RECOMMENDED PRACTICAL AND ORAL EXAM FOR NZPIA PARACHUTE TECHNICIAN RATING (SENIOR)

The main reference sources for Parachute Technician certification assessment are the following –

(1) The manufacturers' instructions for the equipment being serviced;
(2) Poynter's "Parachute Manual," latest revision (PPM);
(3) The FAA's AC65-5b "Parachute Technician's Handbook," latest revision;
(4) The NZPIA Documents, Standards and Procedures Manual (DSPM), latest revision;
(5) All applicable NZ Civil Aviation Rules.

This assessment tool is based on US FAA document faa-s-8081-25b, modified to complement the NZ CAA and NZPIA regulations. Some of the test items are oral, some are practical and some are a combination of the two.

NOTES

1. **There is no standard length** of time prescribed for parachute technician oral and practical tests. However, the testing period must be long enough to make a valid determination in each area of assessment for the certificate sought. Before starting the test, advise the applicant when the day's activities will be terminated and when testing will resume if more than one day is needed.
2. **Practical test:** Not all tasks must be evaluated, but sufficient number for the examiner to make a valid determination of the candidate's competency in all the required areas. Any task selected must be evaluated in its entirety. The minimum passing grade for each Part is 70% of the number of practical projects selected for that Part; every Part must be passed.

   The examiner must personally observe all tasks the applicant performs.
3. **Oral questioning** may be used at any time during the skill/practical test. At least 70% of the number of oral questions asked in each Part must be passed; every Part must be passed.
4. **Unsatisfactory Performance:** If the applicant does not meet the prescribed proficiency level on each assigned task in each required Part, that Part is failed; therefore, the practical test is failed.

   If it becomes obvious during the test that an applicant does not possess sufficient proficiency and is failing a Part, the examiner may discontinue testing. The applicant is entitled credit for only those Parts satisfactorily performed. However, during a re-test and at the discretion of the examiner, any task may be re-evaluated, including those previously considered satisfactory.

   Candidates may re-test twice without penalty, after which the candidate may not re-test again for a period of at least three months.
5. Forward results of all completed evaluations to NZPIA on completion: ceo@nzpia.co.nz

Name of candidate: _____

Date of examination: _____

Start time: _____ End time: _____ Grade: _____ %

Name and signature of Assessor: _____

PART I – CERTIFICATION

Candidate should be evaluated on this whole Part

A. Parachute equipment and packing requirements

Objective: To determine that the applicant exhibits knowledge of the use of single-harness, dual parachute systems by describing the:

1. Required configuration for this parachute system.
2. Main parachute packing requirements.
3. Reserve parachute-packing requirements.
4. Automatic activation device requirements.

PART II – PRIVILEGES, LIMITATIONS, AND OPERATING RULES

Candidate should be evaluated on at least two of following:

A. Senior Parachute Technician certificate privileges and limitations

Reference: NZPIA DSPM ch. 7 & 20

Objective: To determine that the applicant exhibits knowledge of Senior Parachute Technician Certificate privileges and limitations by describing:

1. What repairs may be accomplished.
2. Whom the senior technician may supervise.
3. What the supervised person may accomplish.

B. Performance standards

Reference: NZPIA DSPM ch. 7 & 20

Objective: To determine that the applicant exhitbits knowledge of the required performance standards by describing what the regulations state concerning the certificated parachute technician with regard to:

1. Unsafe parachutes.
2. Drying and airing requirement.
3. Alteration of parachutes.
4. Requirements to exercise privileges.

C. Repair classifications

Reference: NZPIA DSPM ch. 7& 20

Objective: To determine that the applicant exhibits knowledge of repair classifications by describing:

1. What constitutes a major repair.
2. Three examples of major repairs.
3. Who may perform major repairs.
4. What data is used to make a repair.

D. Alterations

Reference: NZPIA DSPM ch. 7 & 20

Objective: To determine that the applicant exhibits knowledge of alterations by describing:

1. What constitutes a parachute alteration.
2. Certificate requirements for a technician to perform alterations.
3. What data is required.
4. How alteration approval may be obtained.
5. Who may perform alterations.

E. TSO 23c requirements

Reference: TSO 23c; Aerospace Standard 8015A.

Objective: To determine that the applicant exhibits knowledge of TSO 23c requirements by listing the:

1. Seven major components of the complete parachute assembly.
2. Required marking and location of marking on stowage container.
3. Required marking and location of marking on canopy.
4. Required marking on primary actuation device/ripcord.

PART III – PACKING PARACHUTES

Candidate should be evaluated on this whole Part

A. Packing a reserve/auxiliary parachute

Reference: NZPIA DSPM ch. 7 & 20; NZCAR 105.111 & 115.67.

Objective: To determine that the applicant demonstrates the procedure for packing a reserve parachute in accordance with the manufacturer's instructions by:

1. Obtaining the relevant manufacturer instructions
2. Inspecting the complete assembly.
    a. Layout and straightening of the complete canopy, container, and harness assembly.
    b. Ensuring all components are compatible, complete, and free from manufacturer's errors and in compliance with approved changes.
    c. demonstrates inspection of the following components—
        1) Pilot chute.
        2) Pilot chute bridle.
        3) Deployment device (bag, diaper, etc.).
        4) Lines (suspension-steering).
        5) Risers and links.
        6) Harness.
        7) Container.
        8) Ripcord.
        9) Canopy.
3. Flaking the canopy.
4. Folding the canopy.
5. Installation of deployment bag or diaper, if applicable.
6. Canopy and line stowage (sequence dependent on model).
7. Placement of pilot chute.
8. Closing the container.
9. Sealing the pack.
10. Making all required record entries:
    a. Packing record.
    b. Maintenance record.

PART IV – PARACHUTE OPERATION AND CARE

Candidate should be evaluated on at least one of the following:

A. Parachute storage

References: PPM

Objective: To determine that the applicant demonstrates preparing a parachute for extended storage by:

1. Unpacking the parachute.
2. Roll packing the canopy.
3. Positioning slider if installed.
4. Daisy chaining lines.
5. Removing rubber bands from assembly.
6. Separating canopy assembly from container, if necessary.
7. Placing assembly in storage container.

B. Parachute drying and airing

References: PPM

Objective: To determine that the applicant:

1. Exhibits knowledge of procedures for drying and airing parachute assemblies by describing—
   a. Recommended airing time.
   b. Method and conditions when airing time may be reduced.
   c. Recommended atmospheric conditions in the packing area.
2. Demonstrates hanging a round canopy and chaining the suspension lines.
3. Demonstrates hanging a ram-air canopy.

C. Cleaning parachute canopies

Reference: PPM

Objective: To determine that the applicant:

1. Exhibits knowledge of cleaning parachute canopies by describing—
   a. Which canopies could be washed if absolutely necessary.
   b. The effect washing would have on the permeability of a ram-air canopy.
   c. How hard water may be softened.
   d. The washing process (including the handling of the canopy during the wash).
   e. How the canopy should be dried and the maximum temperature and time a heated drying room may be used.
2. Demonstrates spot cleaning a sample piece of nylon canopy material soiled with grease.

D. Cleaning parachute harness/container

Reference: PPM

Objective: To determine that the applicant:

1. Exhibits knowledge of cleaning parachute harness/container assemble by describing—
   a. How the harness/container may be cleaned.
   b. How Velcro should be protected during washing.
   c. The effects of washing the harness webbing in overly hot water or overly strong soap solution.
   d. How the hardware should be protected after cleaning.
   e. The effects of cleaning solvents on nylon and Lexan plastic.
2. Demonstrates litmus testing of an area of suspected acid contamination on a sample piece of container material.

PART V – PARACHUTE CONSTRUCTION DETAILS

Candidate should be evaluated on both of the following:

A. Seam construction defects

Reference: PPM

Objective: To determine that the applicant demonstrates identification of various seam construction defects from examples of the following:

1. A correctly sewn seam.
2. A raw edge defect.
3. Excess material beyond desired seam width.
4. Under fold condition (insufficient material inside seam width).
5. Over fold condition (excess material inside seam width).

B. Parachute construction knots

Reference: PPM

Objective: To determine that the applicant demonstrates forming the following types of parachute construction knots:

1. Clove hitch.
2. Lark's head.
3. Two overhand.
4. Bowline.
5. Surgeon's, with locking tie.

And at least one of the following:

C. Fabric construction

Reference: PPM

Objective: To determine that the applicant demonstrates fabric construction details, by indicating on a sample of parachute cloth the:

1. Fabric warp yarn.
2. Fabric fill yarn.
3. Selvage edge.
4. Rip stop weave.

D. French fell seam construction

Reference: PPM

Objective: To determine that the applicant demonstrates construction of 301 LSc-2 French fell seam by:

1. Selecting the correct sewing machine.
2. Setting up the sewing machine to sew with E size A-A-59826 thread on MIL-C-4438 cloth at the correct number of stitches per inch.
3. Constructing a bias 1-foot sample of a French fell seam on MIL-C-4438 cloth.
4. Examining the sewn sample for any irregularities.

E. Technical standard order TSO-C23C

References: TSO-C23c; Aerospace Standard 8015A.

Objective: To determine that the applicant exhibits knowledge of technical standard order requirements by listing:

1. Types of parachutes specified.
2. Categories of parachutes specified.
3. Seven major components of a parachute assembly.
4. Primary actuation device test load and functional requirements.
5. Marking requirements for stowage container, canopy, and primary actuation device.
6. Strength test requirements for a category B parachute assembly.

F. Technical Standard Order TSO-C23B

References: TSO-C23b; NAS-804

Objective: To determine that the applicant exhibits knowledge of technical standard order requirements by listing:

1. Types of parachutes specified.
2. Fitting material requirements.
3. Maximum pull force required to open pack.
4. Required information marking on pack.
5. Required information marking on canopy.
6. Ripcord tension test requirements.
7. Requirement for inspection data pocket.
8. Strength test requirement for a low speed parachute drop at 125 mph.

G. Fastener tapes

Reference: PPM

Objective: To determine that the applicant exhibits knowledge of fastener tapes (hook and loop) and factors that affects their functions by describing the:

1. Position at installation of the two sides.
2. One-way hook tape.
3. Effect of cutting the tape lengthwise.
4. Effect of temperature on tapes.
5. Effect of water on tapes.

H. Finger trap loop construction

Reference: PPM

Objective: To determine that applicant:

1. Exhibits knowledge of finger trap construction by describing—
    a. The tools necessary to form loop.
    b. The method of tensioning and marking cord.
    c. Types of stitching used to secure the loop.
    d. The method of trimming the cord end.
    e. The length of stitching necessary to secure the loop.
    f. Construction irregularities to be avoided.
2. Demonstrates constructing a 1-inch finger trap loop in a coreless Dacron cord sample.

I. Threading friction adapter

Reference: PPM

Objective: To determine that the applicant demonstrates threading friction adapters by:

1. Selecting compatible webbing.
2. Threading an adapter.
3. Preparing the terminal either by the split, wrap and sew method or by folding over and sewing.

PART VI – PARACHUTE REPAIR

Candidate should be evaluated on the following Task:

A. Single patch (basic patch) canopy repair

References: PPM; FAA-H-8083-17.

Objective: To determine that the applicant can construct a single patch canopy repair by:

1. Laying out and marking the damage area.
2. Selecting proper material.
3. Orientating patch material warp and filler threads to the canopy.
4. Cutting and folding the patch.
5. Sewing inside seam.
6. Removing damaged area.
7. Sewing outside seam.
8. Thoroughly inspecting and ensuring the stitching has not captured a line or adjacent material.

And at least one of the following:

B. Application of non-destructive test method TS-108 [pull test]

Reference: Parachute Industry Association Publications Technical Standard 108.

Objective: To determine that the applicant:

1. Exhibits knowledge of the following by describing the—
   a. Purpose of the test.
   b. Tools and materials required.
   c. Test procedure.
   d. Chemical indications.
2. Demonstrates the test procedure.

C. Removal and installation of grommets

References: PPM; FAA-H-8083-17.

Objective: To determine that the applicant demonstrates removal and installation of grommets by:

1. Cutting the rolled barrel of the old grommet, then separating the barrel and washer from the material.
2. Stitching the perimeter of the hole, for reinforcement.
3. Installing new grommet tight enough that it cannot be rotated in the material by hand and with no rough edges.

D. Sewing machine operation

References: PPM; Sewing Machine Manual.

Objective: To determine that the applicant demonstrates sewing machine operation by:

1. Threading the machine.
2. Setting the tension.
3. Adjusting the number of stitches per inch.
4. Stitching a canopy seam.

E. Container repair

References: PPM; FAA-H-8083-17, Parachute Rigger Handbook.

Objective: To determine that the applicant:

1. Demonstrates preparation for container repair by selecting—
   a. Repair material.
   b. Required tools.
2. Demonstrates the procedure for container repair.

F. Ram-air canopy repair limitations

References: PPM; FAA-H-8083-17.

Objective: To determine that the applicant demonstrates knowledge of ram-air canopy repair limitations for both certificated and non-certificated canopies, by listing limits for the following repairs:

1. Re-stitching.
2. Single outside patch.
3. Basic patch.
4. Panel patch.
5. Suspension lines.

G. Bottom of container (BOC) pocket replacement

Reference: FAA-H-8083-17.

Objective: To determine that the applicant demonstrates skill necessary to replace a BOC pocket by:

1. Readying container for repair, may require complete unpacking of container.
2. Marking corner positions of the original installation.
3. Open the lower right corner of the main container and remove old BOC pocket.
4. Position the new pocket in place temporally with pins.
5. Sew in place with single needle machine, backstitching corners for reinforcement.
6. Re-stitch the corner of the main container as per original configuration.
7. Inspect repair, ensuring correct pocket orientation.

H. Canopy repair

References: PPM; FAA-H-8083-17.

Objective: To determine that the applicant:

1. Demonstrates preparation for canopy repair by selecting—
    a. Repair material.
    b. And adjusting the sewing machine.
    c. Required tools.
2. Demonstrates the procedure for canopy repair.

I. Main riser 3-ring locking loop replacement

References: PPM, FAA-H-8083-17.

Objective: To determine that the applicant demonstrates skill necessary to replace the locking loop on the main riser 3-ring release by:

1. Disassembling of the old locking loop and removal of the confluence wrap.
2. Cutting a new loop.
3. Marking and positioning the new loop.
4. Sewing the new loop on the riser.
5. Trimming excess material from loop and reinstalling the confluence wrap.
6. Inspect repair and making an example packing data card and technician logbook entries.

Assessors' Notes / Comments (attach extra sheets if necessary): _____