



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

**Final date for issue of award is 31 December 2008**

## **TECHNICIAN'S CERTIFICATE - MECHANICAL**

### **WORK EXPERIENCE GUIDELINES**

#### **Introduction**

Mechanical engineering for the Technicians Certificate is concerned primarily with general workshop practice that encompasses a wide range of hands-on activities that provide experience with mechanical devices and processes.

It is expected that experience will be gained in each of the following categories. For each category, appropriate activities from which relevant work experience should be gained are given.

The process of approving Work Experience Record Books will be assisted by referencing each activity listed in the Record Book to the appropriate general category in these guidelines.

#### **1 General workshop practice**

Hands-on experience in each of the following general workshop practices/situations

- 1.1 Cleaning machinery, workshop and associated areas.
- 1.2 Welding (gas, MIG and ARC).
- 1.3 Using various metals and their alloys.
- 1.4 Using metal forming machinery such as lathes, grinders, milling machines.
- 1.5 Using and maintaining hand tools.
- 1.6 Demonstrating safe workshop practices (tool and machinery use).
- 1.7 Using various polymers such as PTFE, nylon, adhesives.
- 1.8 Applying various corrosion control mechanisms such as protective coatings, galvanic systems.
- 1.9 Handling and storing compressed gas cylinders.

1.10 Reporting on-job operations practices.

1.11 Supervising selected workshop activities.

## **2 Replacement and maintenance of mechanical devices**

Replacing and maintaining a selection of the following:

- fluid control valves
- pneumatic control valves
- bearings
- hydraulic pipes/systems
- pneumatic pipes
- compressed air systems
- fluid (including fuel) and pneumatic pumps
- fluid, hydraulic and pneumatic gauges
- cylinders and storage canisters of compressed gases
- bearing and valve pipe junction seals.

## **3 Machinery**

Experience with dismantling, fault diagnosis, replacement and repair of parts, and full assembly into full working condition of at least four of the following:

- diesel engines
- four stroke engines
- two stroke engines
- steam driven engines
- turbines
- auxiliary machines
- refrigeration systems
- air conditioning/extraction systems.

## **4 Testing**

Testing and dealing with the consequences of contamination of the following materials used with mechanical devices:

- fuels
- cooling liquids
- lubricating fluids
- hydraulic fluids.

## **5 Mechanical systems**

Hands on experience, including problem solving, with lubrication systems, cooling systems, fluid transfer systems and control systems in relation to at least two of the following:

- internal combustion engines, including diesel, petrol (both two and four stroke cycles)
- steam driven engines
- turbines (either gas or steam).

## **6 Mechanical procedures**

Hands on experience, including problem solving, with start-up procedures, routine checks, shut-down procedures and emergency shut-down procedures for at least four of the following:

- diesel engines
- four stroke engines
- two stroke engines
- steam driven engines
- turbines
- auxiliary machines
- refrigeration systems
- air conditioning/extraction systems.

## **7 External contractors**

Experience in dealing with external contractors in one or more of the following activities:

- developing contract documentation
- monitoring work progress and standards of external contractors
- ensuring contractors adhere to the site/company operational regulations
- ensuring the satisfactory completion of the contract.