UK National Aerospace NDT Board

The British Institute of NDT
Midsummer House, Riverside Way
Bedford Road, Northampton
NN1 5NX
United Kingdom

Tel: +44 (0)1604-438251

E-mail: uknandtb@bindt.org

© UK NANDTB

NANDTB/30 – UK NANDTB INTERIM POLICY FOR

3D NON-FILM RADIOGRAPHIC TESTING TRAINING AND QUALIFICATION

1. Status.

Third issue, approved for publication at the 28 January 2026 meeting of the UK NANDTB.

This interim policy expires 28 January 2028, unless extended or withdrawn by UK NANDTB.

2. Scope.

This document sets out the UK NANDTB interim policy for 3D Non-Film Radiographic Testing (3DNF RT) training and qualification. It is intended to facilitate various routes for EN4179 3DNF RT:

a. Direct qualification to Level 1 / 2 (with no previous qualification).
b. Parallel qualification to Level 1 / 2 (with no previous qualification), in conjunction with a 2D Non-Film RT (2DNF RT) technique, eg Computed Radiography (CR), Digital Radiography (DR), etc.
c. Supplementary qualification for Level 1 / 2 / 3 personnel previously qualified in a 2DNF RT sub-technique, eg CR, DR, etc.
d. Supplementary qualification for Level 1 / 2 / 3 personnel previously qualified in the Film RT technique.

This interim policy does not cover any form of qualification for metrology applications.

Once sufficient 3DNF RT qualified trainers, examiners, supervisors, and mentors are in place, this interim policy will be replaced with a steady-state policy that will allow UK aerospace sector capability in 3DNF RT to develop further.

3. Definitions.

Whilst there are some common principles between Computed Tomography (CT) and Digital Tomosynthesis (DT), there are also important differences that warrant specific training. The following definitions are provided to help clarify the boundaries between CT & DT:

a. Computed Tomography (CT).

The process of generating 3D volumetric data by reconstructing a large number of digital 2D radiographic projections taken at positions around an object's circumference. Data can be rendered as a 3D image and as multiple series of 2D cross-sectional images at known positions in any orientation. CT systems are generally capable of at least 180 degrees of relative angular motion between the object and source/detector.

b. Digital Tomosynthesis (DT)

The process of generating pseudo-3D data by reconstructing a small number of digital 2D radiographic projections taken at positions adjacent to an object. Data can be rendered as a

series of 2D cross-sectional images at known positions in a single orientation. DT systems operate using 2D translational motion of the source relative to a static detector and object (roughly equivalent to 15-60 degrees of relative angular motion).

4. Background.

Advanced manufacturing processes, eg Additive Manufacturing (AM), often require correspondingly advanced inspection techniques. To address the UK aerospace sector's increasing need for high-resolution, volumetric NDT there is growing demand for 3DNF RT solutions; primarily using Computed Tomography (CT), but also Digital Tomosynthesis (DT).

CT systems generally have high set-up costs and long or uncertain return on investment. DT systems are typically cheaper, but do not yet have the penetrating power or resolution of CT systems. To date, 3DNF RT expertise in the UK aero sector has been mainly confined to a small number of Primes and contractors using CT/DT for R&D, as a supplementary inspection for another NDT approach, or for metrology. Operators are heavily reliant on OEM training and until recently, there has been no established pathway to EN4179 qualification via Approved Training Organisations (ATO).

The UK NANDTB recognises CT and DT as sub-techniques that fall within the RT method and the Non-Film technique outlined in EN4179. Whilst EN4179 permits Employers / RL3s to define technique boundaries and specify training requirements in their Written Practice, there is a risk of 3DNF RT standards diverging across industry, if not controlled from the outset.

The UK NANDTB therefore requires standardised 3DNF RT training for EN4179 organisations during this critical initial period. The EN4179 model for emerging methods will be used as a basic template and will incorporate the three main elements for qualification: formal training, experience, and assessment.

5. Policy Overview.

The UK NANDTB has appointed an industry Genesis Level 3 (GL3) experienced in 3DNF RT (see Appendix 3). The GL3 has trained and qualified an experienced Lead ATO RT Level 3 Trainer/Examiner in 3DNF RT. The Lead ATO Trainer/Examiner will then conversion train and qualify other ATO Level 3 Trainer/Examiners in CT (Appendix 1) and/or DT (Appendix 2). This 'initial cadre' (identified at Appendix 3) will in turn train and qualify Employer personnel.

As the aerospace industry currently has very little 3DNF RT expertise, OEM SME knowledge forms a vital component in successful qualification of EN4179 practitioners. As such, ATO (general theory) classroom-based training must complement OEM (equipment-specific) client practical training.

Figure 1 below shows the basic 3DNF RT qualification hierarchy.

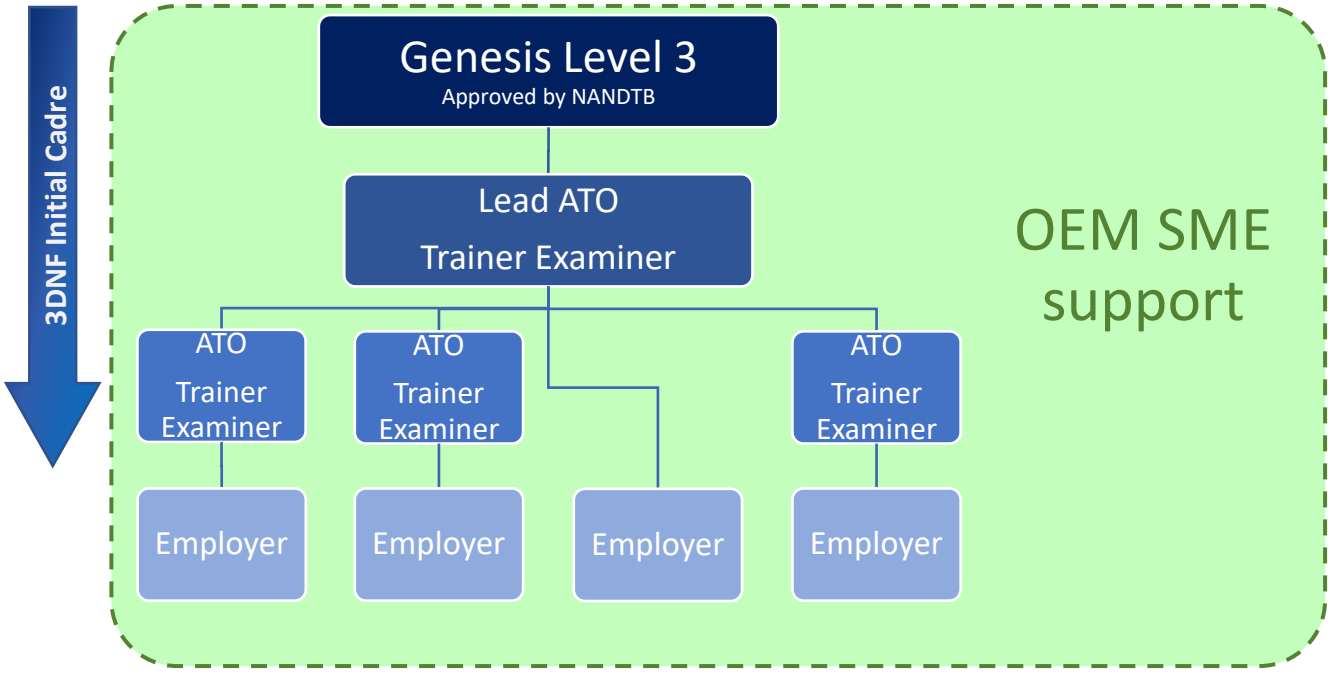


Figure 1 – 3DNF RT qualification hierarchy

6. Regulatory Requirements.

a. None.

7. UK NANDTB Requirements.

a. ATO Approvals. ATOs with a current EN4179 2DNF RT approval may develop and deliver 3DNF RT training and examination for L2/L3 personnel. This arrangement is conditional on the ATO being represented on the NANDTB/30 Working Group and either:

- minimum Level 3 with 3DNF RT qualification, or
- directly appointed by the board (initial cadre only).

b. Computed Tomography Qualification. RL3s shall ensure that individuals within their organisation follow the CT Training Outline (Appendix 1).

c. Digital Tomosynthesis Qualification. RL3s shall ensure that individuals within their organisation follow the DT Training Outline (Appendix 2).

d. Personnel Appointments. Direct personnel appointments for initial cadre 3DNF RT conversion are only to be issued by NANDTB. A record of such appointments is at Appendix 3.

8. Recommendations. It is recommended that:

a. ATO (general theory) training should be completed prior to OEM (equipment specific) training.

b. ATO Trainer/Examiners should participate in OEM client training (if they are not already familiar with the make and type of equipment used by the Employer).

9. Guidance. It is advised that:

a. Enquiries regarding 3DNF RT training and qualification policy may be referred to the NANDTB.

Signed for the Board



Kevin Pickup
Chairperson of the NAndtB

Appendices:

Appendix 1 - Computed Tomography Conversion Training and Qualification.

Appendix 2 - Digital Tomosynthesis Conversion Training and Qualification.

Appendix 3 - NANDTB 3DNF RT Appointment Record.

Appendix 1 to NANDTB/30: Computed Tomography Training and Qualification.

1. **General:** All personnel shall undergo Radiation Safety instruction in accordance with EN4179 Para 6.1.5(c). Depending on their qualification route, they shall hold the requisite prior qualification in Table 1 and the requirements for formal training (Para 2), experience (Para 4) and assessment (Para 5). Equipment-specific training from the OEM is also recommended (Para 3).

Table 1 - EN4179 RT(CT) qualification routes with minimum training & experience hours

DIRECT	Level 1 RT(CT) ONLY		Level 2 RT(CT) ONLY	
Prior Qualification:	**Training**	**Experience**	**Training**	**Experience**
None required	40	200	80	800

PARALLEL	Level 1 RT(CR/DR) + RT(CT)		Level 2 RT(CR/DR) + RT(CT)	
Prior Qualification:	**Training**	**Experience**	**Training**	**Experience**
None required	56 See Note 1	220 See Note 1	96 See Note 1	880 See Note 1

SUPPLEMENTARY	Level 1 adding RT(CT)		Level 2 adding RT(CT)		Level 3 adding RT(CT)	
Prior Qualification:	**Training**	**Experience**	**Training**	**Experience**	**Training**	**Experience**
RT 2DNF (CR/DR)	16	100	24	200	24	200
Film	32	40	48	200	48	200

Note 1. CR/DR formal training and General examination shall be completed before CT formal training commences. CT-specific formal training hours shall be within 25% to 75% of the total, eg L2 RT(CT+CR) requires 96 hours total formal training, so CT formal training hours shall be between 24 and 72. CT-specific experience shall be within 25% to 75% of the total, eg L2 RT(CT+CR) requires 880 hours experience, so CT experience shall be between 220 and 660.

2. **Formal training outline (mandatory):** Classroom-based, CT-specific theory training, delivered by ATO. Minimum hours as Table 1, covering:

   a. Overview:

      1. Safety requirements.
      2. Basic principles.
      3. Basic terminology.
      4. Basic system configuration.
      5. Basic system performance checks and calibration.
      6. Advantages / disadvantages.
      7. Understanding of NDT applications for aerospace production and in-service maintenance.

8. Awareness of non-NDT applications (eg metrology, FEA, re-design as part of an accredited Part 21 design certification, etc).

9. Awareness of the similarities and differences between CT and DT.

b. Hardware:

1. Safety features.

2. Enclosures.

3. Manipulators.

4. Turntables.

5. Component support & mounting materials.

6. Tube heads (mini/micro focus, open/closed, cone/fan beam, etc).

7. Detectors (array/linear, fixed/mobile, etc).

8. Video monitoring.

9. Component & tube head positioning (including collision avoidance).

10. Workstation & user interface (UI).

c. Data Acquisition & Reconstruction:

1. Scan types (2D / 3D / Stack / Spiral / Mosaic / Multi-component / etc).

2. Sinograms.

3. Tomograms.

4. Volumes.

5. Scan quality attributes (eg resolution, layer separation, number of projections, etc).

6. Optimisation of acquisition settings (eg kV, mA, time, wattage, binning, etc).

7. Reconstruction methods.

d. Data Visualisation & Analysis:

1. Visualisation types.

2. Image optimisation and enhancement.

3. Analysis & evaluation software tools:

- Surface determination.
- Feature detection, location, and measurement (linear & volumetric).
- Material integrity analysis (eg porosity / void / inclusion / etc).
- Automatic Defect Recognition (ADR).
- Digital Twin Comparison (DTC).

e. Data Handling:

1. File formats.
2. Data export.
3. Archiving and retention.
4. Security.
5. Reporting.

f. Interpretation (Level 2/3 only):

1. Recognition and correction of acquisition issues and reconstruction artefacts (eg lack of penetration, centre-point of rotation, ring artefacts, partial volume effect, beam hardening, under-sampling, noise, significant density variations etc).
2. Characterization and interpretation of defects (manufacturing flaws) relevant to the material(s), production method(s) and part type(s) **specified by customer RL3**.
3. Characterization and interpretation of faults (in-service failures) relevant to the material(s), production method(s) and part type(s) **specified by customer RL3**.

3. **Specific training outline (recommended if employer does not have existing qualified supervisors / mentors internally).** Minimum of 16 additional hours of equipment-related, blended classroom/practical training, delivered by OEM, covering:

1. Safety features.
2. Emergency procedures.
3. Daily / Pre-use checks.
4. User-level maintenance and troubleshooting.
5. Support and software updates.
6. Awareness of OEM-level maintenance, calibration, and repair.
7. Start-up / shut-down procedures.
8. System performance checks.
9. Component handling.
10. Component positioning.
11. Tube-head, manipulator, and detector positioning (including collision avoidance).
12. Optimisation of settings / attributes for acquisition, reconstruction & visualisation.
13. L2/L3 only: Use of software analysis tools for effective interpretation (as Para 2f).

4. **Experience (mandatory):** Minimum experience hours as Table 1 (practical consolidation training). The experience is to be relevant and meaningful, as follows:

a. Individuals shall complete the CT Experience Checklist (EC) at Annex A, under supervision of 3DNF RT L2/L3, ATO Trainer, OEM SME, or other suitable assessor designated in writing by the RL3.

NOTE. An organisation's RL3 may designate pre-qualification individuals as EC assessors ahead of qualification, only if they are 'first generation', i.e. they have already been successfully assessed in that competency by 3DNF RT L2/L3, ATO Trainer or OEM SME. This is to prevent dilution of EC standards, whilst allowing the initial cadre rollout to proceed in an efficient manner.

The EC original (and, where appropriate, record of RL3 designation as EC assessor) shall be retained with the individual's NDT training record. If required, copies may be retained by the individual, their line manager or ATO.

b. Automated CT scans often have very long durations and may only require intermittent monitoring by operators. Non-productive activity during lengthy scans shall not be counted towards experience hours.

5. **Assessment (mandatory)**:

a. General Examination. Minimum 30 questions, administered by L3 Examiner (following General Training Course). Closed book. Pass mark: 70%.

b. Specific Examination. Minimum 30 questions, administered by L3 Examiner (following completion of experience checklist and experience hours). Open book, based on standards / specifications detailed by customer RL3. Pass mark: 70%.

c. Practical Examination. Administered by L3 Examiner (following completion of experience checklist and experience hours). Pass mark: 70%, averaged across all practical exams.

Level 1. Acquire, reconstruct, and visualise a minimum of TWO specimens to an acceptable standard iaw specific WIs.

Level 2/3. Specimen defects/faults shall be representative of the criteria in Paras 2f2 & 3. The RL3 shall specify the examination format in advance, as either:

Option 1: Acquire, reconstruct, visualise, and analyse a minimum of TWO specimens iaw specific WIs.

OR

Option 2: Acquire, reconstruct, visualise, and analyse a minimum of ONE specimen iaw a generic WI. Reconstruct, visualise, and analyse a pre-acquired dataset of ANOTHER specimen iaw a specific WI.

d. Overall pass mark 80% (average of General, Specific and Practical marks).

6. **References (advisory):** The following list of references is provided for general information only and should not be considered exhaustive or authoritative.

a. ASTM E1441. Standard Guide for Computed Tomography (CT).

b. ASTM E1672. Standard Guide for Computed Tomography (CT) System Selection.

c. ASTM E1695. Standard Test Method for Measurement of Computed Tomography (CT) System Performance.

d. ASTM E1814. Standard Practice for Computed Tomographic (CT) Examination of Castings.

e. ASTM E2737. Standard Practice for Digital Detector Array Performance Evaluation and Long-Term Stability.

f. ASTM E2767. Standard Practice for Digital Imaging and Communication in Nondestructive Evaluation (DICONDE) for X-ray Computed Tomography (CT) Test Methods.

g. ASTM E3166. Standard Guide for Nondestructive Examination of Metal Additively Manufactured Aerospace Parts After Build.

h. ASTM E3375. Standard Practice for Cone Beam Computed Tomographic (CT) Examination.

i. BS EN ISO 15708-1. Non-destructive testing — Radiation methods for computed tomography — Part 1: Terminology.

j. BS EN ISO 15708-2. Non-destructive testing — Radiation methods for computed tomography — Part 2: Principles, equipment, and samples.

k. BS EN ISO 15708-3. Non-destructive testing — Radiation methods for computed tomography — Part 3: Operation and interpretation.

l. BS EN ISO 15708-4. Non-destructive testing — Radiation methods for computed tomography — Part 4: Qualification.

7. **Annexes.**

Annex A – Level 1 Computed Tomography Experience Checklist.

Annex B – Level 2 Computed Tomography Experience Checklist.

Annex A to Appendix 1 – Level 1 Computed Tomography Experience Checklist.

Candidate Name:

Organisation & Department:

Examination Target Date:

TASK	STANDARD. The candidate shall…	Date achieved	Assessor name & signature
Health and Safety	Demonstrate knowledge of Health and Safety procedures pertaining to CT: a. Radiation risk assessments. b. Use of local rules and contingency plans c. Risk assessments. d. Emergency procedures..		
Written Practice & MCP	Demonstrate knowledge of the location, function and general content of the Written Practice, Method Control Procedure(s) and other policies pertaining to CT.		
Standards/ Specifications	Demonstrate knowledge of CT standards/specifications and be able to locate relevant information: a. ASTM E1441* b. ASTM E1672* c. ASTM E1695* d. ASTM E1814* e. ASTM E2737* f. ASTM E2767* g. ASTM E3166* h. ASTM E3375* i. BS EN ISO 15708-1* j. BS EN ISO 15708-2* k. BS EN ISO 15708-3* l. BS EN ISO 15708-4* m. n. * RL3: add/delete as applicable		
OEM Manual(s) & Operating Procedures	Demonstrate knowledge of the location, function and general content of OEM manual(s) and operating procedures.		
OEM-level Maintenance	Demonstrate awareness of OEM-level: a. Maintenance. b. Technical support. c. Calibration.		
User-level Maintenance	Demonstrate ability to carry out user-level: a. Maintenance. b. Troubleshooting. c. Software updates. d. Calibration.		
Daily / Pre-Use Checks	Demonstrate ability to carry out daily / pre-use checks.		

TASK	STANDARD. The candidate must be able to…	Date achieved	Assessor name & signature
System Performance Checks	Demonstrate ability to carry out system performance checks.		
Start-up & Shut-down	Demonstrate ability to carry out start-up and shut-down procedures.		
Component Positioning	Demonstrate ability to carry out component/part preparation, handling, and positioning.		
Scanner Positioning	Demonstrate ability to position tube-head / manipulator / detector and avoid collisions.		
Scan Programming	Demonstrate ability to program acquisition settings and reconstruction parameters from a WI.		
Data Acquisition	Demonstrate ability to use software tools to acquire raw test data and verify its integrity.		
Data Reconstruction	Demonstrate ability to use software tools to reconstruct test data and verify its integrity.		
Other Activities as designated by RL3			
Assessor Endorsement	Assessor is satisfied that the candidate: a. Has a documented record of experience that meets the minimum requirement. b. Is sufficiently prepared for Specific & Practical examinations.		

Annex B to Appendix 1 – Level 2 Computed Tomography Experience Checklist.

Candidate Name:

Organisation & Department:

Examination Target Date:

TASK	STANDARD. The candidate shall…	Date achieved	Assessor name & signature
Health and Safety	Demonstrate knowledge of Health and Safety procedures pertaining to CT: a. Radiation risk assessments. b. Use of local rules and contingency plans c. Risk assessments. d. Emergency procedures.		
Written Practice & MCP	Demonstrate knowledge of the location, function and general content of the Written Practice, Method Control Procedure(s) and other policies pertaining to CT.		
Standards/ Specifications	Demonstrate knowledge of CT standards/specifications and be able to locate relevant information: a. ASTM E1441* b. ASTM E1672* c. ASTM E1695* d. ASTM E1814* e. ASTM E2737* f. ASTM E2767* g. ASTM E3166* h. ASTM E3375* i. BS EN ISO 15708-1* j. BS EN ISO 15708-2* k. BS EN ISO 15708-3* l. BS EN ISO 15708-4* m. n. * RL3: add/delete as applicable		
OEM Manual(s) & Operating Procedures	Demonstrate knowledge of the location, function and general content of OEM manual(s) and operating procedures.		
OEM-level Maintenance	Demonstrate awareness of OEM-level: a. Maintenance. b. Technical support. c. Calibration.		
User-level Maintenance	Demonstrate ability to carry out user-level: a. Maintenance. b. Troubleshooting. c. Software updates. d. Calibration.		
Daily / Pre-Use Checks	Demonstrate ability to carry out daily / pre-use checks.		

TASK	STANDARD. The candidate must be able to…	Date achieved	Assessor name & signature
System Performance Checks	Demonstrate ability to carry out system performance checks.		
Start-up & Shut-down	Demonstrate ability to carry out start-up and shut-down procedures.		
Component Positioning	Demonstrate ability to carry out component/part preparation, handling, and positioning.		
Scanner Positioning	Demonstrate ability to position tube-head / manipulator / detector and avoid collisions.		
Scan Optimisation	Demonstrate ability to optimise and program acquisition settings and reconstruction parameters.		
Data Acquisition	Demonstrate ability to use software tools to acquire raw test data and verify its integrity.		
Data Reconstruction	Demonstrate ability to use software tools to reconstruct test data and verify its integrity.		
Data Visualisation	Demonstrate ability to use software tools to optimise images / visualisations.		
Data Analysis (Interpretation)	Demonstrate ability to characterize and interpret: a. Artefacts. b. Defects (manufacturing flaws). c. Faults (in-service failures).		
Data Handling & Reports	Demonstrate ability to: a. Format, export, archive, and secure test data. b. Prepare reports.		
Work Instruction Development	Demonstrate ability to prepare a Work Instruction.		
Other Activities as designated by RL3			
Assessor Endorsement	Assessor is satisfied that the candidate: a. Has a documented record of experience that meets the minimum requirement. b. Is sufficiently prepared for Specific & Practical examinations.		

Appendix 2 to NANDTB/30: Digital Tomosynthesis Conversion Training Outline

1. **Eligibility:** Minimum requirement:

   a. Hold EN4179 Level 2 or equivalent qualification in a 2D Non-Film RT application (eg Computed Radiography, Digital Radiography, Digital Radioscopy, etc).

   b. Have undergone Radiation Safety instruction in accordance with EN4179 Para 6.1.5(c) or equivalent.

Table 1 - DT qualification routes with minimum training & experience hours

SUPPLEMENTARY	Level 2 adding RT(DT)		Level 3 adding RT(DT)	
Prior Qualification:	**Training**	**Experience**	**Training**	**Experience**
RT 2DNF (CR/DR/CT)	16	100	16	100

2. **General training:** Classroom-based DT-specific theory training, delivered by ATO. Minimum hours as Table 1 covering:

   a. Overview:

      1. Safety requirements.
      2. Basic principles.
      3. Basic terminology.
      4. Basic system configuration.
      5. Basic system performance checks and calibration.
      6. Advantages / disadvantages.
      7. Understanding of NDT applications for aerospace production and in-service maintenance. Brief overview of how tomosynthesis is used in other industries, such as medical (mammography and orthopaedic), veterinary and electronics.
      8. Awareness of non-NDT applications (eg metrology, FEA, re-design as part of an accredited Part 21 design certification, etc).
      9. Awareness of the similarities and differences, advantages and limitations between CT and DT.

   b. Hardware:

      1. Safety Features.
      2. Enclosures.
      3. Component support & mounting materials.
      4. Tube heads (mini/micro focus, open/closed, cone/fan beam, etc).
      5. Detectors.
      6. Component positioning, considerations of size, shape and material and optimising the data collected and the reconstruction.

7. Workstation & user interface (UI).

c. Data Acquisition:

1. Scan types (2D / 3D).

2. Tomosynthesis datasets.

3. Scan quality attributes (eg resolution, slice separation, number of projections, etc).

4. Calculation & optimisation of scan settings (eg kV, mA, time, number of emission positions etc).

d. Data Processing:

1. Visualisations.

2. Image optimisation and enhancement.

3. Software evaluation tools:

- Feature location and measurement (linear & volumetric).
- Image processing filters / porosity analysis.

e. Data Handling and compatibility:

1. File formats.

2. Data export.

3. Archiving and retention.

4. Security.

5. Reporting.

f. Interpretation:

1. Recognition and correction of acquisition issues and reconstruction artefacts (eg lack of penetration, out of plane artefacts, partial volume effect, beam hardening, under-sampling, noise, significant density variations etc).

2. Characterization and interpretation of defects (manufacturing flaws) relevant to the material(s), production method(s) and part type(s) **specified by customer RL3**.

3. Characterization and interpretation of faults (in-service failures) relevant to the material(s), production method(s) and part type(s) **specified by customer RL3**.

3. **Specific training. (recommended if employer does not have existing qualified supervisors / mentors internally).** Recommend minimum 8 hours equipment-related, blended classroom/practical training, delivered by OEM, covering:

1. Safety features.

2. Emergency procedures.

3. Daily / pre-use checks.

4. User-level maintenance and troubleshooting – calibration and air data.

5. Support and software updates.

6. Awareness of OEM-level maintenance, calibration, and repair.

7. Start-up / shut-down procedures.

8. System performance checks.

9. Component handling.

10. Component positioning.

11. Tube-head and detector positioning (including collision avoidance where applicable)

12. Optimisation of scan settings / attributes.

13. Use of software tools for effective interpretation (as Para 2f).

4. **Experience requirements:** Minimum 100 hours of experience (practical consolidation training) as Table 1. The experience is to be relevant and meaningful, as follows:

   a. Individuals shall complete the DT Experience Checklist (EC) at Annex A, under supervision of 3DNF RT L2/L3, ATO Trainer, OEM SME, or other suitable person designated as assessor by the RL3 in writing.

      NOTE. An organisation's RL3 may designate pre-qualification individuals as EC assessors ahead of qualification, only if they are 'first generation', i.e. they have been successfully assessed by 3DNF RT L2/L3, ATO Trainer or OEM SME. This is to prevent dilution of EC standards, whilst allowing the initial cadre rollout to proceed in an efficient manner.

      The EC original (and, where appropriate, record of RL3 designation as EC assessor) shall be retained with the individual's NDT training record. If required, copies may be retained by the individual, their line manager or ATO.

5. **Assessment requirements**:

   a. General Examination. Minimum 30 questions, administered by L3 Examiner (following General Training Course). Closed book. Pass mark: 70%.

   b. Specific Examination. Minimum 20 questions, administered by L3 Examiner (following completion of experience checklist and experience hours). Open book, based on standards / specifications **detailed by customer RL3**. Pass mark: 70%.

   c. Practical Examination. Minimum 2 specimens, administered by L3 Examiner (following completion of experience checklist and experience hours). Each practical examination shall cover acquisition and evaluation. Practical examination specimens shall be representative of the criteria in Paras 2f2 & 3. Pass mark: 70%, averaged across all practical exams.

   d. Overall pass mark 80% (average of General, Specific and Practical marks).

6. **Annexes.**

   Annex A – Digital Tomosynthesis Experience Checklist.

Annex A to Appendix 2 – L2 Digital Tomosynthesis Experience Checklist.

Candidate Name:

Organisation & Department:

Examination Target Date:

TASK	STANDARD. The candidate shall…	Date achieved	Assessor name & signature
Health and Safety	Demonstrate knowledge of Health and Safety procedures pertaining to DT: a. Radiation risk assessments. b. Use of local rules and contingency plans c. Risk assessments. d. Emergency procedures.		
Written Practice & MCP	Demonstrate knowledge of the location, function and general content of the Written Practice, Method Control Procedure(s) and other policies pertaining to DT.		
Standards / Specifications	a. ASTM E2737. Standard Practice for Digital Detector Array Performance Evaluation and Long-Term Stability.* b. ASTM E3166. Standard Guide for Nondestructive Examination of Metal Additively Manufactured Aerospace Parts After Build.* c. OEM Operator Manual (hardware)* d. OEM Operator Manual (software)* RL3: add/delete as applicable		
OEM Manual(s) & Operating Procedures	Demonstrate knowledge of the location, function and general content of OEM manual(s) and operating procedures.		
OEM-level Maintenance	Demonstrate awareness of OEM-level: a. Maintenance. b. Technical support. c. Calibration.		
User-level Maintenance	Demonstrate ability to carry out user-level: a. Maintenance. b. Troubleshooting. c. Software updates. d. Calibration.		
Daily / Pre-Use Checks	Demonstrate ability to carry out daily / pre-use checks.		

TASK	STANDARD. The candidate must be able to…	Date achieved	Assessor name & signature
System Performance Checks	Demonstrate ability to carry out system performance checks.		
Start-up & Shut-down	Demonstrate ability to carry out start-up and shut-down procedures.		
Component Positioning	Demonstrate ability to carry out component/part preparation, handling, and positioning.		
Scan Optimisation	Demonstrate ability to optimise scan settings / attributes.		
Data Acquisition	Demonstrate ability to acquire test data and verify its integrity.		
Data Processing	Demonstrate ability to use software tools to optimise images / visualisations.		
Interpretation	Demonstrate ability to characterize and interpret: a. Artefacts. b. Defects (manufacturing flaws). c. Faults (in-service failures).		
Data Handling & Reports	Demonstrate ability to: a. Format, export, archive, and secure test data. b. Prepare reports.		
Work Instruction Development	Demonstrate ability to prepare a Work Instruction.		
Other Activities as designated by RL3			
Assessor Endorsement	Assessor is satisfied that the candidate: a. Has a documented record of experience that meets the minimum requirement. b. Is sufficiently prepared for Specific & Practical examinations.		

Appendix 3 to NANDTB/30: NANDTB 3DNF RT Appointment Record.

The following table details 3DNF RT GL3 and ATO personnel directly appointed by the NANDTB:

Role	Name	Organisation	Scope of appointment	Issue	Expiry
Genesis Level 3 CT	James Willcocks	Rolls-Royce	EN4179 Level 3 RT(3DNF)	26 Jul 22	Valid whilst EN4179 L3 RT held.
Genesis Level 3 DT	tbc	tbc	tbc	tbc	tbc
Lead ATO Trainer/Examiner	David Blacklock	International School of Aerospace NDT	EN4179 Level 3 RT(3DNF)	13 Oct 23	Valid whilst EN4179 L3 RT held.
ATO Trainer/Examiner	tbc	Aerospace Inspection Training	EN4179 Level 3 RT(3DNF)	tbc	tbc
ATO Trainer/Examiner	tbc	IMechE Argyll Ruane	EN4179 Level 3 RT(3DNF)	tbc	tbc
ATO Trainer/Examiner	tbc	South West School of NDT	EN4179 Level 3 RT(3DNF)	tbc	tbc
ATO Trainer/Examiner	tbc	Testia	EN4179 Level 3 RT(3DNF)	tbc	tbc

Revision History

Owner	Issue	Change Summary	Date of publication	Scheduled Review Date
NANDTB	Issue 1	**Initial version created**	**05/09/2022**	**05/09/2024**
NANDTB	Issue 2	Para 3. Introduce definitions for CT & DT. App 1. Expand References. Add manipulator / detector positioning to Para 3. App 1 Annex 1 Experience checklist. Expand References and add manipulator / detector positioning.	11/09/2023	05/09/2024
NANDTB	Issue 3	Policy expanded to allow direct, parallel, and supplementary (formerly 'conversion') qualification routes for CT. App 1 changes: - Add ASTM E3375 to references. - Improvements to L2 Experience Checklist. - Add L1 Experience Checklist (similar to L2 but no requirement for WI development & analysis). - Clarify L1 & L2 practical exam criteria. App 3. Update Appointment Record.	10/09/2024	10/09/2026
NANDTB	Issue 4	- Para 3. DT definition working updated - Para 7. Update to ATO approval to improve clarity App 1 Changes: - Increase of RT 3DNF experience hours in Table 1 following Lead ATO feedback - Acquisition issues added to CT training outline - Para 3. clarification of recommendation for when employer has suitable internal supervisors / mentors App 2 Inclusion of Digital Tomosynthesis (DT) conversion training outline App 3 Updates to appointment table	28/01/2026	28/01/2028