness, conductivity, tensile, ~~pyrometry~~, thickness, process controls, inspection of thread rolling etc.).

The auxiliary processes can only be used for captive applications (in support of the process performed by the processor) and *shall* be reviewed for approval with the main process with the same level of detail as the primary process, since they are as important as the primary.

The auxiliary specifications *shall* be listed in the DQP scope of approval of the main process.

Suppliers performing laboratory testing activities for LH plants need SQA approval under the Laboratory Scope (DQPs are not applicable for laboratory testing activities).

LH's Suppliers shall flow-down QRS-01 and testing requirements to their sub-tier suppliers that perform laboratory testing activities. These sub-tier suppliers shall be certified to ISO/IEC 17025 or maintain, at a minimum, Nadcap accreditation for MTL and NMMT, and shall not require LH SQA approval.

Suppliers that hold DQP approvals for Special Process that also covering specific laboratory testing (no pyrometry) are authorized to perform those tests for any other LH Suppliers.

Pyrometry checks

Pyrometry checks shall be performed in accordance with AMS2750 unless otherwise specified by the applicable Engineering and/or process specification requirements.

Material Testing are identified by the following Nadcap Commodities:

- MTL: Material Testing Laboratory
- NMMT: Non Metallic Material Testing

Appendix 3: Declaration for Qualification of the Process (DQP)

LEONARDO	**D Q P** Declaration of Qualification of the Process Dichiarazione Qualifica Processo	Leonardo Helicopters N°XXXX/YYYY/ZZZZ

☐ INITIAL QUALIFICATION Qualificazione Iniziale ☐ RENEWAL OF QUALIFICATION Rinnovo della Qualifica ☐ REQUALIFICATION Riqualificazione ☐ External / Esterna ☐ Internal / Interna

APPROVED SUPPLIER OR LH PLANT/ Fornitore o Sito LH	**RESPONSIBLE LH SITE** / Sito LH Responsabile
PRODUCTION SITE / Sito Produttivo	**DEPARTMENT - BUILDING** / Reparto - Edificio

SPECIAL PROCESS / Processo Speciale

PROCESS DETAIL / Dettaglio Processo

APPLICABLE SPECIFICATIONS AND REVISION NUMBER
Specifiche Applicabili e Relativo Stato di Revisione

EQUIPMENT AND RELEVANT DATA / Impianti e Dati Rilevanti

APPROVED ACTIVITIES / Attività Approvate

LIMITATIONS / Limitazioni

THE PROCESS IS APPLICABLE FOR THE PRODUCTION OF PARTS P/N
Specifiche Applicabili e Relativo Stato di Revisione

☐ AgustaWestland	☐ Bell	☐ Boeing	☐ Sikorsky	☐ AW609 per BPS spec	☐ ICH-47F	☐

PERSONNEL ASSIGNED TO THE PROCESS / Personale addetto al processo

PRODUCTION RESPONSIBLE / Responsabile Produzione	**QUALITY RESPONSIBLE** / Responsabile Qualità
ASSIGNED PERSONNEL / Personale addetto	**INSPECTORS / NDT Personnel** / Controllori

RESPONSIBILITY: THE APPROVED LH FACILITY / SUPPLIER IS RESPONSIBLE TO PERFORM ALL TESTS REQUIRED BY APPLICABLE PROCESS SPECIFICATIONS
Responsabilità: il Reparto LH / Fornitore approvato è responsabile di eseguire tutte le prove richieste dalle Specifiche Applicabili
TRACEABILITY: RECORDS OF ALL PROCESS CONTROL TESTING PERFORMED AND RELATED RESULTS MUST BE AVAILABLE
Rintracciabilità: deve essere disponibile la registrazione di tutte le prove di controllo processo e relativi risultati

APPROVED DEVIATIONS-RFVAs / Deviazioni-RFVA Approvate

QUALIFICATION REPORT No. / Rapporto di Qualifica N°	**QUALIFICATION REPORT DATE** / Data Rapporto di Qualifica

DQP INITIAL VALIDITY DATE Data Inizio validità DQP	**DQP VALIDITY** Validità DQP	**DQP EXPIRATION DATE** Data Scadenza DQP

THIS DOCUMENT MUST BE DISPLAYED ON THE EQUIPMENT OR AS CLOSE AS POSSIBLE
Il presente documento deve essere esposto sugli Impianti o nelle immediate vicinanze

Prepared By Preparato Da	**Date** Data	**Laboratory Responsible** Responsabile di Laboratorio	**Date** Data	**QUALITY CONTROL MANAGER** Responsabile Quality Control	**Date** Data

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Register number:
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Document issued with electronic signatures
Documento emesso con firme elettroniche

LEONARDO	D Q P Declaration of Qualification of the Process Dichiarazione Qualifica Processo	Leonardo Helicopters N° XXXX/YYYY/ZZZZ

PROCESS CONTROL TESTS AND INSPECTIONS TO BE PERFORMED Prove di Controllo Processo e Ispezioni da Eseguire	FREQUENCY Frequenza	REFERENCE DOCUMENTS Documenti di Riferimento
REVISIONS / Revisioni		
REMARKS / Note		
COMMODITY / Commodity		

Continued from page 1 / Segue da pagina 1

APPLICABLE SPECIFICATIONS AND REVISION NUMBER / Specifiche Applicabili e Relativo Stato di Revisione	
ASSIGNED PERSONNEL / Personale addetto	INSPECTORS / NDT Personnel / Controllori

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Annex 1: List of LH Special Process Specifications

List of LH Special Process Specifications is a reference list of the current LH process specifications (AWPS, STA, WHPS, WT.PS and PP.PS, etc..) identifying Special Processes.

In case of conflict between the List of LH SP Specification in Annex 1 and the Table of Special Processes in Appendix 2, the Table of Special Processes in Appendix 2 shall prevail (i.e. specifications recently issued and not included in Annex 1). Ask LH Laboratory in case of doubts.