



DPD-MBD Checklist Survey

All references in this checklist are current to the latest released version of

Boeing D6-51991 – Quality Assurance Standard for Digital Product Definition at Boeing Suppliers.

Supplier to complete the following sections as applicable. If Supplier has Boeing D6-51991 approval, attach a copy of Boeing Approval Letter.

- 1. Digital Product Definition (DPD)
- 2. Model Based Definition (MBD)
- 3. Coordinate Measurement Systems (CMS)
- 4. Plotters

NOTE: Digital Product Definition (DPD) includes derivatives e.g. 2D prints/drawings, please see definition listed. This checklist applies to any manufacturer who uses a customer-provided engineering model, print or drawing to manufacture or ensure conformance of a part or tooling or tooling repair.

Supplier Name:					
Assessment Completed by		Signature		Date:	
Services Provided		Tooling	<input type="checkbox"/>	Manufacturing	<input type="checkbox"/>

PECO Reviewed (as applicable)			
Quality Assurance		Date:	
Mechanical Engineering		Date:	
Other		Date:	

Description	Response			Supplier Supporting Documents	Comment
	Y	N	NA		
Section 1 - Digital Product Definition					
1. Are there DPD documented processes or procedures based upon Boeing D6-51991? Requirement: D6-51991-1.0 & AS9100-7.5, 8.5.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is there a flow diagram of the complete documented DPD processes? Requirement: D6-51991-1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Are documented DPD processes implemented with defined authority for change control & maintenance? Requirement: D6-51991-1.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is there a requirement in the suppliers documented processes to notify customer within 30 days of any changes or at a minimum annually if no changes occur. Requirement: D6-51991-1.3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Is there a process to ensure integrity and security of datasets from receipt throughout the manufacturing and acceptance processes? a) Storage of Boeing provided DPD and supplier created derivatives b) Archiving old revisions c) Encryption during send/receive d) Backup system e) Access control and password protection (read/write) Requirement: D6-51991-2.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Does the supplier have a process to control configuration of dataset derivative media? Requirement: D6-51991-2.2.2 & AS9100- 8.1.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Are dataset derivatives traceable back to the current authority dataset? Requirement: D6-51991-2.2.2, 2.2.3 & AS9100-8.5.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Description	Y	N	NA	Supplier Supporting Documents	Comment

8. Does the planning package identify traceability to the current authority dataset? Requirement: D6-51991-2.2.2 & AS9100- 8.5.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Does the supplier have a change control process for dataset derivative media? Requirement: D6-51991-2.2.4 & AS9100-8.3.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Does the supplier have a process that includes control of noncurrent (obsolete) authority datasets and dataset derivatives? Requirement: D6-51991-2.2.5 & AS9100-7.5.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. If providing Type Design to Boeing, does the supplier have a documented process for design and development? Requirement: D6-51991-2.3 & AS9100-8.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. Does internal quality audits procedure include auditing or reviewing all internal and sub-tier operations for DPD data and related documentation? Requirement: D6-51991- 4.1& AS9100- 8.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
13. Does the supplier have a process to assess, monitor and control sub-tier compliance with DPD requirements? Requirement: D6-51991-5.1 & AS9100- 8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
14. Does the supplier QA organization have responsibility for approval of all inspection media? Requirement: D6-51991-7.1 & AS9100- 8.3.2, 8.5.1.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
15. Does the supplier have a documented process to create inspection media from a 3D model in addition to the 2D drawing? Requirement: D6-51991-7.2, 7.3 & AS9100-8.3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
16. Is there a process in place to document FAIs for product produced from authority datasets? Requirement: D6-51991-7.6 & AS9100- 8.5.1.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Description	Y	N	NA	Supplier Supporting Documents	Comment
17. Does the supplier document the current level of hardware configuration, software, software revisions and other digital system information (e.g. PTF(s), project files) required to maintain compatibility with Boeing supplied datasets and/or data exchange formats per applicable Boeing system(s) requirement documents? Requirement: D6-51991-8.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
18. Does the supplier verify all dataset translations when a supplier exports Boeing CATIA, NX or CREO authority datasets from their as received format to a neutral format (STEP)? Requirement: D6-51991-8.2 & AS9100-8.3.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
19. Does the supplier have a documented process to ensure release, acceptance, identification, security, access and change control for - Tool design datasets - Tool Inspection datasets Requirement: D6-51991-9.1 & AS9100-8.1.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
20. Does the supplier ensure that when Tool Design responsibility is flowed down to sub tier suppliers, that the sub-tier supplier is approved by the supplier? Requirement: D6-51991-9.1.2 AS9100- 8.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
21. Are digitally defined special tools and physical inspection media (check fixtures, templates, etc.) identified and traceable to the authority tool design dataset? Requirement: D6-51991-9.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
22. Are special tools and tooling media accepted and periodically validated to the authority design at a frequency determined to ensure accuracy and repeatability? Requirement: D6-51991-9.3 & AS9100-7.1.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

<p>23. Does the supplier define training requirements that:</p> <ul style="list-style-type: none"> - Assure competence and maintain employee-training records, including on-the-job-training, for all DPD system users. - Respond to changes to the DPD process, equipment, or software? - Does supplier have OJT or other training relative to GD&T standards? <p>Requirement: D6-51991-10.0 & AS9100- 7.2b</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
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Description	Response			Supplier Supporting Documents	Comment
	Y	N	NA		
Section 2 - Model Based Definition					
1. Does the suppliers CAD system have the ability to view annotation based on Boeing site-specific requirements? Requirement: D6-51991-8.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Does the supplier have a documented process to create inspection media from a 3D MBD model? Requirement: D6-51991-7.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Does the supplier have a process to ensure verification of all design requirements of the authority dataset? (e.g., all defined by feature control frames, annotation, specifications, notes and other specified requirements in the authority DPD dataset and associated parts list including dimensional and other properties) Requirement: D6-51991-7.5 & AS9100-8.1b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is there a process in place to document FAI's for product produced from MBD datasets? Requirement: D6-51991-, 7.6 & AS9100-8.5.1.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Does the supplier have a process to assure sub-tier suppliers' ability to work with MBD information? Requirement: D6-51991-5.1 & AS9100-8.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Has the supplier identified specific training requirements for all functions associated with use and control of MBD datasets? (e.g. planning, purchasing, contract review and Mfg? Requirement: D6-51991-10.0 & AS9100-7.2b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Description	Response			Supplier Supporting Documents	Comment
	Y	N	NA		
Section 3 - Coordinate Measurement Systems					
1. Does the supplier use CMS equipment for Tooling and or Product acceptance? Requirement: D6-51991-6.2 Identify all that apply a) Articulating Arm – Portable Coordinate Measuring Machine b) Digital Theodolite c) Fixed Coordinate Measurement Machine d) Fixed Scanning Coordinate Measurement Machine e) Indoor Global Positioning System f) Laser Projectors – Optical Layout Template g) Laser Radar h) Laser Scanner i) Laser Tracker j) Numerical Control Machine Inspection k) Photo or Video - Grammetry l) Other – explain in comments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Does the supplier have NADCAP AC7130 Measurement and Inspection accreditation at this time? Requirement: D6-51991-6.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Does the supplier have a process to control critical functions of the CMS? N/A if NADCAP approved. Requirement: D6-51991-6.2.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Does the supplier maintain certification/calibration for equipment used for inspection, including: N/A if NADCAP approved Requirement: D6-51991-6.1 & AS9100-9.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Is there a process in place to validate Product Acceptance Software (PAS) independent of the software developer? N/A if NADCAP approved Requirement: D6-51991-3.1 & AS9100-9.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

<p>6. Does the supplier develop software for inspection and acceptance of product? N/A if NADCAP approved - Is there a documented process to require creation of plans and instructions for the building, configuration management, loading and testing of Supplier developed product acceptance software? Requirement: D6-51991-3.3</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<p>7. Does the supplier define training requirements that: N/A if NADCAP approved, - Assure competence and maintain employee-training records, including on-the-job-training, for all CMS system users. - Respond to changes to the CMS process, equipment, or software? Requirement: D6-51991-10.1 & AS9100-7.2b</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Description	Response			Supplier Supporting Documents	Comment
	Y	N	NA		
Section 4 - Plotter					
1. Does the supplier receive Boeing PDTs used for manufacturing and inspection? Requirement: D6-51991-7.7.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Does the supplier have a documented process for creating plots for product acceptance use or as media of inspection? Those procedures shall include at a minimum the following: <ul style="list-style-type: none"> - Plotter Calibration - Plotting Environment - Verification of engineering definition - Plotted media material - Part number Identification & revision - Verification of plotted media - Quality acceptance stamping - Accuracy of plots used for inspection Requirement: D6-51991-7.8 & AS9100-9.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Does supplier have a documented process for validation of plot accuracy prior to use, environmental controls, handling & storage and Destruction of Obsolete/Unusable? Requirement: D6-51991-7.8.1, 7.8.3 & 7.8.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Does the supplier define training requirements that: a) Assure competence and maintain employee-training records, including on-the-job-training, for all DPD system users. b) Respond to changes to the DPD process, equipment, or software? Requirement: D6-51991-10.1 & AS9100-7.2b	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		



DEFINITIONS:

AUTHORITY

Undisputed source of Boeing approved dataset used for product manufacture and quality assurance acceptance.

CATIA

Computer-graphics Aided Three-dimensional Interactive Application. A CAD system with interactive graphics design software modules used to create 3D and 2D geometric designs of products.

CMS

Coordinate Measurement Systems - Also known as Computer Aided Inspection (CAI) and Computer Aided Measurement Systems (CAMS). Measurement equipment such as Coordinate Measuring Machines (CMM), Laser Tracker, and numerical controlled machinery with inspection probe capability which are used to support inspection activity.

DATASET

Information prepared and maintained by electronic means (CAD/CAM), and provided by electronic data access, interchange, transfer, or on electronic media.

DERIVATIVE

A reproduction of all or part of an authority dataset. Derivatives include 2D drawings, paper and mylar plots, tool designs, inspection datasets created to analyze as-built designs, check templates, numerical control (N/C) datasets/media, datasets with nominal values for CMS use, QA inspection plans and other extractions (dimensions, views, etc.) for inspection/measurement use.

DPD

Digital Product Definition – The electronic data elements that specify the 3D Computer Aided Design (CAD) geometry and all design requirements for a product (including notation and parts lists), and the use of this data throughout an integrated CAD/Computer Aided Manufacturing (CAM) and Coordinate Measurement Systems (CMS).

MBD

Model Based Definition – A Boeing dataset containing the exact solid, its associated 3D geometry and 3D annotation of the product's dimensions and tolerances (and may include parts/notes list) to specify a complete product definition. This dataset does not contain a conventional 2D drawing. MBD is one possible format of DPD. (Note: Model Based Definition is the undisputed source of definition)

PAS

PAS (Product Acceptance Software) is considered software that performs product or tooling acceptance without subsequent inspection. Common PAS applications include: CMS software (CMM, Laser Trackers, Laser Radar, PCMM's), CAD translators, and CAD Analysis Software.

TRANSLATION

Translations occur when a digital dataset is changed from its original CAD system format to another CAD, CAM, and CAI application format and require verification.