

<b>DOMAIN</b>	Refrigeration and Air Conditioning				
<b>STANDARD</b>	29100	V2	Commission commercial RAC equipment under supervision	Level 3	8 Credits
<b>ENTRY</b>	<p>There are no pre-requisite unit standards.</p> <p>However, it is recommended that the learner holds Unit Standard 28959: Demonstrate knowledge of installation and commissioning procedures for commercial RAC equipment or has equivalent experience.</p>				

LEARNER TO COMPLETE					
Name		Company			
NSI No.		Email / phone			
Pre-assessment confirmation					
<p>I, the <b>learner</b>,</p> <p>Understand the assessment process and assessment requirements for this unit.</p> <p>Understand the appeals and resubmission processes.</p> <p>Believe I have the skills and knowledge to successfully complete the assessment requirements.</p>					
Assessment Submission: (Tick ✓ appropriate circle)	<input type="radio"/>	1st Submission	<input type="radio"/>	1st <u>Resubmission</u>	<input type="radio"/> Final Resubmission

ASSESSOR TO COMPLETE	
Name	Company
Email / phone	
Pre-assessment confirmation	
<p>I, the assessor, can confirm the learner has achieved any pre-requisite requirements. <input type="radio"/></p>	
ASSESSOR: UPDATE RESULTS AND COMPLETE FEEDBACK ONLINE VIA CANVAS	
<p><b>NOTE TO LEARNER:</b> You will be able to access your results via the Marks section (for this course) in Canvas. You will also see the feedback from your Assessor, and any actions you may need to take if a resubmission is required.</p>	

## RESUBMISSIONS:

Under Apprenticeship Training New Zealand (ATNZ) policy you have a maximum of **two** resubmission opportunities for this assessment. In total you will have three opportunities to meet the unit standard requirements. Information about the ATNZ resubmission process can be found in the Learner Regulations.

## APPEALS:

Your Assessor will discuss ATNZ's Assessment Appeals process with you before carrying out this assessment. Information about the Assessment Appeals process can be found in the Learner Regulations.

# LEARNER INSTRUCTIONS:

## YOU WILL NEED TO BE ABLE TO:

- Carry out pre-start commissioning tasks.
- Carry out start-up commissioning tasks.
- Provide information to operators and complete documentation.

## IMPORTANT INFORMATION

- Carefully read through this Assessment Guide so you know exactly what is expected.
- All evidence you provide for this assessment must be your own work.
- You must wear personal protection equipment (PPE) throughout the assessment.
- Attach additional supporting evidence which shows you have the required skills and knowledge, e.g. Drawings/Job specifications/records of work carried out, completion reports, photos / videos.
- Clearly name and label all attached evidence. Labels for photos must describe the activity being performed in the photo and which job it relates to.

What you need to do		Tick when complete
Observation Checklist 1	<p>1. You must be observed</p> <ul style="list-style-type: none"><li>• Commissioning <b>ONE (1)</b> commercial RAC systems <u>under supervision</u>. This will include:<ul style="list-style-type: none"><li>○ Carry out pre-start commissioning tasks.</li><li>○ Carry out start-up commissioning tasks.</li><li>○ Provide information to operators and complete documentation.</li></ul></li></ul>	<input type="radio"/>
	<p>2. You must also upload <b>supporting evidence</b> from the commissioning job. This <b>must</b> include the following:</p> <ul style="list-style-type: none"><li>• Company procedures/checklists you complete during the commissioning process.</li><li>• Records of all measurements you take to confirm correct setup of the RAC system.</li><li>• Reports you complete during the commissioning process.</li><li>• Company procedures you followed during the commission process. For example:<ul style="list-style-type: none"><li>○ procedures to evacuate and charge the RAC system with refrigerant and other fluids.</li><li>○ hand-over procedures.</li></ul></li><li>• Before, during and after photos/videos.</li></ul>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

## RESUBMISSIONS:

Under Apprentice Training New Zealand (ATNZ) policy you have a maximum of **two** resubmission opportunities for this assessment. In total you will have three opportunities to meet the unit standard requirements. Information about the ATNZ resubmission process can be found in the Learner Regulations.

## APPEALS:

Your Assessor, Observer or Verifier will discuss ATNZ's Assessment Appeals process with you before carrying out this assessment. Information about the Assessment Appeals process can be found in the Learner Regulations.

# Observation checklist 1 – Part A

(LEARNER TO COMPLETE THIS SECTION)

## YOU MUST BE OBSERVED:

- Carrying out pre-start commissioning tasks.
- Carrying out start-up commissioning tasks.
- Providing information to operators and completing documentation.

## LEARNER INSTRUCTIONS:

- Carefully read through this Observation Checklist so you know exactly what is expected.
- You the learner must fill in **PART A**
- **PART B** will be completed by an observer who must be approved by your Assessor/Account Manager prior to starting this assessment.
- Your assessor may choose an observer from your workplace to observe and/or verify your work.
- You may need to be observed more than once.
- Your Observer may ask you additional questions to check your knowledge and understanding.
- All work must be completed under supervision.
- Gather supporting evidence from the commissioning job including completed checklists, measurements, reports, photos, drawings, and work specifications.

Learner name		Workplace	
Describe the commissioning job, site location and the commercial RAC system specifications.		Date completed	Supporting evidence attached
			○

## OBSERVER TO COMPLETE THIS SECTION

- | Assessment Task  |  | Commissioning Job                                   | PC                         |
|--|--|---|----------------------------|
| <b>When carrying out pre-start commissioning tasks, the learner:</b> |  |   |                            |
| 1.   | Identified the commercial RAC system to be commissioned.   | ○   | PC 1.1                     |
| 2.   | Confirmed all mechanical systems and components were installed, aligned, and operating according to drawings and specifications.<br><br><ul style="list-style-type: none"> <li>Confirmed all components installed and aligned as specified. May include but not limited to:<br/>Compressors ○ Lubricants ○ Controls ○<br/>Pumps ○ Evaporators ○ Connectors ○<br/>Valves ○ Expansion valves ○ Filters ○</li> <li>Checked that components were operating to specified standards.</li> <li>Checked that system is clean and free from leaks</li> <li>Documented results on workplace Commissioning checklist/worksheets.</li> <li>Communicated results, identified issues or irregularities to the supervisor.</li> </ul> | <div>○</div> <div>○</div> <div>○</div> <div>○</div> | PC 1.1<br>PC 2.1<br>PC 2.3 |
| 3.   | Confirmed all electrical systems and components were installed, aligned, and operating according to drawings and specifications.<br><br><ul style="list-style-type: none"> <li>Confirmed all components installed and aligned as specified. May include but not limited to:<br/>Continuity ○ Insulation resistance ○ Polarity ○<br/>Voltage ○ Motors ○ Wiring ○<br/>Terminals and connections ○</li> <li>Checked that components were operating to specified standards.</li> <li>Documented results on workplace Commissioning checklist/worksheets.</li> <li>Communicated results, identified issues or irregularities to the supervisor.</li> </ul>  | <div>○</div> <div>○</div> <div>○</div>              | PC 1.2<br>PC 2.1<br>PC 2.3 |
| 4.   | Calibrated and tested safety devices in the RAC system.<br><br><ul style="list-style-type: none"> <li>Calibrated all safety devices to specified settings.</li> <li>Tested all safety devices to confirm settings were correct</li> </ul>  | <div>○</div> <div>○</div>                           | PC 1.3<br>PC 2.1<br>PC 2.3 |
| 5.   | Tested and calibrated control systems to ensure accurate performance and safety.<br><br><ul style="list-style-type: none"> <li>Tested <b>TWO (2)</b> different types of control systems to ensure accuracy and safety.<br/>PLC ○ Pneumatic ○ Electromagnetic ○ Electronic ○</li> <li>Verified their function under various conditions and adjusted settings for proper response in both normal and emergency situations.</li> </ul>  | <div>○</div> <div>○</div>                           | PC 1.4<br>PC 2.1<br>PC 2.3 |

Assessment Task		Commissioning Job	PC
6. Flow rates of fluids within the system were monitored to verify that they align with the values specified in the design documents.	<ul style="list-style-type: none"> <li>Monitored flow rates of all fluids in the system to verify alignment with specified rates.</li> <li>Adjusted flow rates (if required) to achieve optimal performance.</li> <li>Documented results on workplace Commissioning checklist/worksheets.</li> <li>Communicated results, identified issues or irregularities to the supervisor.</li> </ul>	<input type="radio"/>  <input type="radio"/>  <input type="radio"/>  <input type="radio"/>	PC 1.5 PC 2.1 PC 2.3
7. Evacuated the system and broke system vacuums following workplace procedure.	<ul style="list-style-type: none"> <li>Evacuated the system.</li> <li>Broke the system vacuum.</li> <li>Charged the system with specified refrigerant.</li> <li>Completed final inspections to confirm all components were operating correctly.</li> </ul>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	PC 1.6 PC 2.1
<b>When carrying out start-up commissioning tasks, the learner:</b>			
8. Affixed refrigerant and/or lubricant identification labels in accordance with legislative requirements.	<ul style="list-style-type: none"> <li>Ensured labels were placed in a clearly legible and visible on the refrigerant and lubricant containers.</li> <li>Ensured label content included essential information such as product name or chemical name, hazard pictograms, and hazard statement.</li> </ul>	<input type="radio"/>  <input type="radio"/>	PC 2.2
9. Recorded system performance data following workplace procedure.	<ul style="list-style-type: none"> <li>Performance data measured for:            Temperature <input type="radio"/>    Pressure <input type="radio"/>    Vibration levels <input type="radio"/>            Sub-cooling <input type="radio"/>    Fluid flows <input type="radio"/>    Humidity levels <input type="radio"/>            Super-heat <input type="radio"/>    Current draw <input type="radio"/>    Noise levels <input type="radio"/> </li> <li>Completed workplace performance data reporting.</li> </ul>	<input type="radio"/>  <input type="radio"/>	PC 2.3
10. Operators were familiarised with RAC system operating instructions.	<ul style="list-style-type: none"> <li>Ensured each operator had access to the relevant equipment manuals and instructions.</li> <li>Ensured each operator was instructed on how to operate the system within system parameters.</li> <li>Ensured system was handed over in accordance with workplace procedures.</li> </ul>	<input type="radio"/>  <input type="radio"/>  <input type="radio"/>	PC 3.1 PC 3.2
11. Completed all workplace documentation and records to meet job requirements.	<ul style="list-style-type: none"> <li>Recorded time and any information required for invoicing.</li> <li>Details required for warranties.</li> <li>Learner has attached workplace commissioning reports.</li> </ul>	<input type="radio"/>  <input type="radio"/>  <input type="radio"/>	PC 3.3
<b>Feedback from Observer</b>			
Please comment on the learner's ability to complete the commissioning job to specification.			
Observer Name		Observer Signature	Date signed: