

Boat Restricted Zone (BRZ)

Project Standing Order

The Dalles Navigation Lock & Dam



Revised 2011

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1. PURPOSE:

The Boat Restricted Zone (BRZ) project policy is established to address work over or near water occurs often at a hydroelectric facility, adding risk to the work performed by Corps or contractor employees. This policy examines the ways workers are exposed to this risk, and prescribes the precautions to be taken. Prior to beginning work over or near water, personnel shall have already prepared an Activity Hazard Analysis, attended a pre-work meeting, and contacted the Control Room for coordination and implementation.

This policy details the following procedures:

- a) Boat Restricted Zone (BRZ) requirements
- b) Water rescue efforts within the BRZ
- c) Boat & Operator qualifications for BRZ activities
- d) Fall protection requirements within the BRZ

2. SCOPE:

The BRZ policy is applicable to all persons and equipment entering the BRZ at The Dalles Navigation Lock and Dam (TDD). TDD is not capable for enforcing the BRZ restrictions on those public individuals that enter the BRZ without prior notification and authorization.

3. REFERENCES:

- a) EM 385-1-1, U.S. Army Corps of Engineers Safety & Health Requirements Manual
- b) ER 385-1-91, Training, Testing & Licensing of Boat Operators
- c) TD Standing Order III, Hazardous Energy Control (HEC)
- d) 29 CFR, Parts 1910 General Industry; 1918 Longshoring; & 1926, Construction

4. DEFINITIONS:

- **Activity Hazard Analysis** - The AHA will define the activities being performed and identify the sequence of work, the specific hazards anticipated, the control measures to be implemented, and the personal protective equipment (PPE) to be used.
- **Boat Restricted Zone** - The BRZ at the project is comprised of Outer and Inner Zones. Zone 1 (Outer) is defined by large orange and white signs placed at the shores; and Zone 2 (Inner) is defined as the area close enough to a dam structure (< 600 ft.) as to require reconfiguration of water control equipment to avoid dangerous flow conditions to the boats. Zone 2, therefore, requires compliance with the HEC program before entering the BRZ. Any person wishing to enter the BRZ must follow the procedures outlined in PARAGRAPH 5, below. Permission to enter the BRZ may be withdrawn due to operational concerns at a moment's notice by the Operating Manager or his/her representative. See Figures 1 and 2 on pages 10 and 11.
- **Fall Restraint System** - Body harness, lanyard and connecting hardware, which can be attached to a solid anchorage point, thereby precluding a fall hazard. EM 385-1-1, Sections 05.H and 21.

- **Hazardous Energy Control (HEC)** - A definite operating arrangement whereby an Authorized Individual, acting individually or as a representative for a crew, may have designated equipment removed from or held out of service for maintenance or repair purposes under an approved tagout process which insures the safety of the workers involved, until released for service by the same Authorized Individual. The approved process provides protection from hazardous energy sources, which could endanger workers or equipment if energized.
- **Immediately available** - The lifesaving skiff or rescue boat must be in the water and all systems tested and operational.
- **Lifesaving Skiff** - A vessel used for the rescue of a worker who has fallen from work over water that satisfies the requirements of EM 385-1-1, Section 5.K. As defined in Section 5.K., in locations where the waters are rough, swift, or where manually operated boats are not practical, a powered boat suitable for the waters shall be provided and equipped for lifesaving.
- **Near water** – When a worker is performing work from a shoreline or other surface essentially at the same elevation as the water surface, where a drowning hazard exists.
- **On water** – When a worker is performing work out of a boat or barge, exposed to the risk of falling less than six feet vertically into the surrounding water.
- **Over water** - Work performed from a dam deck, structure, or equipment, where a fall (of more than six feet) would result in entering the river, pool or fishway.
- **Personal Fall Arrest System (PFAS)** - A body harness, connecting hardware, lanyard, and lifeline or self-retracting lifeline. EM 385-1-1, Sections 05.H, 21.A, 21.G, and 21.H. For PFAS with retrieval; the system includes a winch (usually hand-operated) by which another worker can hoist a fallen worker to safety.
- **Personal Floatation Device (PFD)** - USCG-approved Type I, III or Type V (no inflatables), International Orange color, with reflective stripe and PFD light. EM 385-1-1, Section 05.J.
- **Rescue & Work Boat** - Vessels 26' or Less: A vessel satisfying the following requirements: powered by two motors, each capable of driving the boat upstream while fully loaded, at twice the swiftest water velocity encountered inside the Boat Restricted Zone. Each motor shall be individually capable of driving the boat and all workers (including those from a work boat) from the work site.
- **Ring buoy** - Life ring with a rope attached (minimum length 70 ft. or longer if appropriate), for worker rescue. EM 385-1-1, Section 05.J.06.d (PFD Type IV) and OSHA 1918.97(e)(1).
- **Standing Order** - A project written process for accomplishing a standardized task or mission. Vessels greater than 26' shall be sufficiently powered to travel against current while loaded to full capacity with enough freeboard to safely carry its equipment and personnel.

5. BOAT RESTRICTED ZONE PROCEDURES

RATIONALE

Work-related freshwater boating has hazards recognized by most workers. However, work near a dam structure can present additional hazards—sudden, large, natural or man-made, often without warning, and deadly—that originate from flow or environmental changes not evident to the boat’s crew. Two scenarios exist where work occurs within the BRZ: working over or near water; and working from a workboat. In both scenarios, a properly staffed and equipped rescue boat shall be immediately available (see definitions for requirements).

PROCEDURE

a. Anyone who intends to enter the Boat Restricted Zone of The Dalles, John Day or Willow Creek project for performing work must apply for permission in writing, at least two weeks in advance of the anticipated entry date. The request must include a schedule, a written work plan, and an Activity Hazard Analysis. The Operations Manager or his/her designate must approve the request prior to entry.

NOTE: for operational emergencies e.g., debris in forebay obstructing a fishway, the Control Room Operator will call out a trained retrieval crew of project employees (see below) to remove the hazard to operations. The responding crew will follow a pre-approved Activity Hazard Analysis; the two-week prior request notification is waived for such emergencies. The crew will conduct a pre-work meeting in the Control Room.

b. A pre-work safety meeting will be conducted at the facility prior to the anticipated work. The work leader or supervisor of the boat crew must attend this meeting, and must provide evidence there that the requirements of this Policy have been satisfied.

c. When applicable and practicable, the Control Room Operator will configure dam equipment to minimize flows in the work area. This equipment will be “tagged out” via the dam’s Safe Clearance Procedure, thus preventing operation of the equipment during the work. No boat may enter the work area until approval is given by the Control Room Operator. The Control Room Operator has the right to deny entry, if any condition would threaten the safety of the boat crew. The boat crew shall also call the Control Room upon leaving the BRZ.

d. Clear lines of radio communication between each boat and the dam Control Room shall be agreed upon during the pre-work meeting, and established before the boat(s) enter the BRZ.

PERSONNEL

a. The operator of any boat entering the BRZ must provide proof of qualification as a trained, experienced operator of the boat being piloted. A list of qualified project vessel operators is included as Appendix A.

b. The crew of the workboat shall include an operator who will not engage in any other work while piloting the boat. When a workboat is securely tied off in the area of operations, the operator may conduct other activities that do not interfere with the primary responsibility of piloting the boat.

c. At least one of the workboat crew and one of the rescue boat crew, other than the operator, must be trained in CPR, first aid, and water rescue procedures.

EQUIPMENT

a. Work boats and rescue boats must meet U.S. Coast Guard safety standards for all boat operating conditions. In addition, each boat shall meet current State and Federal requirements.

b. Work boats and rescue boats must be equipped with the following (EM 385-1-1, 19.F):

1. Fire extinguisher--for boats less than 26-ft in length, one 1-A:10-B:C extinguisher; for boats greater than 26-ft in length, two 1-A:10-B:C extinguishers.
2. Personal floatation devices (PFD) for the maximum crew listed for the boat.
3. Running and anchor lights
4. An audible warning device capable of alerting rescue personnel anywhere within the BRZ
5. A marine band radio capable of communicating with the Control Room on Channel 14
6. An approved ring buoy with a minimum seventy-foot throw line (buoyant rope required)
7. An adequately sized towrope
8. A spotlight or acceptable visual distress signal

6. WATER RESCUE

RATIONALE

When a worker faces the hazard of falling in water, Corps safety requirements and project policy necessitate rescue readiness. This procedure defines the requirements for providing rescue actions and post-rescue care of a worker exposed to water immersion.

REQUIREMENTS

a. Minimum of two crew members dedicated strictly to rescue operations. One operator exclusively dedicated as a boat operator and another rescue crew member trained in cold-water rescue and certified to perform First Aid/CPR.

b. Crew members of a rescue boat or life-saving skiff must be trained in rescue and post-rescue care procedures. Training for project employees will be made available by project management. Contractors shall include in the Activity Hazard Analysis, procedures for cold-water rescue and post-rescue care.

c. Rescue response is intended for protection of project workers performing assigned duties—not as first responders to other agencies or to the public. However, if an overboard event occurs in the immediate vicinity of a project work site, where a non-project individual is in imminent danger of drowning, then the project safety boat and crew may respond, in the spirit of the State's Good Samaritan laws. In keeping with project's partnership with local law enforcement agencies, we will provide rescue efforts as practicable, when requested by the Sheriff's office or similar agency.

d. When the rescue boat responds to an overboard event, a crewmember shall notify the appropriate Control Room of the in-progress rescue. The Control Room Operator will call the entities listed below for continued care of the rescued worker.

- Mid-Columbia Medical Center (541) 296 -1111
- Klickitat Valley Hospital (509) 773 - 4022
- Providence / Hood River Hospital (541) 386 – 3911

d. During BRZ operations, if the rescue boat becomes unavailable, all work will cease.

e. The Columbia River water temperature is below 70°F year-round. Worker rescue from the river becomes, therefore, a “cold-water rescue.” Project employees who become rescue crewmembers will be trained in, and will use, cold-water rescue and care techniques for all such events.

7. BOAT AND OPERATOR QUALIFICATIONS

RATIONALE

Project policy requires that personnel operating watercraft less than 26-feet in length shall be trained, tested and licensed in accordance with ER 385-1-1 Section 19.F, this document and other applicable regulations. Employees who operate watercraft will do so in a safe manner in accordance with recognized Federal, state and local laws and standards.

REQUIREMENTS

PERSONNEL (Reference EM 385-1-1, Section 19.A.02).

- a. Government operators shall be licensed or certified in accordance with ER 385-1-19.A.02. Officers and crew shall be qualified and documented by the designated project authority.
- b. Non-Government operators and crew shall be qualified as evidenced by a Boater Education Card or by letter from the employer with a current, valid USCG license.
- c. In accordance with new guidance from the Oregon State Marine Board:
 - By January 1, 2003, all individuals age 16 up to and including age 30 are required to possess a Boater Education Card to operate a motorboat having more than 10 horsepower.
 - By January 1, 2004, all individuals age 16 up to and including age 40 are required to possess a Boater Education Card to operate a motorboat having more than 10 horsepower.

Information on the requirements set forth by the Oregon State Marine Board can be found at the following website; <http://www.boatoregon.com/Education/index.html> .

VESSELS

- a. Under 26 feet. All vessels under 26 feet shall be inspected annually by a qualified person. The inspection shall be documented and a copy shall be furnished to the designated authority, upon request.

b. 26 feet and over. All vessels 26 feet and over shall have current inspections and certificates issued by the USCG Auxiliary or licensed Marine Surveyor before being placed into service. The inspection shall be documented and a copy shall be furnished to the designated authority, upon request.

8. FALL PROTECTION

RATIONALE

There are several scenarios of dam work during which personnel may fall into the water. These different scenarios demand different methods of fall protection, and are covered by different regulations. Below are example scenarios, with appropriate references and the required precautions.

POSSIBLE SCENARIOS & REQUIRED SAFETY PRECAUTIONS:

* **Work from a work platform suspended by mobile crane:**

Requirements-- (ref. EM 385-1-1, Section 16.T.11.a & b; OSHA 1926.550(g)(3)(i)(F) 1926.106)

- (1) OSHA-compliant work platform
- (2) Inspected and load-tested mobile crane
- (3) PFD in place of PFA
- (4) Rescue boat immediately available
- (5) For swift current or turbulent water, reconfigure plant equipment to stop the flow. If the current cannot be substantially reduced, then alternative means of access must be utilized. *A live-boom-supported work platform may not be used in this circumstance.* (booms in which lowering is controlled by a brake without aid from other devices which slow the lowering speeds)

* **Work from a suspended scaffold, supported by a portable frame:**

Requirements--(ref. EM 385-1-1, Section 22.E)

- (1) OSHA-compliant work platform
- (2) Inspected and tested hoist/frame system, secured by locking wheels or anchored to deck
- (3) Fall arrest system
- (4) For swift current or turbulent water, reconfigure plant equipment to stop the flow. If the current cannot be substantially reduced, then a second fall arrest system with retrieval capability shall be attached to each worker.

* **Work from the dam structure, or stationary, rigid frame (without guardrail or safety net):**

Requirements--(ref. EM 385-1-1, Sections 05.H, 05.J, 21.G, and 21.H)

- (1) Fall arrest system
- (2) A co-worker/observer, for emergency retrieval if needed
- (3) A ring buoy with a minimum length of 70 ft.
- (4) For swift current or turbulent water, reconfigure plant equipment to stop the flow. If the current cannot be substantially reduced use a second fall arrest system with built-in retrieval, in lieu of a lifesaving skiff (or rescue boat for BRZ work).

*** Work from the water surface (work boat, barge, etc.):**

Requirements—(ref.'s noted)

- (1) Within the Boat Restricted Zone: see Paragraph 5 above
- (2) Outside the Boat Restricted Zone: see EM 385-1-1, Section 19, “Floating Plant and Marine Activities”.

*** Work near the water surface at the same elevation (i.e., shoreline):**

Requirements--(ref. EM 385-1-1, Section 5.J)

- (1) PFD
- (2) Communication with Control Room
- (3) Co-worker within clear sight.
- (4) Ring Buoy with rope (see rope requirements above)

SPECIAL EXCEPTIONS: (1) Walkway access onto a boat dock does not require PFD use; however, work on a dock will be treated as “work near the water surface.” (2) Where a dam deck has a guardrail on one side, and personnel can traverse the deck without approaching the unprotected edge, no PFD is required. However, if work will occur near the edge, or if an unprotected portion of travel exists, then a PFD is required.

DIVING EXCEPTION: All diving operation will be reviewed on a case by case basis. Approval of dive operation requirements MUST be obtained and concurred through the District Dive Safety Office (DDO), Operations Project Manager, Hydro-Power Operations Manager and Project Safety Office. In general, when a diver is to perform in-water work in supplied surface air (SSA) and access is provided by a crane supported work platform (such as a man-basket), then no lifesaving skiff is required.

DIVING SAFETY SKIFF: For all diving operations requiring support of project safety skiff and boat operator personnel by the hosting project, coordination between DDO and project POC is required 14-days prior to diving operations. If operations of powerhouse generators will be effected, coordination between DDO and project POC shall occur 21-days prior to dive operations.

THE DALLES DAM

BRZ Map

