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Critical Task Hazard Analysis Worksheet

Critical Task: Conducting Horizontal Plankton Multi-net Tows

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 Horizontal Zooplankton Multi-Multi-net Tows*
- 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 Horizontal Plankton Multi-net Tows
Last revision: August 13, 2020	Original THA Conducting Towed Operations prepared by: R.Reiniger/B. Hartling/P.Vass/M.Lundy/B.Wile /J.Reid/M.Lamplugh, Maritimes Region, May 2003. Reviewed by: Neil Dangerfield, Kim Houston, IOS/PGC OHS Committee, August 2020

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) Ensure that each member of the team is qualified to carry out each task required. c) Verify that the weather conditions are suitable. d) If weather conditions are extreme recommend that the operation be postponed. e) Conduct step-by-step safety briefing with all team members (Mate, Chief Officer, Bosun, Deck crew and Science crew) to look at risks and mitigation factors, roles &responsibilities, command structure and steps of operation.

		f) Review objectives of the operation (depths, types of sampling, etc.) with team. g) Check all equipment to be used for the multi-net operation is functioning properly, safely, and has the appropriate safe working load (SWL). Replace any faulty equipment. h) 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). i) Plan to monitor working conditions and communicate with Bosun, bridge and winch operator regarding changing weather conditions and sea state throughout the operation. j) Understand procedure for rapid recovery in the event of an emergency. k) If all basic steps cannot be performed safely, do not perform the task and notify your supervisor. l) Follow safe work procedures from **THA/SWP Science Pacific** *Covid – Field work* If required
2. Prepare the multi-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.	a) Be aware of sea conditions and how they may affect working around the multi-net. b) Inspect decks and staging areas for oil and other potential hazards. c) Follow safe work procedures from THA/SWP Lifting, Transporting & Handling Heavy Objects. d) Ensure all participating team members wear appropriate PPE, PFD, hard hat and steel toe footwear). .
3. Systems Check	a) Physical injury due to slips and tripping on wet/oily surface b) Physical injury caused by handling heavy items on a moving ship.	a) Ensure the electronics for the sensors are turned on and everything verified. b) Check all nets are on tight and skirts are not crossed c) Arm multi-net springs and engage safety bar
4. Deploy the multi-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.	a) Ensure that all personnel involved in the deployment understand the procedure and the correct sequence of steps for the deployment. b) Assess the sea conditions and weather to determine whether the deployment should proceed.

		c) Follow safe work procedures from **THA/SWP Science Pacific *Working at the Ship's Side***. d) Follow safe work procedures from **THA/SWP Science Pacific *Lifting, Transporting & Handling Heavy Objects.*** Do not proceed with deployment until permission has been received from the bridge. e) Ensure that all safety equipment are removed for the initial deployment, and then re-attached after recovery. f) Lift the multi-net over board using an A-frame or a crane. g) Inform the bridge and bosun to get permission to launch, coordinate with the winch operator via radio h) continue to lower the multi-net below the water surface to designated depth for towing while ship puts some way on, 1-2 knots (actual depth depends on the sea conditions).
5. Start the Tow	a) Physical injury caused by slack wire or wire breakage. b) Damage or loss of equipment caused by wire breakage.	a) Reel out the desire amount of tow cable always watching that it is spooling off properly. Ensure that winch counter is working properly b) Always stay clear of the wire and never stand behind the wire or in the bite, (this is especially true in high load situations). c) Always follow the proper spooling or handling procedure of the tow cable. d) Ensure all participating team members wear appropriate PPE PFD, hard hat and steel toed footwear and tethers as needed. e) If a damaged spot is located on the wire, stop the operation and direct the winch operator to bring the sampler back on board. Contact the Bosun, bridge and chief scientist to correct the wire situation. f) Communicate with the winch operator and bridge regarding line tension, pitch and roll of the sampler and adjust ship position as necessary.
6. Monitoring	a) Physical injury caused by failure of any components in the operation. b) Damage of equipment caused by failure of any components in the operation.	a) A log is maintained by both bridge and science crew highlighting the operation. Visual monitoring of the operation is ongoing by deck and science crew. b) If during the operation, the visual inspection identifies a problem, the operation should be stopped or slowed down, and a review done (is it safe to continue or is the problem endangering the equipment?).
7. Recovering the Multi-net	a) Physical injury caused by slack wire or wire breakage.	a) Always stay clear of the wire and never stand behind the wire or in the bite, (this is especially true in high load situations).

	b) Damage or loss of equipment caused by wire breakage or if accidentally pulled into the block c) Physical injury or death due to falling overboard..	b) Ensure all participating team members wear appropriate PPE PFD, hard hat and steel toed footwear and tether as necessary c) If a damaged spot is located on the wire, direct the winch operator to bring the sampler back on board. Contact the Bosun, bridge and chief scientist to correct the wire situation. d) Always maintain a "watch" for the sampler, especially as it nears the surface and stay in contact with winch operator.
8. Return Multi-net Aboard	a) Physical injury caused by handling heavy items on a moving ship. b) Physical injury or death due to falling overboard.	a) When permission from the bridge is given, and personnel are in position, and sea state is suitable, lift the towed multi-net aboard the vessel. b) Gather all the scientific information from the instrument including a full inspection of the trawl gear and components, turn off power to the unit and reattach all safety equipment. c) Collect samples from cod ends and take to the lab for processing d) Store and secure the towed multi-net e) Ensure all participating team members wear appropriate PPE PFD, hard hat and steel toed footwear and tethers as necessary 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 & Handling Heavy Objects.*** h) Ensure the deck crew has the sampler properly tied down before the ship moves to next station. Have winch operator contact bosun and bridge that the sampler is secured.
9. Sampling	a) Physical injury due to slips and tripping on deck.	a) Transport the scientific samples etc. to the appropriate lab for storage and/or analysis. b) When transporting samples, if possible, choose and inside passage, have 2 people involved, never work alone on the back deck. c) Follow the DFO Policy regarding Working Alone.

Science	**Branch**
Pacific	**Region**
Conducting Horizontal Plankton Multi-net Tows	**Subject**

I. PURPOSE

Provide guidance to Science Pacific staff on how to Conduct Horizontal Plankton Multi-net Tows properly and safely.

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

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 Horizontal Plankton Multi-net Tows is dangerous work but it can be done safely. If not done safely the severity of loss will be high. This task is done occasionally 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 or loss from equipment failure, extreme weather, handling heavy items on a moving ship, slipping, falling overboard and breakage of lines.

The Safe Work Procedures for Conducting Horizontal Plankton Multi-net Tows 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.

Understanding of equipment operators manual.	
IV. PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
• CSA approved Safety Footwear • CSA class G Hard Hats • CSA approved Safety Harnesses • Transport Canada approved Personal Floatation Device • Whistle, Hydrostatic Strobe Light, and Reflective tape on PFD or Jacket • 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 *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 24-Mar-2016 OSH Representative Review by: Peter Chandler Interviews conducted with: Moira Galbraith Version 1.0 Updated by M Archer Nov 14, 2016: Changed SWP Purpose from *"….Ocean Sciences Division Pacific staff* …" to "…*Science Pacific staff*…" (Version 2.0) Subject Matter Expert/Peer Review by: Moira Galbraith: December 4, 2019 OSH Representative Review by: David Spear January 23, 2020 Subject Matter Expert/Peer Review by: Neil Dangerfield Aug, 2020 OHS Representative Review by: Kim Houston August 10, 2020: Included reference to THS/SWP COVID – Fieldwork when required in Section 1 IOS/PGC OHS Committee review: Aug 13, 2020	

Carmel Lowe

Signature

8/27/2020

Date *(mm/dd/yyyy)*

Director: Dr. Carmel Lowe

Branch: Science

Region: Pacific