AIRBUS

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AIRBUS CANADA A220 ENGINEERING REQUIREMENTS DOCUMENT

A2ERD A220-000

REV. B

MATERIAL AND PROCESS ENGINEERING DOCUMENTATION EFFECTIVITY AND APPLICATION

REVISION HISTORY

REV.	DATE	eCRA # or ORIGINATOR	PAGES AFFECTED
--	2019-09-25	eCRA 50074	All, new document
A	2019-11-29	eCRA 50103	1, 3, 4, 5, 6, 7
B	2021.04.30	eCRA 50946	1, 2, 5, 6, 7, 8, 9

Comments:

Rev. “B”

Updated in view of Airbus Canada release of engineering documentation on internal and external portals. Added information on release of top GA (General Assembly) datasets for A220 aircraft.

Clarified the flow-down of nomenclature and functions supersession through Engineering changes on top GA and other datasets.

Rev. “A”:

Minor editorial changes to correct documents numbering and add missing in the original release inherited abbreviations and function names. Text in Section 5 (Interpretation Rules) simplified for clarity.

DISPOSITION OF STOCK:

MATERIALS: ***Use***

PARTS PROCESSED: ***Use***

MATERIAL AND PROCESS ENGINEERING DOCUMENTATION EFFECTIVITY AND APPLICATION

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MATERIAL AND PROCESS ENGINEERING DOCUMENTATION EFFECTIVITY AND APPLICATION

1 SCOPE

This governing document is developed in order to implement the engineering documentation evolution rules to ascertain Airbus Canada Engineering control over materials and manufacturing processes (M&P) employed to manufacture the Airbus A220 model aircraft, formerly known as Bombardier Aerospace CSeries.

2 APPLICABILITY

Requirements stipulated in this document are mandatory for compliance for all engineering, manufacturing and processing organizations and facilities involved in the design, procurement of materials, manufacturing, finishing, and assembly of parts and components for A220 model aircraft. This includes all partners, suppliers, and all functions of Airbus Canada organization.

3 APPLICABLE AIRBUS CANADA A220 DOCUMENTATION

AM4050	Part Based Product Definition Manual
AM4050.03.03.01	Part Based Product Definition Manual. Aircraft Top Level Dataset
AM7016	Airbus Canada A220 Materials and Processes Manual (MTLP)
AM4050.02.02.04	Airbus Canada A220 Manual: Computer Aided Design (Cad) Dataset Notes
AM4050.02.02.02	Airbus Canada A220 Manual: Pictorial Sheet Formats
A2EMM-001	Airbus Canada A220 Engineering Materials Manual
A2EPM-001	Airbus Canada A220 Engineering Process Manual
A2ERD 100-000	Numerical Index of Airbus Canada A220 Engineering Requirements Documents
A2PS 100-000	Numerical Index of Airbus Canada A220 Process Specifications
A2MS 100-000	Numerical Index of Airbus Canada A220 Material Specifications
A2TS 100	Numerical Index of Airbus Canada A220 Test Standards
A2LS 100	Numerical Index of Airbus Canada A220 Laboratory Specimens
A2NDE 100	Numerical Index of Airbus Canada A220 Specific Non-Destructive Evaluation Procedures

A2MPEP 100	Numerical Index of Airbus Canada A220 Material and Process Engineering Procedures
C00001100-001	Engineering Dataset: GA A220-100 (CS100)
C00001300-001	Engineering Dataset: GA A220-300 (CS300)

4 GENERAL

Engineering drawings defining the aircraft in accordance with Product Definition Manual AM4050 fully rely on AM7016 Airbus Manual, which is dedicated to regulate and control the following activity fields:

1. **PRINCIPAL MANUFACTURING ACTIVITIES:**
   a) Selection, qualification, procurement and control requirements for all **materials** used to manufacture, finish, and assemble the aircraft
   b) Definition, qualification and control requirements for all manufacturing **processes** used to build components, finish, and assemble the aircraft
2. **SUPPORTING MANUFACTURING ACTIVITIES:**
   a) Definition and control of Non-Destructive Evaluation (**NDE**) methods and procedures for raw materials, parts and assemblies during manufacturing to assure product integrity and development of in-service NDE procedures
   b) **Laboratory** control procedures required to control the materials and manufacturing processes, support for engineering development, investigations and failure analysis

Conformity to Airbus Canada A220 material and process (M&P) engineering documentation is the basis of continuous airworthiness and certification compliance of manufactured aircraft.

In order to assure these needs are supported, several series of dedicated M&P Engineering documents are used.

Refer to table 1 for M&P documents naming convention, new and inherited documentation identifications.

4.1 M&P ENGINEERING DOCUMENTATION NAMES AND ACRONYMS

As the original (inherited) M&P Engineering documentation which is the basis of type certificate compliance is used and maintained elsewhere, the naming convention and acronym identification is changed. This change is introduced to assure Airbus Canada organization maintains full control over technical requirements for materials and process used in manufacturing of A220 aircraft.

MATERIAL AND PROCESS ENGINEERING DOCUMENTATION EFFECTIVITY AND APPLICATION

TABLE 1 -- AIRBUS CANADA M&P DOCUMENTATION NAMING CONVENTION

Airbus Canada Document Acronym	Airbus Canada Document Name	Inherited Document Acronym	Covering Activity Fields (See Section 4)
A2EMM-001	Airbus Canada A220 Engineering Materials Manual	BAEMM-001 EMCM-001	1a
A2EPM-001	Airbus Canada A220 Engineering Process Manual	BAEPM-001	1b, 2a, 2b
A2ERD GEN	A220 Engineering Requirements Document (General)	BAERD GEN	all, general
A2ERD A220	A220 Engineering Requirements Document (A220 Program-Specific)	BAERD BA500	all, acft-specific
A2PS	Airbus Canada A220 Process Specification	BAPS MPS*	1b, 2a
A2MS	Airbus Canada A220 Material Specification	BAMS CMS*	1a
A2TS	Airbus Canada A220 Test Standard	BATS CTS	2b
A2LS	Airbus Canada A220 Laboratory Specimen	BLS CTSS	2b
A2NDE	Airbus Canada A220 Non-Destructive Evaluation Procedures	NDE	2a
A2MPEP	Airbus Canada A220 Material and Process Engineering Internal Procedures	MPEP	all
A2-RFD	A220 Request for Deviation	RFD	all
*Add two leading zeroes (00) in front of sequential number, for example MPS 213-1 becomes A2PS 213-001			

4.2 CHANGES TO GOVERNING FUNCTIONS NAMES AND ACRONYMS USED IN PRODUCT DEFINITION AND M&P DOCUMENTATION

Refer to Tables 2 for functions names, forms and departmental acronyms changes

TABLE 2 — FUNCTIONS NAMES, ACRONYMS, AND FORMS

Stated reference	Interpret as
Bombardier, Bombardier Aerospace, Canadair	Airbus Canada A220
Bombardier Aerospace Material and Process Engineering (BAMPE)	Airbus Canada A220 Material and Process Engineering (A2MPE)
Bombardier Aerospace Supplier Quality Assurance (SQA, BASQA) Bombardier Aerospace Supplier Quality Management (SQM, BASQM) Bombardier Aerospace Supplier Approval System (SQM, BASAS)	Airbus Canada A220 Supplier Quality Assurance (A2SQA)
Bombardier Approved Supplier List (ASL, BASL) Bombardier Aerospace Approved Supplier List (ASL, BAASL)	Airbus Canada A220 Approved Supplier List (A2ASL)
CSeries, BD-500, BA-500	A220
CS300	A220-300
CS100	A220-100
BT0213-01 Request for Deviation Form	ACT0213-01 Request for Deviation Form

5 INTERPRETATION RULES

Airbus Canada A220 Material and Process Engineering (A2MPE) documentation system is based on BAMPE (Bombardier Aerospace Material and Process Engineering Documentation).

The initial content of documents and numerical numbers for each document at time of transition was identical to the original document at its revision at time of segregation: only acronym prefix was changed, for example:

BAMS 516-002 became A2MS 516-002

BAPS 160-010 became A2PS 160-010

BAERD GEN-004 became A2ERD GEN-004

BAERD BA500-001 became A2ERD A220-001

BLS 9733 became A2LS 9733

NDE PT-7 became A2NDE PT-7

MPS 213-1 became A2PS 213-001

CTS 5751 became A2TS 5751

CTSS 9610 became A2LS 9610

All Bombardier Aviation documents for which the specific revision ownership was transferred to Airbus Canada are currently published both on internal portal for use within Airbus Canada organization (M&P Search Tool on intranet) and external portal (iSupply internet) for use by all suppliers involved in manufacturing of A220 components.

These documents use the new naming convention either through cover pages (which summarize the changes introduced by current document and may include additional document-specific requirements), or have been completely re-issued with a new revision and tracking of changes under the Airbus Canada Engineering authority.

The release dates of Airbus Canada M&P specification revisions are listed within the *Specification Release History link* (available on both the intranet and external portals) as they are published.

Notes:

A limited number of documents for which ownership to Airbus Canada was not granted, remain valid in their revisions at time of publishing revision "--" of this A2ERD, and must be obtained from Bombardier Aviation.

Refer to initial revisions of index files listed in Section 3 to validate documentation origins.

Please note that index files are not updated frequently – the latest revisions are always available on the search tool.

Consult A2MPE if the required document is not found on the portal.

The documentation references in drawings and inherited document names shall be interpreted in accordance with tables 1 and 2 of the current document: every reference to inherited specification number shall be interpreted under new specification nomenclature. Same applies to function names and other acronyms.

All new and subsequent revisions of both M&P documents and Engineering drawings are developed in accordance with approved Airbus Canada Engineering Manuals. These revisions use the new naming nomenclature, current functions names and acronyms.

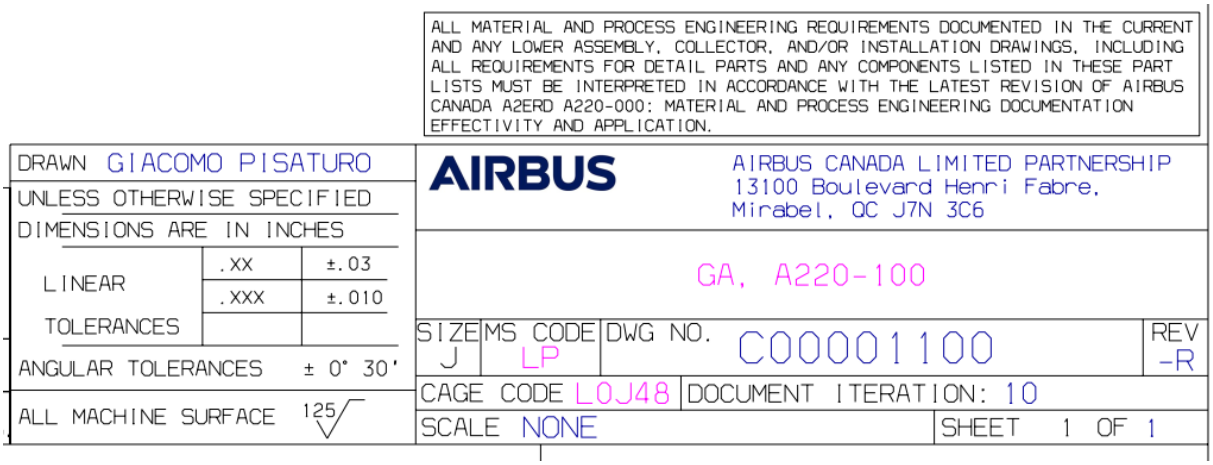

FIGURE 1: TITLE BLOCK OF TOP GA DATASET FOR A220-100 (CS100)

5.1 FLOW-DOWN OF REQUIREMENTS AND OPERATING RULES

In view that every inherited (not revised following updates described below) detail and assembly drawing as well as annotated 3-d model, describes Material and Process Engineering requirements by reference to a specific M&P document per inherited naming convention, the interpretation by end user is mandatory.

Interpretation rules per Section 5 of this document are flown-down through following changes:

- Top assemblies for both models of A220 aircraft per AM4050.03.03.01 have been revised using the new nomenclature with an additional requirement to interpret all M&P documentation per current document. This change applies to all child datasets, refer to Figures 1 and 2 for top GA (General Assembly) datasets

- All newly released or modified assembly, collector, installation, and all other A220 2-d datasets use the new nomenclature and a proprietary notice is introduced per AM4050.02.02.02, where a requirement to interpret M&P documentation per current document is mandated in the drawing template and applies to all child datasets (refer to Figure 3)
- On all A220 newly released and revised annotated 3-d models the new nomenclature is used in accordance with AM4050.02.02.04

Therefore, for an extended period of time, the inherited nomenclature in the engineering drawings will coexist with the new nomenclature, and must be interpreted as explained herein.

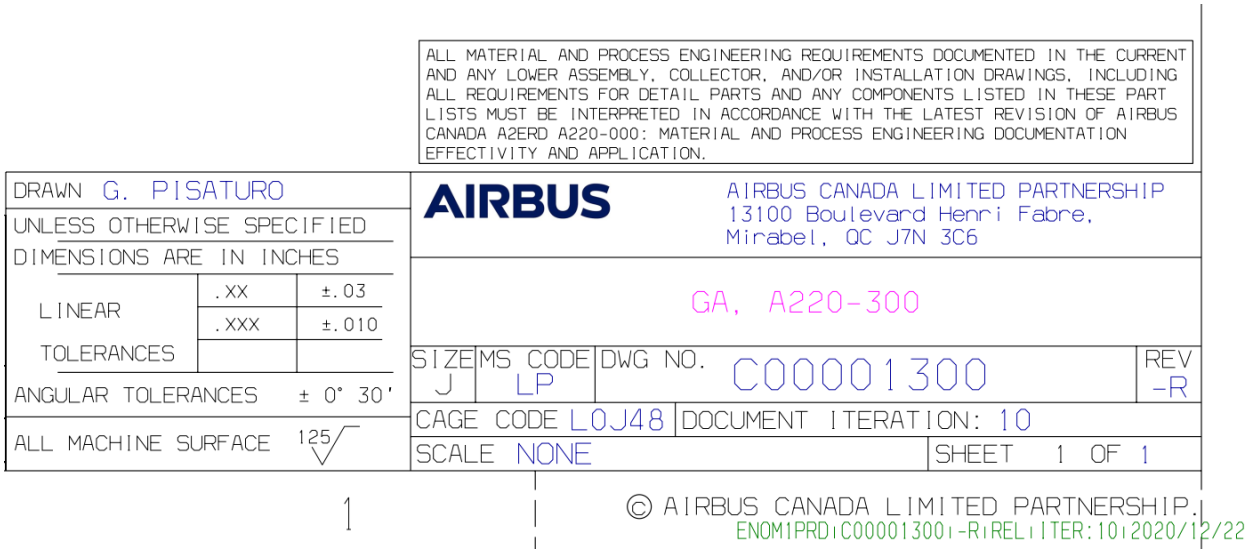

FIGURE 2: TITLE BLOCK OF TOP GA DATASET FOR A220-300 (CS300)

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FIGURE 3: TITLE BLOCK FOR 2-D DATASETS PER CURRENT REVISION OF AM4050.02.02.02, MANDATORY FOR USE

To assure continued compliance, all the manufacturing and testing facilities must interpret the requirements per Airbus Canada policy described herein, regularly access the search portal and apply the latest A220 Material and Process specification revisions instead of inherited documents.

5.2 INHERITED MATERIALS, FACILITY AND PROCESS APPROVALS

All approved materials, facilities with their respective process approvals active at the time of initial revision of this document remained valid.

5.3 INHERITED REQUESTS FOR DEVIATION

All approved deviations documented on BT0213-01 to inherited documentation for active processes at the time of initial publishing of this document remain valid against initial or subsequently released A220 specifications, unless the checkbox “valid for all future revisions” in RFD form is not checked.

No changes to the applicability of inherited RFD’s were introduced with the transition of specifications naming convention.

A2MPE reserves the right to revoke any approved inherited RFD if found the deviation impacts the technical compliance of the product.

5.4 NEW MATERIALS AND PROCESS APPROVALS

New approvals by A2MPE, as well as new approval by A2SQA are issued to the new M&P specifications naming convention, regardless of the status of this specification release by A2MPE.

The approvals issued by Bombardier Aviation to an inherited specification after publishing of the initial release of this document are not valid, unless the qualification and approval of the subject product or facility is a result of a joint approval process.

5.5 NEW REQUESTS FOR DEVIATION

Requests for Deviations against A2MPE specifications (A2-RFD) shall be submitted to A2SQA using ACT0213-01 form and written against A2MPE specification.

Any RFD approved by Bombardier Aviation after publication of this document initial revision against BAMPE version of specification is not applicable for A2MPE documents.

5.6 MATERIALS AND PROCESS COMPLIANCE CERTIFICATION

As a general rule, the materials and process certifications by suppliers must be made to the new specification convention.

However for the period of time determined by Airbus Canada Quality organization, materials and processes certified to inherited specification name remains acceptable, providing the new A2MPE and inherited BAMPE specifications remained identical.