Critical Task Hazard Analysis Worksheet

Critical Task: Conducting Vertical Plankton Net Hauls

Notes:

- This Task Hazard Analysis (THA) is in response to the Canada Labour Code Part II, the Canada Occupational Health and Safety Regulations Part XIX Hazard Prevention Program, and the DFO Occupational Health and Safety Manual.
- It is to assist personnel in identifying foreseeable hazards when *Conducting Vertical Zooplankton Net Hauls*
- The application of these control measures will assist in preventing occupational accidents.
- This THA is to be reviewed regularly to ensure that all potential hazards have been identified.

Region: Pacific	TASK HAZARD ANALYSIS
Branch/Division: Science	Conducting Vertical Plankton Net Hauls
Last revision: September 22, 2020	Original THA *Conducting Vertical over the side Operations* prepared by: R.Reiniger/ B.Hartling/P.Vass/M.Lundy/B.Wile/J.Reid/M.Lamplugh, Maritimes Region, April 2003.

Column A - BASIC STEPS	**Column B - HAZARDS** CONSIDER: Health and safety, damage to people, property, equipment or program/the 5 categories of hazards; biological, physical, ergonomic, chemical, and psycho-social.	**Column C – TASK INSTRUCTIONS** Define how each step is to be performed safely, ensuring all hazards are addressed.
1. Planning	a) Ergonomic, Physical and Psychosocial. b) Physical injury caused by working in extreme weather conditions. c) Physical injury caused by equipment failure.	a) Follow *Canadian Centre for Occupational Health and Safety (CCOHS)* guidelines for Ergonomics, Physical and Psychosocial. b) Include in cruise plan with deck layout. c) Ensure that each member of the science team is qualified to carry out each task required d) Verify that the weather conditions are suitable. e) If weather conditions are extreme recommend that the operation be postponed after consulting with Bosun and Chief Scientist. f) Conduct step-by-step safety briefing with all team members (Mate, Chief Officer, Bosun, Deck crew and Chief Scientist, Watch leader, Science crew) to look at risks and mitigation factors, roles &responsibilities, command structure and steps of operation. g) Review objectives of the operation (depths, types of sampling, etc.) with team. h) Check all equipment to be used for the operation is functioning properly, safely, and has the appropriate safe working load (SWL). Replace any faulty equipment. i) Check that all necessary safety equipment/Personal Protective Equipment (PPE) required is on hand in working area: safety footwear, hard hats, safety harnesses, Personal Floatation Device (PFD) and radio.

		j) Plan to monitor working conditions and communicate with Bridge officer and winch operator regarding changing weather conditions and sea state throughout the operation, using radio. k) If all basic steps cannot be performed safely, do not perform the task and notify Bosun, Chief Officer and Chief Scientist. l) Follow safe work procedures from **THA-SWP Science Pacific Working Around Water** m) Follow safe work procedures from THA/SWP Science Pacific Covid – Field work If required
2. Preparing the net	a) Physical injury due to slips and tripping on wet/oily deck. b) Physical injury caused by handling heavy items on a moving ship. c) Working near a winch with overhead cables and blocks	a) Lay out the net for deployment and attach to the wire. b) Be aware of sea conditions and how they may affect the working area. c) Inspect decks and staging areas for oil, other instrumentation, sampling gear and other potential hazards. d) Follow safe work procedures from **THA-SWP Science Pacific *Lifting, Transporting and Handling Heavy Objects*** e) Ensure all participating team members wear appropriate PPE (PFD, hard hat and steel toed footwear). f) Be aware at all times when the winch is under load and do not stand in the bite. g) Be aware of the A-frame usage and movement.
3. Deploying the net	a) Physical injury caused by handling heavy items on a moving ship. b) Physical injury or death due to falling overboard. c) Damage to equipment due to net being caught up in the A-frame.	a) Ensure that all personnel involved in the deployment understand the procedure and the correct sequence of steps for the deployment, especially the winch operator and that each knows what is expected of them through each stage of deployment. b) Assess the sea conditions and weather to determine whether the deployment should proceed. c) Do not put anything over the side until permission has been received from the bridge. Use radio and communicate through the winch operator to the bridge. d) Access the layout and confirm that all readying is complete. e) Pass the net over board using the winch to take the weight and run it through the a-frame. f) No stopping at the surface during deployment, if possible. Continue to run out line at a rate of no more than 0.5m/s until net has reached the desired depth (adjust speed according to conditions). g) Follow safe work procedures from **THA-SWP Science Pacific *Working at the Ship's Side.*** h) Follow safe work procedures from **THA-SWP Science Pacific *Lifting, Transporting and Handling Heavy Objects***
4. In water	Damage to equipment due to net being caught up in the A-frame or moving under vessel.	a) Ensure the wire does not angle under the vessel and always maintain a watch. b) Ensure the wire does not go slack during deployment (indicates wire being let out at too quick of a speed), and avoid 'snapping' the wire (e.g.: in swell)
5. Lower the net to depth	a) Physical injury caused by slack wire or wire breakage.	a) Lower the net at the proper rate and to the desired depth. Monitor the wire as it is being paid out.

	b) Damage or loss of equipment caused by wire breakage.	b) Always stay clear of the wire and never stand behind or under the wire, (this is especially true in high load situations). c) Ensure all participating team members wear appropriate PPE (PFD, hard hat and steel toed footwear). d) Ensure the wire angle is vertical as net is deployed; always maintain a watch. e) Maintain constant contact with winch operator via hand signals and radio. f) Ensure that winch operator is informing the bridge of any changes: wire angles, ship movement, depth of wire, etc. g) If a damaged spot is located on the wire, stop the operation and retrieve net to deal with wire situation h) Stop at desired depth, wait 3-5 seconds for the net to settle
6. Return net to surface	a) Physical injury caused by slack wire or wire breakage. b) Damage or loss of equipment caused by wire breakage or if accidentally pulled into the block.	a) Always stay clear of the wire and never stand behind or under the wire, (this is especially true in high load situations). b) Always maintain a watch on the wire as it comes out of the water. Pull up the net to the surface at 1 m/s, stop winch operator at surface (once rim of net has cleared the water) obtain permission from the bridge before bringing net onto the deck and lift slowly out, have winch operator bring A-frame in to bring the net to rail for wash down. c) Avoid bringing net and weight fully out of water and stopping for long periods of time with A-frame extended, as the net could swing dangerously. Avoid reaching out or holding onto dangerously swinging equipment, unless it can be safely brought under control; have the winch operator lower the weight back into the water to reduce swing. d) Inform the bridge if any problems arise like the wire leading under the ship. e) Ensure all participating team members wear appropriate PPE (PFD, hard hat and steel toed footwear).
7. Return net aboard	a) Physical injury caused by handling heavy items on a moving ship. b) Physical injury or death due to falling overboard.	a) Lift the net aboard the vessel. b) Gather all the scientific information from the net including a full inspection of the gear and components. c) Remove biological samples from cod end into bucket for processing in lab and prepare the net for next deployment. d) Store and secure the net plus weight while underway to next station. e) Ensure all participating team members wear appropriate PPE (PFD, hard hat and steel toed footwear). **f)** Follow safe work procedures from **THA-SWP Science Pacific *Working at the Ship's Side.*** **g)** Follow safe work procedures from **THA-SWP Science Pacific *Lifting, Transporting and Handling Heavy Objects*** h) Report to bridge when operation is complete.
8. Sampling	a) Physical injury due to slips and tripping on deck.	a) If required, transport the scientific samples etc. to the appropriate lab for storage and/or analysis.

		b) When transporting samples, if possible, choose an inside passage, if not, have 2 people involved. c) Always have two people (beside ship's crew) when working at night. d) Never work on the outer decks alone, always inform someone of your whereabouts when stepping out to the decks.

Science	**Branch**
Pacific	**Region**
Conducting Vertical Zooplankton Net Hauls	**Subject**

I. PURPOSE

Provide guidance to Science Pacific staff on how to Conduct Vertical Plankton Net Hauls properly and safely.

Provide guidance on how to minimize risks to which the staff may be exposed when they are Conducting Vertical Plankton Net Hauls. This procedure is intended to guide the supervisor's and staff's use of discretion and common sense when making decisions related Conducting Vertical Plankton Net Hauls.

It is the responsibility of all Branch staff to conduct risk assessments on an ongoing basis to prevent injury to themselves, the public and other employees.

As per Canada Labour Code Part II, 126. (1), employees shall review and comply with these procedures.

Conducting Vertical Plankton Net Hauls is dangerous work but it can be done safely. If not done safely the severity of loss will be high. This task is done seldom and if an accident occurs, the probability of loss occurring is high.

The Safe Work Procedures focus on hazards. The Critical Task Hazard Analysis Worksheet makes reference to physical injury and equipment damage/loss from equipment failure, extreme weather, handling heavy items on a moving ship, slipping, tripping, falling overboard and breakage of lines.

The Safe Work Procedures for Conducting Vertical Plankton Net Hauls will contribute to safe work and will ensure that the work is undertaken only under controlled and safe circumstances.

II. PROCEDURES

See above Critical Hazard Analysis Worksheet for Basic Steps, Hazards, and Control Measures.

III. TRAINING REQUIREMENTS

On the job training.

IV. PERSONAL PROTECTIVE EQUIPMENT REQUIRED

- CSA approved Safety footwear
- CSA class G Hard hats
- CSA approved Safety Harnesses
- Transport Canada approved Personal Floatation Device (PFD)
- Whistle, Hydrostatic Strobe Light, and Reflective tape on PFD or Jacket
- Work Gloves when handling items

V. REFERENCES

- Canada Labour Code Part II
- Canada Occupational Health and Safety Regulations
- Canadian Centre for Occupational Health and Safety
- DFO Occupational Health and Safety Manual
- THA-SWP Science Pacific *Working Around Water*
- THA-SWP Science Pacific *Lifting, Transporting and Handling Heavy Objects*
- THA-SWP Science Pacific *Working at the Ship's Side*

VI. APPROVED BY

Dr. Carmel Lowe, Regional Director, Science Branch

Original prepared by: Joseph Linguanti 17-Mar-2016; OSH Representative Review by: Peter Chandler
Interviews conducted with: Moira Galbraith; (Version 1.0)

Updated by M Archer Nov 13, 2016: Changed SWP Purpose from *"….Ocean Sciences Division Pacific staff* …" to "…*Science Pacific staff*…" (Version 2.0)

Updated by P. Chandler March 6, 2019: Added Science Pacific THA-SWP Working Around Water to Planning Step #1, and to References. (V3.0)

Subject Matter Expert/Peer Review by: Moira Galbraith: December 4, 2019
OSH Representative Review by: David Spear January 23, 2020 (V3.0)

Subject Matter Expert Review by: Kelly Young, Moira Galbraith, Aug 2020
OHS Representative Review by: Kim Houston, Sept 22 2020

Carmel Lowe | 10/06/2020

Signature | Date *(mm/dd/yyyy)*

Director: Dr. Carmel Lowe

Branch: Science

Region: Pacific