

Title	Demonstrate knowledge of alluvial gold recovery plant equipment		
Level	4	Credits	12

Purpose	People credited with this unit standard are able to demonstrate knowledge of: feeders, screens and conveyer systems; variables related to gravity separation devices, pumps and cyclones; electrical componentry and safety practices for electrical faults applicable to alluvial gold plants; a basic hydraulic circuit; and the key components of alluvial gold plants.
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Classification	Extractive Industries > Surface Extraction
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Available grade	Achieved
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Guidance Information

Definition

Company procedures mean the documented methods for performing work activities and include health and safety, operational, environmental, and quality management requirements. They may refer to manuals, codes of practice, or policy statements.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of feeders, screens and conveyer systems.

Performance criteria

- 1.1 Monitoring and adjustments to a feeder to optimise delivery of raw product to screen are described for a given system.
- 1.2 Monitoring and adjustments to screen to optimise screening and washing of raw product are described for a given system.
- 1.3 Load and power calculations are made for conveyor systems of a given plant situation.

Outcome 2

Demonstrate knowledge of variables related to gravity separation devices, pumps and cyclones.

Performance criteria

- 2.1 Variable parameters affecting gravity separation performances are described in accordance with company procedures.
- Range may include but is not limited to – feed characteristics and/or, one or more of:
jigs – raggings, mesh size, hutch water, frequency, stroke;
centrifugal concentrators – speed, time, supplementary water, fingers;
riffle or streamdown table – angle, riffle size, supplementary water, beds, matting;
spirals – wash water, profile, spigot settings.
- 2.2 Pump calculations are undertaken to establish the effect of variable parameters on pump performance in accordance with manufacturer's specifications.
- 2.3 The variable workings of a cyclone are described for a given plant situation.
- Range may include but is not limited to – vortex finder size, spigot size, cyclone size in relation to feed, pressure or vacuum.

Outcome 3

Demonstrate knowledge of electrical componentry and safety practices for electrical faults applicable to alluvial gold plants.

Performance criteria

- 3.1 Electrical componentry is described for a given plant situation.
- Range motor sizing, starters and controls including soft starts, motor speed control including A.C. inverter, earth leakage, power factor correction, cable sizing, generator sizing.
- 3.2 Safety practices and isolation procedures for plant electrical faults are described for a given plant situation in accordance with company procedures.

Outcome 4

Demonstrate knowledge of a basic hydraulic circuit.

Performance criteria

- 4.1 The different types of hydraulic pumps and their operation are described for a given plant situation.
- 4.2 The different types of hydraulic motors and rams and their operation are described for a given plant situation.
- 4.3 Types of pipe and hoses, their pressure capabilities and associated fittings, and the safety requirements, are described for a given plant situation.

Outcome 5

Demonstrate knowledge of key components of alluvial gold plants.

Performance criteria

- 5.1 Calculate buoyancy loading for a given regular flotation situation to maintain adequate freeboard.
- 5.2 Profile of steel members and their uses are described for a given plant situation.
- 5.3 Steel wire rope types, grades and applications and maintenance are described for a given plant situation.

Planned review date	31 December 2022
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 July 1999	31 December 2011
Revision	2	12 January 2005	31 December 2011
Review	3	19 November 2010	N/A
Rollover	4	25 January 2018	N/A

Consent and Moderation Requirements (CMR) reference	0114
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.