W2W – SOV & Gangway

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Gangway connections

- General types of connection
  - “Cone“
    - Vertically landing of cone or similar support
    - Requires large platform
    - Stairs
    - “Free-wheel” control
    - Long duration connections
  - “Bumper”
    - Horizontal connection.
    - Gangway keep connection by pushing against landing point
    - Requires only a small beam (Typical 1.5m x 0.3 m)
    - Stepless connection
    - Active control of gangway at all time
    - Short duration connections
  - *Hover*
    - *No connection*
    - *Gangway tip hovers over landing point, typically stairs on gangway (to reach over handrails on installation)*
    - *Short duration connections*

Gangway types

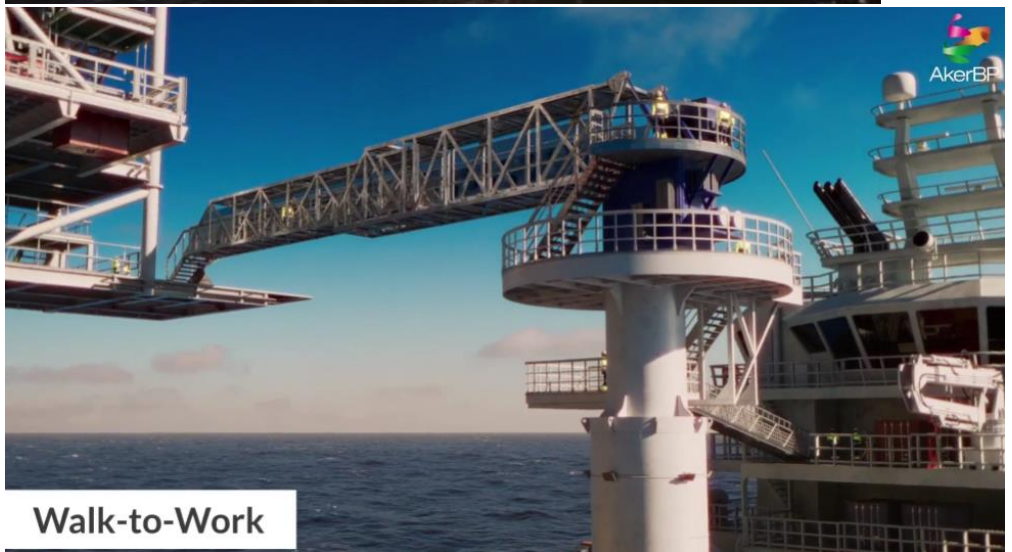
Per DNV-ST-0358, ref Facilities Regulation §13

- Type 1
  - Uncontrolled flow of people, routine personnel transfer.
    - people move freely between the connected units
    - connection time: indefinite
    - gangway is usually supported in X, Y and Z axis directions at both ends
    - gangway shall not be permanently connected to at least one of the units
    - gangway shall contain means to self-detach at one end and move away in a safe manner and short time.
- Type 2
  - Controlled flow of people, routine personnel transfer.
    - People do not move freely between the connected units, the flow of people is controlled/regulated by means of manual (i.e. the gangway operator) or automatic control.
    - Connection time: usually less than 24 hours, the control of the flow of people shall be ensured throughout the entire connection time.
    - At least one end of the gangway is supported in the X, Y and Z axis directions.
    - The gangway shall contain means to self-detach at one end and move away in a safe manner and short time.
- Type 3 and 4 not relevant

Aker BP introduction of UI

Unmanned Installation (UI)

- No Helideck – Requires gangway
- No Lifeboat – Gangway is primary evacuation
  - Type 1:
    - All personnel on UI should be able to quickly escape via the gangway in an evacuation system. i.e Free flow and vertical support both ends
    - Gangway must be available at all times. i.e. extended connection and cone mode for “free-float” (passive) system.
- No utilities– The vessel provides water, air, diesel, nitrogen
  - Type 1 (2):
    - Gangway may have to be available for prolonged durations. i.e. extended connection and cone mode for “free-float” (passive) system
- No living quarter or other facilities – The vessel is hotel and office
  - Type 1 (2):
    - Gangway will be frequently used. Flexible use of gangway.
    - POB control at gangway will be used



Other gangway service

Manned Installations

- Short durations for personnel transfer
  - IP personnel change
  - Pick up personnel living on manned installations for work on NUI/UI
  - Change of marine crew
- Currrent regulations: Personnel living on the vessel cannot work on manned installations

Type 2

Normally Unmanned Installations (NUI)

- Walk to Work - W2W
  - Personnel working on NUI brought to installation on start of shift and are picked up at the end of shift
  - Simple facilities on NUI – Meals can be served on NUI or vessel

Type 2

AkerBP Gangvei

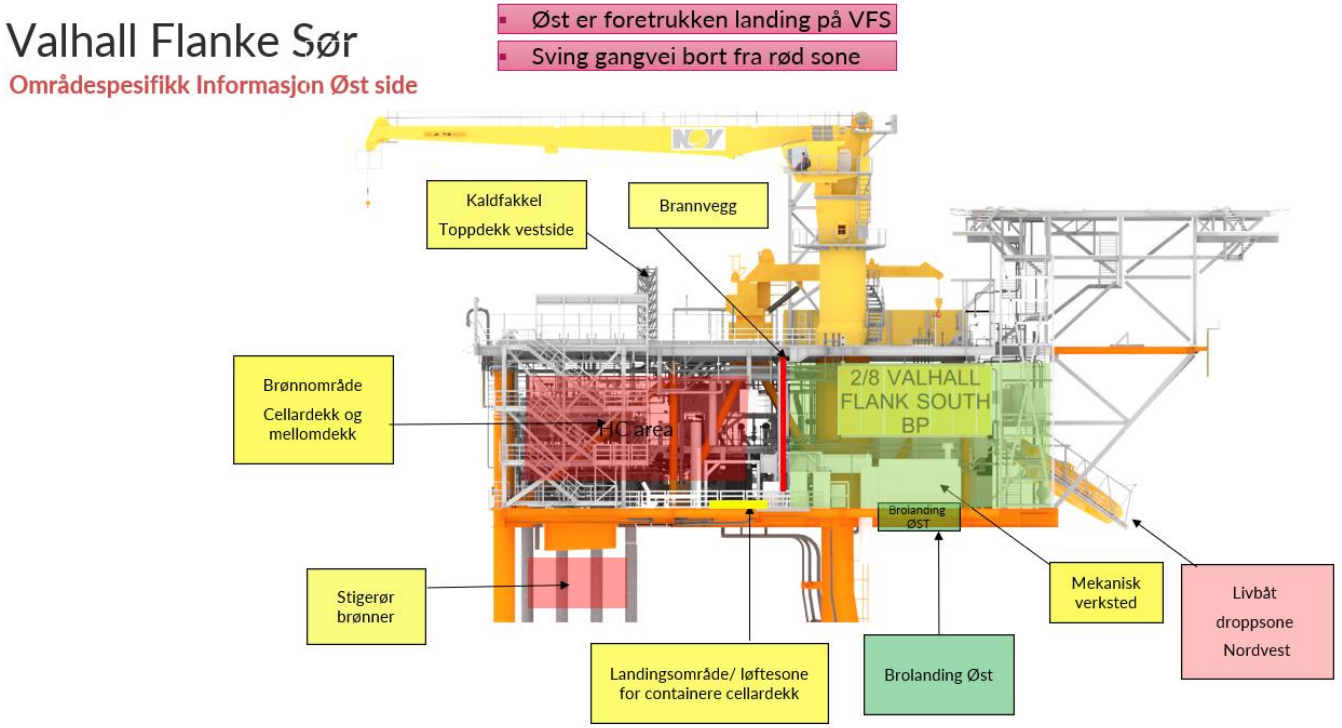
Status og plan

- SMST Gangvei bestilt
  - Utgangspunkt L2, Type 2
  - Vil bli kombinert Bumper og Cone, Type 1
- Cone mode på Fenris og Munin, Ubemannede Installasjoner (UI)
  - Primært evakueringsmiddel
  - Kontinuerlig oppkobling
  - Fri flyt av personell på gangveien
- Bumper mode ved mannskapsbytte på feltsenter, Valhall PWP og Hugin A
  - Kun oppkoblet for overføring av personell
  - Kort varighet
  - Ingen beredskapsfunksjon
  - Kan også benyttes på Normalt Ubemannede Installasjoner (NUI)

SMST illustrasjons-foto, ikke eksakt gjengivelse av AkerBP leveranse

W2W sikkerhetsfunksjoner (design)

- Etablerte design kode(r)
  - **DnV-ST-0358**
  - Lloyds Code for Offshore Personnel Trɒnsfer Systems, July 2023
- ISO 12100 risiko analyse
- Konsekvenser av ulykkeslaster analyseres for hvert landingsområde (inherent safe)
- ATEX krav på deler av gangbro



Tekniske W2W sikkerhetsfunksjoner

- Trafikklys. Flere løsninger for synlighet vurderes – f.eks. LED striper på gangbro
- Alarm (lys og lyd) hvis gangveibevegelsene går i gult område.
- Automatisk tilbaketrekking av gangvei i rødt område.
  - Fokus på opprampingshastighet ved tilbaketrekking i bumper modus.
  - Muligheter for sikker hindring av at personell kan falle til sjø ved tilbaketrekning undersøkes
- Markering av potensielt farlige områder/deler
  - Enden av teleskopdelen, bumper, trapp
  - Område som teleskopdelen beveger seg på
- Maskinsikkerhet – klemfare etc

- Gassdetektorer på skip og gangvei

Operasjonelle W2W sikkerhetsfunksjoner

- Innhente læring fra tidligere operasjoner og hendelser
- God og informativ sikkerhetsvideo med høy detaljeringsgrad
- Reders Activity specific Operating Guidelines, ASOG
  - Gir grønt, blått, gult og rødt operasjonsområde, med operasjonelle marginer mellom områdene
- Trente og sertifiserte gangveisoperatører
- Gangvei respons varsel basert på værmeldingen

- "Lokalt tillegg" for hver landing/platform som viser kritisk utstyr som gangvei kan treffe. Foretrukket/pålagt til- og frakoplingssone

ASOG – W2W – ISLAND CONDOR

This setup applies when carrying out operations within a 500 m zone of an offshore installation.
Bridge manned with 2 certified DPOs. ECR manned with one qualified ERO.

Condition	GREEN	ADVISORY	YELLOW	RED
Notify Master, Chief Eng Client rep. and platform	NO	NO. SDPO to decide	YES	YES
Action required	Continue normal operation	Informative/ consultative status (risk assessment)	Cease operations a be ready to move Vessel to safe pos Joystick/ manual i applicable	Cease operations. Leave 500 m zone immediately.
DP position footprint Vessel offset deviation from start point	< 1,5 meters	1,5 – 3 meters	> 3 meters	When situation cannot be controlled
DP heading footprint	< 2°	2-4°	> 4°	If threat to position
Generators online	2	2	1	1
Total power consumption	< 45%	45-50%	> 50%	Situation specific
Thrust consumption	< 45%	45-50%	> 50%	Situation specific
Auxiliary machinery systems	Redundant DP2 set up of starting air, fuel, cooling, ventilation	Supply blockage or any other system failure.	No redundancy available	If threat to position
Position reference system available	3 independent	Loss of performance in any system	1	Within 30 seconds after Position drop-out alarm.
DP control system	2	Loss of	1	0

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