

NSF#1 risks

#	Consequence	Hazard	Damage category	Affected stakeholder	Severity	Probability	Risk
Hazard: 01: Fixed structures offshore							
1	Collision between multi-use vessel and wind farm structure causing damage to the wind farm foundation	01: Fixed structures offshore	Assets	WFO	4	4	HIGH
2	Collision between multi-use vessel and wind farm structure causing damage to the wind farm infield cables by sinking and/or dropping items on the seabed	01: Fixed structures offshore	Assets	WFO	5	3	HIGH
3	Collision between multi-use vessel and wind farm structure causing the vessel to sink leading to human fatalities	01: Fixed structures offshore	Human	WFO	5	3	HIGH
4	Openly disposed food, animal or seaweed remains and/or bait leads to attraction of birds and potential collisions of birds with rotors of monopiles.	01: Fixed structures offshore	Other	Both WFO &...	5	2	MEDIUM
5	Openly disposed food, animal or seaweed remains and/or bait leads to attraction of fish/marine mammals and potential collisions of animals with rotors of monopiles.	01: Fixed structures offshore	Other	Both WFO &...	5	2	MEDIUM

Hazard: 02: Moored multi-use assets within a wind							
6	WFO vessel collides with MU-Assets leading to damage/failure of MU Assets	02: Moored multi-use assets	Assets	MUO	5	4	HIGH
7	Wind farm assets covered in seaweed, shellfish and/or other living biomass leading to reduced design life of wind farm assets	02: Moored multi-use assets	Assets	WFO	3	3	MEDIUM
8	Wind farm assets covered in seaweed, shellfish and/or other living biomass due to proximity of MU-Systems leading to slipping/ falling and thus fatality of wind farm personnel	02: Moored multi-use assets	Human	WFO	4	3	MEDIUM
9	MUPS-Rigid goes adrift due to mooring failure and collides with vessel leading to fatalities	02: Moored multi-use assets	Human	Both WFO &...	5	3	HIGH
10	MUPS-Rigid goes adrift due to mooring failure and collides with vessel leading to vessel damage	02: Moored multi-use assets	Assets	Both WFO &...	3	3	MEDIUM
11	MUPS-Rigid goes adrift due to mooring failure and collides with wind farm structure leading to WF foundation damage	02: Moored multi-use assets	Assets	WFO	3	3	MEDIUM
12	MUPS-Rigid goes adrift due to mooring failure	02: Moored multi-use assets	Assets	WFO	5	2	MEDIUM

	and collides with wind farm structure leading to infield cable damage						
13	MUPS-Flexible goes adrift due to mooring failure and becomes entangled in vessel leading to fatalities	02: Moored multi-use assets	Human	Both WFO &...	5	1	MEDIUM
14	MUPS-Flexible goes adrift due to mooring failure and becomes entangled in vessel leading to vessel damage	02: Moored multi-use assets	Assets	Both WFO &...	2	3	MEDIUM
15	MUPS-Flexible goes adrift due to mooring failure and becomes entangled in WF structure leading to damage to the WF foundation	02: Moored multi-use assets	Assets	WFO	2	3	MEDIUM
16	MUPS-Flexible goes adrift due to mooring failure and collides with wind farm structure leading to infield cable damage	02: Moored multi-use assets	Assets	WFO	5	1	MEDIUM
17	MUPS-Flexible goes adrift due to mooring failure and becomes entangles on WF foundation boat landing leading to inaccessible wind farm assets	02: Moored multi-use assets	Assets	WFO	2	3	MEDIUM
18	Collision between vessel adrift and MUPS within the wind farm	02: Moored multi-use assets	Assets	MUO			LOW
19	Collision between vessel adrift and wind	02: Moored multi-use assets	Assets	WFO			LOW

	turbines within the wind farm						
Hazard: 03: Multi-use area operation							
20	During the MUPS installation activity, other MU-assets in the MU-area are damaged by the installation vessel or (part of) the MUPS	03: Multi-use area operation	Assets	MUO	3	4	MEDIUM
21	During vessel operations in the MU-Area the MU-vessel collides with MU-Assets due to inadvertent navigational error	03: Multi-use area operation	Assets	MUO	4	4	HIGH
22	During operation an operations vessel goes adrift and collides with installed MUPSS leading to asset damage	03: Multi-use area operation	Assets	MUO	4	3	MEDIUM
23	MUO goes bankrupt leading to unattended assets and potential unpaid cost for WFO	03: Multi-use area operation	Other	WFO	4	4	HIGH
24	New multi-use operations attract more birds than anticipated and previously observed in wind farm, leading to increased bird casualties	03: Multi-use area operation	Environment	Both WFO &...	3	4	MEDIUM
25	Station keeping leads to an unintended monopile approach and collision resulting in personal harm and man overboard	03: Multi-use area operation	Human	Both WFO &...	4	1	LOW

26	Station keeping leads to an unintended monopile approach and collision resulting in damage to ship to even sinking	03: Multi-use area operation	Assets	Both WFO &...	3	2	MEDIUM
27	While approaching boat landing of monopile or multi use installation for work, persons fall into water because of ropes etc. and suffer injury or drown	03: Multi-use area operation	Human	Both WFO &...	4	3	MEDIUM
28	The handling of animals and livestock leads to personal injury e.g. due to biting, spines, diseases, etc.	03: Multi-use area operation	Human	MUO	2	2	LOW
29	Due to heavy weather anchors of installations lose grip and installations get mobilized, get damaged and damage other installations	03: Multi-use area operation	Assets	Both WFO &...	5	2	MEDIUM
30	Irresponsible anchoring in the park because of work or emergency situation or drifting anchors due to bad weather lead to damaging of infield electricity cables	03: Multi-use area operation	Assets	WFO	5	1	MEDIUM
31	Large scale necessary maintenance of one multi-use party is hampered by another multi-use party leading to delays and cost increase	03: Multi-use area operation	Other	Both WFO &...	4	4	HIGH
Hazard: 04: Offshore transportation							

32	During transport of the MU Vessel to/from the MU Area items fall of the ship and cause damage to the Infield Cables	04: Offshore transportation	Assets	WFO	5	2	MEDIUM
33	Boarding, mooring and disembarking vessel causes personnel to fall in the water leading to fatality	04: Offshore transportation	Human	Both WFO &...	4	4	HIGH
34	While moving on the vessel, slippery surfaces and material cause personnel to fall in the water leading to injury or fatality	04: Offshore transportation	Human	Both WFO &...	4	3	MEDIUM
35	While working on deck of the vessel, not secured and moving material cause injury or fatality to personnel	04: Offshore transportation	Human	Both WFO &...	4	3	MEDIUM
36	Boarding and leaving vessel causes personnel to fall in the water leading to injury or fatality	04: Offshore transportation	Human	MUO	4	3	MEDIUM
37	While mooring the vessel, tripping over the ropes on the vessel or jetty causes personnel to fall in the water leading to injury or fatality	04: Offshore transportation	Human	Both WFO &...	4	3	MEDIUM
38	During (dis)embarkment of equipment, material falls, leading to injury or fatality	04: Offshore transportation	Human	Both WFO &...	4	3	MEDIUM

39	Due to lifting heavy loads personnel suffers back injuries leading to pain and injuries.	04: Offshore transportation	Human	Both WFO &...	2	2	LOW
40	Vessel and/or crew do not meet the legal vessel and crew requirements, which leads to fines or reputation damage	04: Offshore transportation	Reputation	Both WFO &...	4	2	MEDIUM
Hazard: 05: Offshore weather conditions							
41	Adverse offshore weather conditions causing mooring failure and leading to MUPS-WTG Foundation collision [this item is fully covered by the consequences of MUPS - WTG structure collision under Hazard02 - therefore these rest of this line item remains empty]	05: Offshore weather condit					LOW
42	Exposure to wetness and or cold temperatures leads to illness (hypothermia), minor injury or even death	05: Offshore weather condit	Human	Both WFO &...	4	4	HIGH
Hazard: 06: Operation in a complex industrial zone)							
43	Lengthy coordination activities cause a delay in WFO response time leading to consequential damage (e.g. additional downtime)	06: Operation in a complex i	Assets	WFO	1	4	LOW

44	Lengthy coordination activities cause a delay in MUO response time leading to consequential damage (e.g. damaged systems, too late harvest)	06: Operation in a complex i	Assets	MUO	1	4	LOW
45	Potential of liability claims by WFO due to consequential damage leads to unavailable finance/insurance for MUO	06: Operation in a complex i	Other	MUO	3	5	HIGH
46	Liability claim from wind farm operator (as a consequence of damages caused by MUO) exceeds insurance coverage of MUO or generally falls outside of the insurance policy coverage of MUO	06: Operation in a complex i	Other	MUO	5	4	HIGH
47	Crew list and work locations were not communicated to assigned simultaneous operations (SIMOPS) Coordinator and coast guard resulting in increased risks and increased personal damages. Ships could be intercepted by coast guard.	06: Operation in a complex i	Human	Both WFO &...	4	4	HIGH
48	Crew list and work locations were not communicated to assigned simultaneous operations (SIMOPS) Coordinator and coast guard resulting in increased risks and increased asset damages. Ships could be intercepted by coast guard	06: Operation in a complex i	Assets	Both WFO &...	3	4	MEDIUM
49	Loss of equipment leads to an affected work program and loss of time	06: Operation in a complex i	Other	Both WFO &...	2	2	LOW

Hazard: 07: Operation of high voltage facility							
50	MUO personnel enters WTG/OHVS exclusion zone leading to injuries or fatalities	07: Operation of high voltage	Human	MUO	5	2	MEDIUM
51	MU Vessel comes in contact with live electrical infrastructure (via anchor or moored at MUMS) due to straying out of MU Area, leading to MU personnel injuries or fatalities	07: Operation of high voltage	Human	MUO	5	2	MEDIUM
Hazard: 08: People passing through the wind farm							
52	MUMS fails, drifting out of MU Area, leading to collision with third party vessel and causing damage to the vessel (MUPS-Rigid is assumed here as worst case)	08: People passing through	Assets	External sta...	4	3	MEDIUM
53	MU vessel sails through MU Area and collides with MU Assets leading to damage/failure of MU Assets	08: People passing through	Assets	MUO	5	4	HIGH
54	MU vessel sails through WF Area and collides with WF Assets leading to damage/failure of WF Assets	08: People passing through	Assets	WFO	5	4	HIGH
Hazard: 09: Personnel working in multi-use area							

55	During MUPS/MUMS lifting works person is hit, leading to injury or fatality (crushing, concussion, fractures, etc.)	09: Personnel working in mu	Human	MUO	4	4	HIGH
56	During MUPS/MUMS works person become entangled or slips and fall overboard leading to injury or fatality	09: Personnel working in mu	Human	MUO	4	4	HIGH
57	Person falls ill on vessel leading to injury or fatality	09: Personnel working in mu	Human	MUO	4	4	HIGH
58	Person sustains injury on vessel and cannot be treated or transported adequately/timely leading to injury or fatality	09: Personnel working in mu	Human	MUO	4	4	HIGH
59	Diving operation goes wrong leading to injury or fatality of diving personnel	09: Personnel working in mu	Human	MUO	4	4	HIGH
60	Lines under tension snap and lead to serious injuries.	09: Personnel working in mu	Human	Both WFO &...	4	2	MEDIUM
Hazard: 11: Wind farm operation							
61	Multi-Use permit gets granted without the WFO		Other	WFO			MEDIUM

	being able to reject the permit application for a MU operation that has direct effect on the performance of the wind farm	11: Wind farm operation			4	3	