



Australian Government

Assessment Requirements for NWPHYD001 Apply principles of open channel hydraulics

Release: 1

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Modification History

Release	Comments
1	These Assessment Requirements were released in NWP Water Training Package release 1.0 and meet the Standards for Training Packages. • Assessment Requirements created drawing upon specified assessment information from superseded unit

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least two occasions.

- drawing velocity distribution curves for fluids in pipes or channels with both laminar flow and turbulent flow
- using data to determine the value of roughness
- using simple equations for determining channel friction with their appropriate application
- calculating minor energy losses associated with enlargements, contractions and bends
- calculating the gradual varied flow profiles in uniform channels when the discharge is known
- interpreting and applying technical documentation to the collection, analysis and reporting of hydrographic data
- using computer systems
- using recording and reporting systems
- calculating hydraulic energy gradients
- distinguishing the applications and characteristics of notches and weirs, including type of the crest, shape of the notch, crest and conditions
- distinguishing the characteristics of open channels including:
 - types of open channel
 - steadiness
 - uniformity
 - state of open channel flow
 - laminar
 - transitional and turbulent flow
 - critical
 - subcritical and supercritical flow
 - types of data (photographic, surveying, long-section and cross-section, topographic maps, historical)
- using surveying techniques
- identifying types of flows
- verifying results by applying hydraulic principles and other methodologies such as using the continuity equation

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- application of matrix algebra to systems of linear equations
- graphical and algebraic methods for solving systems of linear, quadratic, exponential, logarithmic and trigonometric equations
- principles of fluid statics, fluid dynamics and hydraulic mechanics
- Pascal's law and hydrostatic effect on submerged surfaces
- distinction between laminar and turbulent flow
- Hagen–Poiseuille equation
- Darcy–Weisbach equation
- Bernoulli's equation
- the effect of velocity variation on velocity head
- equations for calculating the approximate value of the friction factor, the characteristics of flow through notches/weirs, including the use of these in channel flow measurement
- flow conditions including:
 - laminar flow
 - turbulent flow
 - smooth, rough pipe and channel surfaces
 - full pipe flow
 - submerged flow conditions
 - backwater
 - critical flow
 - subcritical and supercritical flow
 - uniform flow
 - rapidly changing flow
 - weir and flumes behaviour under various flow conditions

Assessment Conditions

Competency should be assessed in an actual workplace or in a simulated environment, with access to equipment and infrastructure appropriate to the outcome. Competency should be demonstrated over time to ensure the candidate is assessed across a variety of situations.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

GSA website - <http://www.govskills.com.au>

NWP Implementation Guide -

<http://www.govskills.com.au/guides/water/implementation-guide>

NWP Assessment Guide - <http://www.govskills.com.au/guides/water/assessment-guide>

NWP Knowledge Guide - <http://www.govskills.com.au/guides/water/knowledge-guide>