Title	**Describe the factors affecting seafood vessel stability**		
Level	**4**	**Credits**	**20**

Purpose	This unit standard is for people working in a seafood operation. People credited with this unit standard are able to describe: the influence and points of action of the forces acting on a static seafood vessel; describe changes in the forces acting on a vessel during vessel movements, and the effect of these changes on the size of the righting lever and the stability of a seafood vessel; describe vessel stability during transfer of loads using a seafood vessel's vessel mounted crane or lifting equipment; describe the effects of a free surface on the stability of a seafood vessel; and interpret information available to calculate the effects of changes in vessel loading on seafood vessel stability.

Classification	Seafood > Seafood Vessel Operations

Available grade	Achieved

Guidance Information

1 All evidence presented in this unit standard must be in accordance with:
- Workplace procedures;
- Health and Safety at Work Act 2015;
- Fisheries Act 1996;
- Maritime Transport Act 1994;
  and any subsequent amendments.

2 Definition
Workplace procedures refer to the policies and procedures set out in a verbal or written form by the employer or organisation. Procedures must be consistent with current legislative requirements and manufacturer's recommendations or instructions where relevant.

Outcomes and performance criteria

Outcome 1

Describe the influence and points of action of the forces acting on a static seafood vessel.

Performance criteria

1.1 Describe how the forces and their points of action act on a stable, floating vessel.

Range forces gravity, buoyancy;
points of action, centre of gravity, centre of buoyancy, metacentre.

1.2 Describe the metacentric height of the vessel as a parameter indicating vessel stability.

1.3 Describe how a Stab Tank works and how it affects vessel stability.

1.4 Describe how Flopper Stoppers work and how they affect vessel stability.

Outcome 2

Describe changes in the forces acting on a vessel during vessel movements, and the effect of these changes on the size of the righting lever and the stability of a seafood vessel.

Range movement caused by lateral, longitudinal, and vertical changes in the position of cargo, ballast, or other mass;

Performance criteria

2.1 Describe vessel stability in terms of the relationship between the centres of buoyancy and gravity, the metacentre of the vessel, and the length of the righting lever.

2.2 Describe the causes of lists, lolls, and changes in roll period in terms of changes in the points of action of the forces acting on the vessel and the length of the righting lever.

2.3 Describe vessel stability in terms of stability changes that make the vessel stiff or tender.

Outcome 3

Describe vessel stability during transfer of loads using a seafood vessel’s vessel mounted crane or lifting equipment.

Performance criteria

3.1 Describe vessel stability in terms of the relationship between the centres of buoyancy and gravity, and the metacentre of the vessel, during the transfer of a load.

Range from rest to suspended, unloading, loading, relocating.

3.2 Describe vessel stability during a lift in terms of the movement of the centre of gravity of the vessel during the transfer of a load.

Range from rest to suspended, unloading, loading, relocating

3.3 Describe strategies for maintaining vessel stability during load transfer.

Range may include but is not limited to – ballasting, fuelling during discharge, use of loading and unloading plans;
evidence of two is required.

3.4 Describe signs that indicate reduction in the vessel's stability.

Outcome 4

Describe the effects of a free surface on the stability of a seafood vessel.

Performance criteria

4.1 Describe the free surface effect in terms of the movement of the points of action of the forces acting on the centre of gravity of fluid in a tank, bilge, or on deck, with a free surface, and on the vessel, as the vessel rolls.

Range may include but is not limited to – partially filled tanks, pressed tanks, bilges, water on decks, water on factory floor, fish in bunkers or pounds, water in bunkers or pounds, fish on deck, scuppers or freeing ports blocked, inoperable exacerbating free surface effect;
evidence of four is required.

4.2 Describe vessel stability while a fluid free surface exists aboard in terms of the size and position of the fluid containers with the free surface.

4.3 Describe methods used to reduce or eliminate free surface effects in terms of their application to fluids in enclosed tanks, fluid like loads in holds or on deck, water on decks and in bilges, and watertight integrity.

Outcome 5

Interpret information available to calculate the effects of changes in vessel loading on seafood vessel stability.

Range one of – stability book, stability control computer programme.

Performance criteria

5.1 Interpret information available to calculate the effects of changes in vessel loading on seafood vessel stability.

Planned review date	31 December 2028

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 February 2005	31 December 2020
Review	2	19 September 2008	31 December 2020
Review	3	27 June 2019	N/A
Rollover	4	29 February 2024	N/A

Consent and Moderation Requirements (CMR) reference	0123

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact the Muka Tangata - People, Food and Fibre Workforce Development Council qualifications@mukatangata.nz if you wish to suggest changes to the content of this unit standard.