

REVIEW OF RISK ASSESSMENT



Risk assessment fishing vessel

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Introduction

Risk assessments are an important tool for an appropriate organization of occupational health and safety at work on board fishing vessels. Not only do they need to be created, but they must also be reviewed regularly and updated continuously.

This document is intended to assist operators (shipowners) of fishing vessels in reviewing and updating their individual risk assessments.

Required risk assessments (RA)

Pursuant to Paragraph 114 of the Maritime Labour Act, the shipowner is obliged to set up and maintain all ship operations and all working equipment including tools and plants, in such a way that crew members are protected against operational hazards. Unless otherwise stipulated, the provisions of the Occupational Safety and Health Act (ArbSchG) must also be taken into account on board fishing vessels. This applies in particular for the conduction of risk assessments. The shipowner should identify possible hazards and should define and implement measures to eliminate or minimize hazards. The result of such risk assessment should be documented.

How the implementation is subject to inspections?

Where maritime labour inspections are carried out on board, the documentation of the risk assessment is subject to this inspection and being reviewed. This also applies to the implementation of the described control and risk reduction measures.

Contents

In this context, we would like to point out that the risk assessment must respond to predictable hazards in the **operations of the ship and in the fishing operation.**

This includes, in particular, the following hazards:

- Stability (*different loading states and methods of fishing*)
- Falling from height and falling over board (*wearing protection against drowning & against falling*)
- Heavy weather (*sea & swell*)
- Safe fishing (*preparation, catch, hauling in, working with winches, lookout*)
- Storage and securing (*shifting of gear and loads*)
- Entering hazardous and enclosed spaces (*fish room, hold*)

Application

This document shows possible hazards and control measures to eliminate or reduce risks and is intended to serve as a basis for reviewing the risk assessments available on board or in the shipping company. Due to the different complex workflows and different designs, this content can only be used as an example and is therefore not exhaustive.

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General ship operation

Nautical operation / watchkeeping

Possible hazards

- Collision
- Grounding
- Heavy weather, sea, swell, ice
- Rolling & pitching
- Reduced visibility
- Traffic density (*fishing area, traffic lane*)
- Reduced manoeuvrability (*fishing ops*)
- Coldness / wetness / ice
- Weather & conditions
- Lone work
- Fatigue

Possible control and protective measures

- Safe manning
- Functional navigation and radio equipment
- Checklists (departure, preparation fishing operations)
- Voyage planning, updated sea charts & nautical publications
- Tide prediction & planning
- Consideration of weather and wind warnings
- Special familiarization for areas & times of heavy weather
- Watch schedule, safe watch keeping during fishing operations (depending on the size of the vessel)
- Rest hour consideration
- Do not provide/use any media distracting from watchkeeping
- Operating instructions & familiarization (crew info / safe procedures)

Technical Ship operation

Possible hazards

- Engine failure (breakdown)
- Incapable of manoeuvring
- Collision
- Grounding
- Loss of power / engine slow down
- Overload
- Fire
- Leakage at lubricating / cooling water system
- Water ingress sea valve
- Inadequate fuel & lubricants

Possible control and protective measures

- Maintenance & Repair
- Shore based service
- Keeping appropriate spare parts available
- Operating instructions & familiarization (crew info / safe procedures)
- Considering maker's instructions
- Keep bilge alarm & pumps ready for service
- Ensure valves are operational under all conditions
- Do not bridge engine & safety alarms, keep them operational
- Provide appropriate fuel & lubricants

Maneuvering

Possible hazards

- Mooring & anchoring
- Squeezing / bumping
 - Slipping / falling on level
 - Falling over board, drowning
 - Break away of mooring
 - Being caught
 - Anchor: uncontrolled moving parts (rust, particles)
 - Gear in propulsion

Possible control and protective measures

- Maintenance & Repair
- Provide & ensure safe mooring ropes & gear
- Safe illumination
- PPE personal protective equipment
- Operating instructions & familiarization (crew info / safe procedures)
- Toolbox meeting / instructions prior special & complicated manoeuvring & mooring operations
- Instructions: keep body clear, do not move between ship and pier
- Order & Cleanliness
- Communicate during mooring operations

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Stability & safety

Access / Gangway

Possible hazards

Crossing from one ship to another, launching or access with small boats (stand by, rescue), taking provisions & spares:

- Falling from height
- Falling over board (drowning)
- Jamming, bumping, stumbling, slipping
- Consumption of alcohol (uncontrolled)

Possible control and protective measures

- Maintenance & Repair
- Safe access, safe illumination, safe ladders
- Operating instructions & familiarization (crew info / safe procedures)
- Awareness: be aware of hazards of drugs & alcohol
- Ensure safe small boats, PPE against drowning (safe working vest)

Loss of stability

Possible hazards

Shifting centre of gravity

- Unsafe loading
- Shifting loads & gear
- Overloading
- Stowing in height

- Launched fishing gear
- Sticking gear
- Unsafe operation of lifting devices

- Water ingress
- Water on deck (accumulation)

- Constructional changes / conversions leading to a shifted centre of gravity / reduced stability
- No stability calculation after constructional changes / conversion
- Removing fixed / solid ballast

Possible control and protective measures

- Keep the centre of gravity low
- Catch to be transferred under deck as soon as possible
- Equipment, gear and loads to be protected from shifting
- Consider weather conditions during fishing
- Keep tanks full / minimize free surfaces
- Maintenance & repair
- Operating instructions & familiarization (crew info / safe procedures)
- Only approved conversions / constructional changes
- After conversion / changes: approval & stability calculations required
- Do not remove fixed / solid ballast without approved calculation
- Weather tight conditions on deck to be maintained
- Holds, port holes, doors, windows: keep close prior entering areas of heavy weather
- Water gates (freeing ports / flaps): inspect & maintain, keep operational under all conditions, do not fix or block
- Keep stone flaps operational, close if not in operation
- Open empty fish boxes to be stored upside down on deck (opening facing down) to avoid water accumulation
- Promote safety awareness for operation of lifting devices

Safety

Possible hazards

Emergency

- Fire / Explosion
- Abandoning ship
- Person over board, SAR Search & Rescue
- Medical emergency (injury/disease)

Escape routes

- Blocked by loads / gear
- Insufficient illumination
- Insufficient marking

LSA life saving appliances

- Blocked, unsafe lashing, inoperational

Required fire fighting equipment & outfits

- not ready for use / emergency service

Possible control and protective measures

- Appropriate safety equipment (LSA life saving & firefighting equipment and firemen's outfit if required)
- Maintenance & Repair
- Maintain operational readiness at all times
- Operating instructions & familiarization (crew info / safe procedures)
- Keep LSA and access to LSA free of obstacles, gear & equipment
- Secure & lash according maker's instruction
- Emergency preparedness: plan, drills, contacts, procedures
- Prepare for medical emergencies, SAR incl. helicopter rescue, 1st aid
- Medical (refresher) training
- Keep escape routes & emergency exits free and operational under all conditions
- Be aware of shifting loads & gear



Working equipment

Possible hazards

Working equipment and operating material:

- Lack of experience
- Lack of familiarization
- Lack of operating instructions

Lifting devices:

- Swinging loads
- Falling down of loads
- Breaking devices
- Unsafe operation

Ladders:

- Falling from height
- Falling over board (drowning)
- Sliding, tilting
- Defects

Tools & power driven tools:

- Fire & explosion
- Damage to eyes
- Thermal impact
- Electric shock
- Mechanical impacts
- Uncontrolled moving parts/particles
- Unprotected moving machinery parts

Possible control and protective measures

- Maintenance & Repair
- Operating instructions & familiarization (crew info / safe procedures)

Working equipment & operating material

- Use as intended
- No overload operation
- Regular inspection
- Operate as per maker's instruction
- Inspect & maintain as per maker's instruction

Ladders:

- Protect against sliding & tilting
- Use only safe ladders

PPE:

- Provide appropriate PPE and use it as intended

Fire protection :

- Remove or protect fire loads / fuels
- Maintain fire watch after hot work
- Working permit for hot works

Supplies

Possible hazards

Operating materials & hazardous substances

- Use of cleaning substances
- Breathing
- Skin (damage to)
- Transfer of liquefied substances (decanting)
- Fire hazard
- Hazardous chemicals
- Poor skin protection
- Fuels & lubricants

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- Provide MSDS material safety data sheets
- Emergency contact numbers
- Provide & use appropriate PPE as per MSDS
- Skin protection plan
- Protective measures for liquid transfer (decanting), e.g. PPE eye & skin protection
- Hygiene measures (do not smoke, do not eat)
- Ventilation
- Avoid skin contact with fuels, lubricants, chemicals
- Smoking prohibition (fire safety)
- Storage separated from food
- Safe storage (protected against sliding, mechanical impacts)

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Working areas & activities

Working areas

Possible hazards

- Stumbling, bumping
- Slipping (ice, fish, oil/grease, sea)
- Unsafe illumination
- Risk of the sea (wavestroke)
- Washed over board (drowning)
- Staying in hazardous areas
- Uncontrolled moving parts
- Falling into holds
- Water on deck

Hazardous spaces including fish room / cargo hold / other enclosed areas

- Suffocation, lack of oxygen
- Inhalation of toxic vapours, rotting gases
- Rescue & recovery

Possible control and protective measures

- Maintenance & Repair
- Operating instructions & familiarization (crew info / safe procedures)
- Order & Cleanliness
- Safe illumination
- Anti skid surface
- Functional water gates (freeing ports / flaps)
- Protection against falling (guards, rails, protective systems)
- Keep hold and vertical entrances closed
- Marking of hazardous edges
- Protect equipment & gear from sliding, tilting, swinging
- Define hazardous areas and hazardous enclosed spaces
- Access to & stay at specific areas: limitations, prohibitions
- Measures for safe ventilation
- Emergency plan: rescue from & hazardous spaces, equipment
- Provide and use appropriate PPE
- Gas free measurement, working permit, other protective measures for entering enclosed spaces

Activities

Possible hazards

Working at heights & overboard

- Falling down / on level
- Falling over board drowning

Manual lifting

- Heavy loads, improper behaviour, twisting body
- Spine / back damage

Humidity & climate

- Hazards from cold & wet conditions

Derusting & painting

- Uncontrolled moving particles
- Dust & vapours
- Hazardous substances

Skin hazards

- Mechanical impacts
- Chemical impacts
- Working in a humid environment

Possible control and protective measures

- Protection against falling (guard, rails)
- Safe illumination
- PPE against falling down
- PPE against drowning (safe working vest)
- Operating instructions & familiarization (crew info / safe procedures)
- Operating instructions for power driven tools
- Maintenance & Repair
- Regular check of power driven tools and mobile working equipment
- Wear clothes and PPE appropriate to the weather conditions, protection against wetness & cold
- Use PPE appropriate to the working task (e.g. derusting works: dust masks, eye protection, ear protection)
- MSDS material safety data sheets for paints & chemicals
- Skin protection plan & appropriate PPE protective gloves (considering the MSDS)
- Individual measures appropriate to the working task

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Engine room & environment

Ergonomics / Spaces / Routes / Hazardous substances / Fire

Possible hazards

Hazardous staircases, routes, escape routes, exits, spaces

- Stumbling
- Slipping (slippery surfaces)
- Unsafe illumination
- Bumping the head against construction
- Unprotected moving/turning machinery
- Hot surfaces
- Electric shock

Noise

- Noise areas

Media (pipes)

- Hot / cold media
- Pressurized media
- Leakage

Exhaust gas (leakage)

- Insufficient ventilation

Hazardous substances in the engine room

- Fuel oil, lubricants, chemicals
- Fire hazard

Possible control and protective measures

- Maintenance & Repair
- Handrail, grips
- Mechanical protection against moving / turning parts
- Safe illumination
- Safe floorplates
- Operating instructions & familiarization (crew info / safe procedures)
- Order & Cleanliness
- PPE ear protection
- Identify & mark noise areas
- Sufficient ventilation (working area, engine room)
- Insulation & marking of hot / cold / pressurized media
- Safe & approved electrical installation
- Prevent fuel and oil leakage
- Avoid sparks in the engine room & do not smoke inside this room
- Lone work: inform other persons (communication)
- Protective measures for working with hazardous substances
- Safe storage (equipment, stores)
- PPE (eye protection, skin protection, breathing protection)

Power & Accumulator

Possible hazards

Working at live parts / installations

- Electric shock / impacts
- Damaged installations
- Unsafe loose installation

Fire hazard

- Overload
- Short circuit

Battery / Accumulator

- Fire & explosion hazard
- Heavy weight (uncontrolled moving)
- Chemical burn

Possible control and protective measures

- Maintenance & Repair
- Operating instructions & familiarization (crew info / safe procedures)
- Safe & fixed installations
- No overload of installation
- Protect installations from mechanical impacts
- Safe charging
- Avoid overcharging
- Store safe and protected from impacts
- No smoking
- Safe ventilation of battery rooms
- PPE for handling accumulator

Environment

Possible hazards

- Pollution

Possible control and protective measures

- Maintenance & Repair
- Operating instructions & familiarization (crew info / safe procedures)
- Use safe and non-harmful fuels & chemicals
- Garbage management: no dumping at sea, shore disposal only
- Garbage management plan
- Emergency plan and equipment for fuel pollution

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Fishing general

Planning & Preparation

Possible hazards

- Lack of or insufficient planning
- Engine failure / breakdown
- Missing spare parts
- Defective safety equipment
- Non-qualified crew
- Emergency conditions due to technical incidents

Possible control and protective measures

- Maintenance & Repair
- Operating instructions & familiarization (crew info / safe procedures)
- Order & Cleanliness
- Checklists: engine, cooling & bilge system clear
- Checklists: bridge & radio systems clear
- Checklists: readiness of safety equipment
- Voyage planning & weather forecasts

Fishing Gear / Lifting devices / Running gear

Possible hazards

Hazards during launching & retrieving

- Ropes, wires, running gear, lifting devices
- Operation of (net) winch & capsule
- Poor workplace (disorder)
- Unsafe illumination

Ropes, chains, loads, trawl doors, other equipment and lifting devices:

- Technical stroke by net, chains, weights, moving tree
- Being caught by net, chains, weights, moving tree
- Falling over board (kicked / carried away)
- Kinks in wires
- Squeezing
- Work & winch area: poor or lack of visual contact (no aids, e.g. camera)

Fishing

- High noise level
- Manual lifting (loads)

Damaged gear

- Breakdown (material damage, collapse), uncontrolled swinging parts, breaking stopper & chains, uncontrolled running and turning gear, kickback
- Being hit

Possible control and protective measures

- Maintenance & Repair
- Prior & during the voyage: check gear incl. winches, ropes & chains visually for damage, replace damaged parts / equipment
- Operating instructions & familiarization (crew info / safe procedures)
- Procedures for launching and retrieving
- Safe illumination
- Order & Cleanliness
- PPE against drowning (safe working vest)
- PPE head protection, foot protection
- Tight-fitting clothing & PPE
- PPE ear protection (for noisy winch operations)
- Do not stay in kickback areas of ropes, wires, chains, gear
- Do not grasp running gear with the fingers, use tools for controlled capsule operations
- Do not stand in bights & kinks
- Do not try to stop running ropes, wires and chains by foot
- Winch operation by familiarized personnel only
- Winch operator need unrestricted view on the working area, use of aids (e.g. camera monitoring)
- Ensure that ropes can run free with open brake / disengaged drum
- Capsule: limit the number of turns to prevent kick-off sliding
- Gear, especially rope and net, should run visible all the times
- Control the end of a swinging net, drop on level prior opening
- Restricted access to working area during heaving

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Fishing details

Marking buoy

Possible hazards

Lookout

- Standing on the bridge deck: falling over board, drowning
- Falling from height
- Falling over board when leaning outside

Retrieving marking buoys

- Falling over board / drowning
- Being caught
- Slipping, falling on level

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- Rig protection against falling (guards)
- Rig guards / protections against falling when standing on the bridge deck (complete enclosing guards/rails)
- PPE against falling (safety harness)
- PPE against drowning
- PPE foot protection
- Prevention of fatigue

Trawling

Possible hazards

- Uncontrolled weight / trawl door
- See also fishing general
- Break away of lines and chains
- Stability reduction
- Sticking net
- Open gate, overcoming sea, falling over board, drowning

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- Safe procedures for launching & retrieving
- Trawl doors to be appropriately lashed and secured
- See protection measures specified under "fishing general"
- Gates to be closed after launching and retrieving gear
- Use personal protective gear and systems
- Stern slip to be secured in open condition (e.g. chain)

Pair Trawling

Possible hazards

- Line throwing (transfer of line): being hit
- Uncontrolled procedure
- Insufficient communication (position trawl door, winch control, between vessels)
- Slip
- Trawl doors
- Kickback of slipping hook

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- Appropriate line / ropes & procedure
- Procedure for safe slipping
- Communication between vessels
- Communication to winch operator
- PPE head protection, PPE against drowning
- Emergency procedure

Tree trawls

Possible hazards

- Being caught, squeezing
- Technical troke by net, chains, weights, moving tree
- Manual lifting (loads)
- Loss of stability during fishing if getting stuck
- Damage to fishing gear
- Collapse of fishing gear

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- PPE head protection
- PPE protection against drowning (safe working vest)
- Ensure: winch operator in visual contact to crew
- Prevent uncontrolled swinging
- Emergency devices (slip, relief), emergency & routine procedures for manoeuvring for freeing fishing gear

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Fishing details

Lining

Possible hazards

- Sticking hook
- Being hit / caught by the hook, uncontrolled moving hook
- Being caught by rotating parts (winch, rollers)
- Monotonous work, lack of concentration
- Damage to eyes or skin

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- PPE skin protection
- Safe illumination
- Pause (break) control, crew alternation (switching positions), job variety, fatigue prevention
- PPE face / eye protection

Pot fishing

Possible hazards

- Being caught / captured / dragged away during launching or retrieving, falling over board & drowning (pots, bights, uncontrolled running gear, winch operation)
- No visual contact between winch operator and working areas
- Shifting pots
- Being caught by hooks
- Falling over board when leaning outboards, drowning
- Overwhelming crew (launching speed)
- Hazardous surfaces, injuries
- Squeezing
- Technical stroke by pot, chains, weights (breaking, kickback)
- Manual lifting (loads)
- Uncontrolled swinging
- Monotonous work, lack of concentration, fatigue

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- Safe procedure: launching, tasks, emergency situation
- PPE head protection
- PPE against drowning (safe working vest)
- PPE safety harness to be worn for leaning over board
- PPE skin protection (wear protective gloves)
- Wear tight-fitting clothing / PPE
- Launch control, do not overwhelm the crew
- Number of pots match working ability of the crew
- Safe stowage prior launching
- Rigging barriers between crew and running gear
- Winch: to be operated by familiarized crew only
- Ensure: visual contact of the winch driver to crew operating pots
- Limit the swinging
- Separate broken and non-used pots
- Secure catch & loads as soon as possible
- Do not overload lifting devices
- At the retrieving: alternating tasks to maintain appropriate safe concentration, apply measures against fatigue
- Avoid manual lifting and body rotation with loads

Hauling net

Possible hazards

- Waste & warfare agents
- Hazardous waste & obstacles in the net
 - Warfare agents (grenades, poison gas bombs, firebombs)
 - Confusing amber with white phosphorus
 - Self-ignition of white phosphorus (from 35°C)

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
- Do not touch warfare and gear, keep leeside
- Do not smell on containments and material
- Close doors & portholes
- Stop all non-essential work operations
- Radio contact to next coastal station (e.g. VHF)
- Contaminated clothing: exchange, store in close & tight plastic bags
- Contact with eye, skin, breathing in: seek medical advice
- Detoxification of the vessel and fishing gear by experts
- Suspicion of white phosphorus: Do not touch pieces, store them underwater in a steel container. Expert clarification required.

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Multiple

Fish processing

Possible hazards

Fish: spines, teeth

- Injury / risk of infection
- Being caught in rotating parts
- Manipulation of safety devices and guards
- Defective machinery, work equipment
- Clothing / PSA is getting caught
- Unsafe standing (sea & swell)
- Risk of fire & explosion
- Improper use and operation
- Electric shock

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
 - Maintenance & repair
 - Safe surfaces (safe standing)
- Working equipment
- Use in accordance with maker's instruction
 - Use suitable fuels and methods of ignition
 - Operation by familiarized personnel only
 - Do not operate unattended
 - Isolation and regular testing of equipment and plants (protect from electric shock, especially when working in a wet and humid atmosphere)

Pier / quayside

Possible hazards

- Stumbling, sliding, slippery surfaces, ice, jamming & bumping
- Falling down (height / level)
- Drowning
- Collision with vehicles, overrun
- Swinging loads
- Hazardous live parts, hoses
- Insufficient illumination
- Visitors / third parties / curious people / kids
- Cleaning woks
- Exhaust gas
- Uncontrolled moving parts & loads
- Unsafe lifting device (shore)
- Falling parts / loads
- Risk of fire & explosion

Possible control and protective measures

- Operating instructions & familiarization (crew info / safe procedures)
 - Order & cleanliness
 - Safe illumination
 - Do not stay under swinging loads / in hazardous areas
- Wear PPE
- head protection
 - food protection
 - skin protection
 - high visible clothing
- Lay hoses and cables securely, pay attention to stumbling blocks
 - Pay attention to visitors and third parties, enforce restricted areas

Other hazards

Possible hazards

Working language

- communication problems with different language speaking crews
- safety familiarizations and instructions cannot be understood

Other ship specific hazards:

- ship / port / sailing and fishing area
- method of fishing

Possible control and protective measures

- define working language

- individual & ship specific measures