Critical Task Hazard Analysis Worksheet

Critical Task: Climbing and Fall Arrest (Towers)

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 climbing and descending towers.
- 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	Climbing and Fall Arrest (Towers)
Last revision: August 12, 2020	Climbing Towers- Original prepared by: A. Koudys, C&A CHS in 2001. Updated by R. Hare in 2007. V2.0 developed by A. Schofield

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, psychological.	a) Follow Ergonomic Policy by Health Canada and Ergonomic section of Canada Centre for Occupational Health and Safety http://www.ccohs.ca/topics/hazards/#ctgt_1-1 b) If all basic steps cannot be performed safely do not perform them. c) Follow safe work procedures from **THA-SWP Science Pacific *Working in the Field with Risk of Dangerous Wildlife***. d) Follow safe work procedures from **THA-SWP Science Pacific *Working Outdoors.*** e) Follow safe work procedures from **THA-SWP Science Pacific *Working in Remote Sites*** f) Follow safe work procedures from **THA-SWP Science Pacific *Using Portable Ladders and Step Stools*** g) Follow **THA-SWP COVID General Duties, THA-SWP COVID Shared Work Spaces, THA-SWP COVID Field Work**
2. Implement Worker Training Program.	a) Ergonomic, physical, psychological	a) Comply with safety training program identified in section 3 of this SWP. b) Refresh training skills.

	b) Falls, slips, hypothermia, electrocution, asphyxiation.	c) Evaluate effectiveness of the training program. d) Comply with all items outlined in training program identified in SWP.
3. Control Risk.	a) Falls, slips, hypothermia, electrocution, asphyxiation.	a) Eliminate hazards by isolating hazards by guarding or enclosing them. b) Follow regulations as per training identified in SWP. c) Prevent falls through training, implementation of safe work procedures and temporary restraint systems.
4. Perform Fall Hazard Assessment.	a) Falls, slips, hypothermia, electrocution, asphyxiation.	a) Assess any incident history. b) Assess access/egress. c) Assess environmental concerns. d) Comply with fall hazard assessment as per training identified in SWP.
5. Implement Fall Prevention Systems.	a) Falls, slips, hypothermia, electrocution, asphyxiation.	a) Develop fall arrest systems. b) Assess anchors and anchorage connectors. c) Implement fall protection systems as per training identified in SWP.
6. Ensure proper safety equipment is available and in good repair.	a) Malfunctioning, worn, improper size/fitting or the failure to use safety gear can be the cause of a serious or life threatening accident. At the very least, it can impede the climber in getting safely up and down the tower.	a) Ensure an adequate level of maintenance on all equipment. b) Ensure the replacement of all inoperable equipment. c) In addition to required climbing equipment as per training identified in SWP, always use as a minimum, the PPE identified in the SWP. d) All individuals involved in the climb must wear the climbing equipment and PPE required for their job and ensure it is in good condition. e) Follow care and maintenance procedures as per training identified in SWP

7. Obtain authorization to climb. Visually inspect tower and support system.	a) Injuries sustained as a result of defective tower or support system components. b) Ice on tower.	a) Check: - the base plate and foundation, - all anchors and visible steel, - guys, clips, turnbuckles, lock wires - tower verticality - rungs and stringers b) Check grounding and lighting protection, electrical and communications hookups. c) If there is any concern that the safety of the climb is in doubt due to defective parts, call it off until repairs are satisfactorily completed. d) Be aware of weather, temperature, wind, moisture for possible ice or wetness e) If the tower is covered with clear ice, especially at the top, cancel the climb. If ice interferes with your grip, clear it as you climb (but only if you are secured to the tower by a lanyard.) f) **See Ergonomic section of Canada Centre for Occupational Health and Safety.** http://www.ccohs.ca/topics/hazards/#ctgt_1-1
8. Safety observer to watch all operations.	a) If inattentive, and something happens to the climber that goes unnoticed, the situation could be worsened. b) Being hit by a falling tool, scale from the tower, etc.	a) The safety observer must be attentive at all times while the climber is working up the mast. b) The following measures must be followed; 1) Always wear a hard hat and safety glasses. 2) Stay well clear of the working radius of the tower. 3) Must be constantly attentive to the climber's activities and needs. 4) Stay alert for any communication from the climber. 5) Be aware of activities during the climb, the work period and the descent. 6) Safety observer to remain outside the working radius of the tower. 7) Safety observer must be capable of using the rescue equipment and able to perform the rescue hence all rescue gear must be ready.
9. Climb/Descend tower.	a) Losing footing due to deterioration of tower components. b) Icy conditions or other weather related concerns such as high wind. c) Physical strain	a) Never work alone. b) Conduct work in a methodical manner and avoid rushing. c) Watch for changes in the weather that involve cold or dampness. These changes could lead to mild hypothermia. d) Descent to be carried out in a safe, methodical, unhurried manner. e) Hands and feet are to be firmly planted before each movement. f) Follow safe work procedures from **THA-SWP Science Pacific Lifting, Transporting and Handling Heavy Objects** prior to climbing.

10. Climber secures him/herself at the working elevation.	a) Improper use of safety strap.	a) The safety strap must always be woven through the tower, not around it, and attached to the belt.
11. Secure tools.	a) Injury to safety watcher or other staff on the ground. b) Dropping equipment, tools, etc. c) Risk of electrical shock from equipment being repaired. d) Being hit by moving equipment or having hands jammed. e) Loss of normal mental and physical abilities due to exposure.	a) Tools, equipment and materials shall be secured with clips and lanyard in such a manner that cannot be dropped more than 1.5m. b) Ensure all equipment is locked out, turned off or disconnected. c) Temporarily immobilize all moving equipment. d) Tools and equipment shall be lowered to the ground prior to descent.
12. Rescue/Evacuation Plan.	a) Suspension trauma.	b) Rescue plans are mandatory. Follow regulation as per training program identified in SWP. c) Ensure rescue fall protection system is ready to go in a moment's notice. d) Call 911 if required, but relying on emergency response as the sole component of your rescue plan is not acceptable.

Science	**Branch**
Pacific	**Region**
Climbing and Fall Arrest (Towers)	**Subject**

I. PURPOSE

- Provide guidance to Science Branch staff on how to perform climbing and fall arrest properly and safely.
- Provide guidance on how to minimize risks to which the staff may be exposed when they are performing climbing and fall arrest. This procedure is intended to guide the supervisor's and staff's use of discretion and common sense when making decisions related to climbing and fall arrest.
- It is the responsibility of all Science 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.
- Climbing and fall arrest is dangerous work but it can be done safely. If not done safely the severity of loss will be high. This task is seldom done and if an accident occurs, the probability of loss occurring is medium.
- The Safe Work Procedures focus on hazards. The Critical Task Hazard Analysis Worksheet makes reference to the physical condition of towers, weather conditions and the condition of safety equipment.
- The Safe Work Procedures for climbing and fall arrest will contribute to a safe climb and descent and will prevent the climber and/or equipment from falling from the tower.

II. PROCEDURES

See above Critical Task Hazard Analysis Worksheet for Basic Steps, Hazards and Control Measures/Task Instructions

III. TRAINING REQUIREMENTS

CHS only:

- The training required for climbing and fall arrest is as per the CHS Pacific Training Process and the Multidisciplinary Hydrographer Progression Plan if applicable.
- Task specific training must be completed and documented as such in the CHS Training Database before task can be undertaken.

All other Science Divisions:

- Standard First Aid
- Wilderness First Aid and/or Wilderness survival, if activity is conducted in a remote area
- Working at heights and fall protection.

IV. PERSONAL PROTECTIVE EQUIPMENT REQUIRED	
Hard hat, approved boots, gloves, hand protection, safety glasses, pre-assembled rescue kit, fall restraint harness, straps, clips, lanyard, PFD. See Critical Task Analysis Worksheet.	

V. REFERENCES	

- Canada Labour Code http://laws-lois.justice.gc.ca/eng/acts/L-2/
- Canada Centre for Occupational Health and Safety http://www.ccohs.ca/topics/hazards/#ctgt_1-1
- Canadian Occupational Health and Safety Regulations http://laws.justice.gc.ca/eng/regulations/sor-86-304/page-1.html
- DFO Occupational Health and Safety Manual https://intranet.ent.dfo-mpo.ca/ss/en/node/1442

VI. APPROVED BY	Dr. Carmel Lowe, Regional Director, Science Branch

OSH Representative Review by: Liz Oliphant 23-Feb-2016
Interviews conducted with: Denny Sinnott, Dave Jackson. CHS Pacific 29-Jan-2016
Climbing and Fall Arrest V2.0: A. Schofield 25-Jan-2016

Updated by M Archer Nov 13, 2016: CHS Version archived. Science version covers requirements for all of Science, including CHS. Deleted reference to "Tower Inspection Checklist" which does not exist. Training Requirements updated for all Science.(Version 3.0)

Subject Matter Expert/Peer Review by R. Loschiavo Dec 10, 2019: no updates made.
OSH Representative Review by T Barlow Jan 27, 2020: updated link to DFO Occupational Health and Safety Manual (V3.1)

Subject Matter Expert/Peer Review by R. Loschiavo July 21, 2020: no updates made
OSH Representation Review by E. Bonner Aug 12, 2020: references added for THA-SWP COVID procedures, (V3.2)

Carmel Lowe — Signature

8/27/2020 — Date *(mm/dd/yyyy)*

Director: Dr. Carmel Lowe

Branch: Science

Region: Pacific