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Minnesota Department of Natural Resources

ELECTROFISHING POLICY

May 1989

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MINNESOTA DEPARTMENT OF NATURAL RESOURCES

ELECTROFISHING POLICY

Minnesota Department of Natural Resources

Division of Fish and Wildlife

Section of Fisheries

May 1989

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 Annual Electrofisher Boat Safety Inspection Checklist

 Annual Stream Electrofisher Safety Inspection Checklist

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 Daily Field Check Sheet for Electrofisher Boat

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 Daily Field Check Sheet for Back Pack Unit

 Electrofishing Log

ELECTROFISHING POLICY

History

Electrofishing gear was first used to collect fish in streams, with the first technical description of the gear published in 1939 (Haskell). Development of the gear has increased progressively ever since. Electrofishing boats for sampling lakes and larger stream were developed in the late 1940s as were battery powered back pack shockers.

Electric stream sampling gear was first used in Minnesota in the 1940s when assessment of some trout streams was attempted. The first gear consisted of a "portable" 500 watt AC generator that delivered 175 volts (Smith et al. 1949). This unit had two portable electrodes, one anode and one cathode, that were connected to spools of wire carried on the user's back.

Minnesota's first electrofishing boat was constructed in the early 1950s and was used to collect fish in larger rivers in the mid and late 1950s. The early electrofishing boat were little more than flat bottom work boats with AC generators. Most of these units used 3 electrodes attached to booms made of whatever material was handy - bamboo fishing poles, conduit, tamarack posts, etc. The first pulsed D.C. unit used in Minnesota was constructed in the late 1960s and described by Newburg (1973). The first commercially produced electrofishing boat was obtained by the Ecological Services Section in 1975. Since that time, many of the Fisheries Area Offices have obtained electrofishing boat units from commercial sources.

Overview

The purpose of these guidelines is to provide a structure that will enable electrofishing crews to safely and efficiently perform their work duties. Minnesota DNR employees have not had a serious injury during electrofishing operations and these guidelines were developed to ensure that there will not be any serious injury in the future. The recent increase in the amount and use of electrofishing gear has created the need to develop statewide safety guidelines for construction, care and operation of electrofishing gear. It also provides the opportunity to work toward standardization of gear and techniques.

These guidelines are separated into 4 distinct sections:

- 1) Standards for construction and/or purchase of each type of gear;
- 2) Personal protection equipment necessary for safe electrofishing;
- 3) Training required; and 4) Safe operational procedures.

The following general statements summarize the attached safety guidelines:

- All electrofishing gear purchased or assembled must conform to state guidelines;
- All electrofishing equipment must receive regular maintenance and inspection;
- All personnel involved in electrofishing must receive training in CPR, first aid and safe electrofishing procedures; and
- All electrofishing activities must be conducted in conformance with established safety procedures.

Equipment Guidelines

I. Room Electrofishing Boats

A. Boat

1. Boat equipment must comply with all Coast Guard and Minnesota regulations.
2. The boat must be large enough and have sufficient flotation to provide for adequate freeboard when being operated.
3. The boat layout design should be as simple as possible while providing adequate work space.
4. Boat shockers are routinely used at nights. All electrofishing boats must be equipped with night navigation lights: A 20 point red/green light on the bow and a 360° white stern light.
5. Any new flotation must be of a solid type (not an air chamber) which is fireproof and fuel resistant. Closed cell foam is recommended.
6. The boat must be equipped with a hip high safety rail around three sides of the bow netting area. The material must be heavy enough and rigid enough to support a side thrust of 200 pounds or more. (3/4" steel pipe, 1 1/2" heavy wall aluminum pipe or equivalent)
7. The work area and floor must be covered with non-skid material and sloped to allow drainage.

B. Generator

1. The generator should be a gasoline powered 115-230 volt AC unit which will provide a minimum of 3500 watts of power.

2. The generator must be muffled and/or housed so that the noise level of the unit is reduced to 90 dB (O.S.H.A. standard).
3. The generator exhaust must be piped away from operating personnel. The piping should be surrounded by rigid screen to reduce the chance of someone being burned by touching a hot exhaust pipe. The screening should be painted yellow to indicate it is a potential hazard area.
4. The generator must be grounded to the boat hull with a grounding strap to prevent any accumulation of static electricity in the generator frame.
5. Electric generators designed for commercial or domestic use may have an internal ground. This may cause the supporting unit (truck, trailer, etc.) to become live when the generator is operating. Any internal ground must be disconnected.
6. It is recommended that all new generators have recoil starters.

C. Controls

1. All controls must be within easy reach of the operator.
2. Console steering for outboard motors is recommended.
3. All units must have an emergency shutdown switch which stops the generator and cuts off the high voltage to the electrodes immediately. This switch must be easily accessible to all personnel.
4. All electrofishing boats must contain at least two (2) safety switches which break the high voltage circuit.

All switches must be low voltage (recommended not to exceed 24 v). At least one safety switch should be a foot operated "dead man" switch operated from the front work deck. The "dead man" switch must be reachable by all dippers and require constant positive pressure to activate the high voltage circuit. The "dead man" switch must be attached to the low voltage control circuit by weatherproof devices.

5. All power control circuits must be of low voltage (less than 24 volts).

D. Electrodes

1. The booms must be non-conductive.
2. All electrodes must be electrically insulated from their booms.

E. Wiring

1. All wires in the high voltage circuit must have an insulation rating higher than the maximum potential voltage of the unit. The wires must be of a standard type and of size appropriate for the maximum voltage of the circuit in which they are used, per NECA standards.
2. All electrically conductive equipment in the boat (including gas cans (prefer non-conductive), metal tool boxes, generator housing, etc.) must be grounded to the boat.
3. All wires will be enclosed in (raceways) conduit or liquid tight conduit except that a heavy duty rubber cord may be used when greater flexibility is required.

4. No splicing of wires will be permitted at any time. All connections must be made in weatherproof (if switches) or watertight boxes (weatherproof and watertight per NECA standards). Wire connections must be made with appropriate size plastic wire nuts, per NECA standards.
5. Lighting circuit shall be 120 volts or less (prefer 12 volts). Spotlamps must be shielded by a sturdy, non-conductive cage and it is recommended that they be covered by a removable face guard.
6. All branch circuits must be equipped with a fuse and/or circuit breaker enclosed in a weatherproof enclosure per NECA standards.
7. All wiring devices (connectors, receptacles, boxes, etc.) must be of appropriate size for the maximum voltage and current in the circuit in which they are used. Connectors and receptacles should be of corrosion resistant materials and should be of a locking style. Receptacles should have rainproof covers per NECA standards.

F. Color Coding of Hazards

1. Red color is used for fire extinguishers, danger areas (gas cans or other flammable liquids) and warning signs.
2. Orange color is used to indicate dangerous areas on exposed machinery -- pulleys, gears, etc.
3. Yellow color is used to indicate potentially dangerous areas -- hot pipes, sharp points or edges, etc.
4. Green color is used to identify all non-fire fighting safety gear -- first aid kits, etc.

G. Auxiliary Equipment

1. Dip nets must have nonconductive handles which are long enough to avoid hand contact with the water. Dip nets must not be used as electrodes.
2. All wet cell batteries should be encased in a nonconductive, acid proof case which is properly vented.
3. A minimum of one (1A 10B C) fire extinguisher is required. The fire extinguisher must be mounted in a holder at a location which is convenient to the operator, yet outside areas of significant fire hazard.
4. All electrofishing boats should carry an instruction and operation manual which includes instructions for cable hook ups and operational safety guidelines. The manual should be contained in clear waterproof plastic and should be boat specific.
5. Each unit will be equipped with a log book containing daily check lists: date, time and extent of use; maintenance records; and a list of who operated the unit.

II. Generator Powered Stream Electrofishing Units

A. Towing Barge

1. The craft used to transport the generator must be large enough and buoyant enough to maintain adequate freeboard during operations.
2. The craft should be made of non-conductive materials. If the craft is made from conductive material, all electrical components (generator, controls, electrodes, etc.) must be electrically grounded to the boat.

3. The towing strap used to pull the craft should be of nylon or other rot-resistant material. The towing strap must be non-conductive -- wire or other electrically conductive material may not be used for towing. The strap should be attached to the craft in at least two (2) places.
4. It would be useful to have the craft equipped with handles to assist in moving it through shallow riffles and over other obstructions. The handles should be attached with fasteners heavy enough and of a type suitable to support the weight of the craft. The handles should be located so that they are above the water line of the craft. The handles should be non-conductive, either made of non-conductive material or be electrically insulated.

B. Generator

1. The generator should be a gasoline powered 115-230 volt unit capable of producing AC and/or DC current.
2. The generator must be muffled and/or housed to limit the noise level to 90 dB for an 8 hour period per OSHA standards. The engine exhaust should be directed away from the participants -- towards the rear of the unit or toward the ground/water. Any exhaust piping should be covered by rigid screening. The screening should be painted yellow.
3. The generator should have some mechanism to control the power output -- a throttle to control rpms, a rheostat or pulsator, step up/down transformers, etc.

C. Controls

1. All high voltage circuits must be controlled by a low

voltage relay switch system. The relay system must have an emergency shut down switch that shuts off high voltage to all electrodes and stops the generator. The relay should be attached to the generator by a non-rigid connection so that the vibration of the generator will not cause damage to the relay switch unit.

2. All portable hand-held electrodes must be equipped with a low voltage, electrically insulated waterproof switch. All switches in hand-held electrodes must be wired in electrical series.
3. The high voltage circuit should be equipped with an ammeter to indicate the current amperage when the unit is operating.

D. Electrodes

1. Anode must be electrically insulated from the rest of the system.
2. Handles of hand-held electrodes must be made of non-conductive material or electrically insulated. Electrode handles should be long enough to insure that the operator's hands don't have to be in the water.
3. Hand-held electrodes should not be used as dip nets.
4. Electrode handles should be strong enough and rigid enough to assist with a person's balance.
5. Electrodes should be connected to the relay/control box by flexible, heavy rubber electrical cord and multi-strand wire of a sufficient gauge and insulation for the maximum potential current in the high voltage circuit. Any wiring

devices used in connecting hand-held electrodes to the heavy rubber cord must be weatherproof and be of proper size for the maximum potential current in the high voltage circuit. It is recommended that the cord be contained in a spring-loaded reel which is attached to the barge.

E. Wiring

1. The wires used must be of a standard type and of a proper size to carry the maximum potential current in the circuit they are employed per NECA standards.
2. No splicing of wires is permitted. All connections must be secured with proper size (per NECA standards) plastic wire nuts in a weathertight (if a switch) or watertight box (weatherproof and watertight per NECA standards)
3. All electrical devices used (receptacles, connectors, etc.) must be of a proper size for the maximum potential current in the circuit in which they are employed. Devices should be made of corrosion resistant materials and be of a locking style. Switches should have weatherproof covers and receptacles should have rainproof covers, per NECA standards.
4. The relay/control box must be in a weatherproof junction box with weatherproof cover, per NECA standards.

F. Color Coding of Hazards

1. Red color is used for fire extinguishers, gas cans and warning signs.
2. Orange color is used to indicate dangerous areas on exposed machinery.

3. Yellow color is used on the generator exhaust system.

G. Auxiliary Equipment

1. Dip nets should have handles that are non-conductive and should be long enough to insure the dipper's hands don't have to enter the water. The handles should be strong enough and rigid enough to assist with a person's balance.
2. A Unit specific operation manual must be present at all operations.

III. Back Pack Electrofishing Units

A. Standards

1. Back pack electrofishing units should meet standards of commercially available gear.

B. Battery

1. The battery should be of a sealed unit, gel type design. The battery should be enclosed in an acid proof, properly vented case.

C. Controls

1. The unit should be equipped with an adjustable voltage transformer system activated by a low voltage relay switch.
2. The unit should be equipped with an ammeter to indicate the amperage in the high voltage circuit when the unit is in operation.
3. The unit must be equipped with an indicator light which is activated when the high voltage circuit is activated.
4. Each electrode must be equipped with a low voltage, electrically insulated waterproof switch. All electrode switches must be wired in electrical series.

5. The transformer/relay control box must contain a master switch which will shut off all power from the transformer unit. The control unit and transformer/relay unit must be contained in a rainproof box electrically insulated from the rest of the system.

D. Electrodes

1. Electrode handles must be non-conductive and made of strong enough material to assist a person with balance.
2. Electrodes must be connected to the relay/transformer unit with heavy rubber electric cord of a size large enough to handle the maximum potential current of the unit, per NECA standards. Any electrical devices used in connecting the hand-held electrodes with the transformer/control unit should be made of corrosion resistant materials and be of a waterproof locking style.

E. Wiring

1. The wires used must be of proper size and have sufficient insulation for the maximum potential current of the unit.

F. Pack Frame

1. The frame must be lightweight and adjustable, with shoulder straps and hip belt each equipped with a quick release mechanism.
2. The frame should be constructed of non-conductive material.

G. Auxiliary Equipment

1. Dip net handles should be long enough to ensure the operators hands don't have to enter the water. The handle

should be strong enough and rigid enough to assist with balance.

2. A Unit specific operation manual must be present at all operations.

Personal Protection Equipment

Electrofishing can be dangerous. It has been reported that at least two (2) people have died and over 400 people have been injured during electrofishing operations in the United States in the last 20 years.

There are four serious safety concerns about electrofishing activities: 1) drowning; 2) electrocution; 3) hearing loss; and 4) personal injury. The use of proper personal protective gear can significantly reduce chances of injury. The following personal protection devices will be used in all electrofishing operations.

- 1) Gloves - Elbow length lineman's gloves (rated to 1,000 volts) must be used by all participants during all electrofishing operations. All gloves must be rubber, waterproof, dry and free of leaks. Extra gloves should be available in the event a participant's gloves get wet on the inside.
- 2) Boots - All personnel involved in all electrofishing operations will wear waterproof footwear that is free of leaks. Chest high waders will be required in all stream electrofishing operations and strongly encouraged in all boat operations.
- 3) Ear protection - Ear plugs and/or ear muffs will be made available to all participants during electrofishing operations where a gas powered generator is employed. In some operations where the generator is very loud, the use of sound powered headsets may be useful to aid in communication between participants.
- 4) Personal Flotation Device - An approved PFD shall be worn by all participants during all boat electrofishing operations.

The use of approved PFD's in stream shocking operations will be at

the discretion of the crew leader. Approved PFD's will be made available to any participants who wish to use them during any stream electrofishing operation.

- 5) Eye protection - Under most daylight conditions, the wearing of polarized lens glasses is recommended to increase in-water visibility and improve the efficiency of fish capture.
- 6) First aid kit - A 10 unit or larger first aid kit will be available during all electrofishing operations.
- 7) Reflectorized clothing - All personnel doing night electrofishing will be supplied reflective material for their headwear and upper body wear.

TRAINING

All personnel who use or who are expected to use electrofishing gear will receive training in cardio-pulmonary resuscitation (CPR), basic first aid, and proper, safe electrofishing techniques.

CPR training must be undertaken as necessary to maintain certification. Red Cross first aid training requires re-certification at specified time intervals. Training should be repeated often enough to maintain certification. It is available through many of the same agencies that provide CPR training.

Electrofishing training will be given through the DNR. All personnel should complete electrofishing training once to become a certified electrofishing operator. Refresher courses will be required at intervals to maintain the certification.

Training Required for Operations

Boat electrofishing activities will require a minimum of two (2) persons (three preferred) with CPR training and first aid training in all operations. In addition, at least one of the participants must be a certified electrofishing operator.

Stream electrofishing operations employing a generator usually requires a minimum of three (3) persons. A minimum of two (2) shall have CPR and first aid, and at least one (1) will be a certified operator.

Backpack electrofishing operations may be done with two (2) persons. Both participants must have CPR and first aid, and one must be a certified electrofishing operator.

OPERATIONAL PROCEDURES

I. Inspections and Maintenance

Annual inspection - Every electrofishing unit must be inspected by a certified electrofishing operator at least once a year, before spring operations begin. The inspector will complete the inspection check list. Copies of the checklist will be maintained in the Area Fisheries Station files and in the electrofishing unit log.

Daily inspection - An electrofishing device must receive an inspection each time it is used. The inspection must be done by a certified electrofishing operator before the operation has begun. An inspection report must be filled out and kept in the electrofishing unit log.

Maintenance - All electrofishing units must have an overhaul by a competent agency or by competent personnel at least once every three (3) years. All mechanical components must be maintained according to the manufacturer's instructions.

Repairs - All repairs, updates, modifications, etc. must be done according to current safety requirements. Commercially purchased equipment should be repaired to manufacturer's standards or better. All repairs and/or alterations must be done by experienced personnel or vendors. It is strongly recommended that commercially purchased electrical components be repaired or altered by the manufacturer or his designated repair vendor.

II. Operation Safety Guidelines

A. Boat Electrofishing

1. Boat electrofishing requires a minimum of two (2) people.
 - a. Both must have first aid and CPR training.
 - b. At least one must be a certified electrofishing operator.
2. One person, who must be a certified electrofishing operator, is in charge of the operation.
3. Boat electrofishing must not be attempted during periods of heavy precipitation and/or during electrical storms.
4. Personnel flotation devices must be worn at all times.
5. The operation leader should brief all participants on safety procedure before the operation is started.
6. The operation leader will complete the daily check list before the operation begins and make a log entry at the end of the operation.
7. A series of uniform hand signals for communication should be developed and made known to all participants.
8. Excess gear should be kept to a minimum. Work areas should be kept clear and good housekeeping habits followed.
9. The generator may be refueled only when the unit is off and cool.
10. No one should touch any of the electrodes at any time during the operation.
11. No one should reach into the water at any time during the operation. If something falls overboard, turn off the generator and then retrieve the object.

B. Stream Electrofishing with a Generator

1. Stream electrofishing operations using a generator usually requires a minimum of three (3) persons.
 - a. Two (2) must have CPR and first aid training.
 - b. At least one (1) must be a certified electrofishing operator.
2. Stream electrofishing must not be attempted during periods of heavy precipitation and/or during electrical storms.
3. One participant, who must be a certified electrofishing operator, will be charge of the operation. It is the responsibility of the leader to brief the other members on safe operational procedures. The leader should develop a series of hand signals which are known and understood by all participants in the operation.
4. The generator may only be refueled when the unit is off and cool.
5. No one should touch the electrodes at any time.
6. No one should reach into the water at any time.
7. No one should become overly fatigued -- plan rest stops as needed.
8. The leader will complete the daily checklist before the operation begins and make a log entry at the conclusion of the operation.

C. Back Pack Electrofishing

1. All back pack electrofishing operations require a minimum of two (2) people.
 - a. Both (2) must have CPR and first aid training.
 - b. One (1) must be a certified electrofishing operator.

2. One person must be designated the operation lead worker. The leader must brief the other participants on safe operational procedures.
3. The leader must complete the daily checklist before the operation begins and make a log entry at the conclusion of the operation.
4. Back pack electrofishing must not be attempted during periods of heavy precipitation and/or during electrical storms.
5. No one should touch the electrodes at any time during the operation.
6. No one should put his hands in the water at any time during the operation.
7. No one should become overly fatigued -- plan rest stops as needed.

APPENDIX

ANNUAL
ELECTROFISHER BOAT
SAFETY INSPECTION CHECKLIST

Boat Inv. # _____ Registration # _____
Boat Model/make _____ Length _____
Discipline/unit _____ Location _____
Inspection Date _____ Inspected by _____
Log Book: Up to date Yes _____ No _____
Inventory complete Yes _____ No _____

BOAT

- ___ 1. Hull integrity
- ___ 2. Painted areas intact - correct colors
- ___ 3. Safety railing intact and sturdy
- ___ 4. Non-skid footing
- ___ 5. Wiring OK - connections secure, etc.
- ___ 6. Adequate connectors and adequate interlocking (integral with hull)
- ___ 7. All metal equipment in boat electrically bonded/connected to hull (check with volt/ohm meter)
- ___ 8. Lighting properly protected - navigational lights working
- ___ 9. Batteries properly enclosed and vented
- ___ 10. Regulation fuel containers
- ___ 11. Boat clean - equipment neatly stored
- ___ 12. Decals, numbers, names - intact, legible
- ___ 13. Oars or paddles present and in good condition
- ___ 14. Anchors, bailers present

BOAT MOTOR

- ___ 1. Servicing up to date
- ___ 2. Components working properly
- ___ 3. Auxiliary motor working (where applicable)
- ___ 4. Proper venting of exhaust
- ___ 5. No gasoline leaks
- ___ 6. Bilge blower operating (where applicable)

GENERATOR

- ___ 1. Servicing up-to-date
- ___ 2. Muffler OK - properly piped, screened and color coded
- ___ 3. Internal ground removed
- ___ 4. Emergency shut off working
- ___ 5. Output voltage checked

ELECTROFISHER

- ___ 1. Controls and gauges operational
- ___ 2. High voltage checks done
- ___ 3. Adequate mechanical protection of wiring
- ___ 4. Adequate connectors and interlocking
- ___ 5. Operator's safety switch working
- ___ 6. "KILL SWITCH" working
- ___ 7. "Deadman" switches working
- ___ 8. Wiring to electrodes in good condition
- ___ 9. Electrodes in good condition

ANCILLARY EQUIPMENT

- ___ 1. Fire extinguisher present - fully charged - correct type
- ___ 2. First aid kit present - fully replenished
- ___ 3. Protective hand and head gear for maximum crew members
- ___ 4. Gas containers - regulation style
- ___ 5. Dipnet handles made of non-conductive material

ANNUAL
STREAM ELECTROFISHER
SAFETY INSPECTION CHECKLIST

Unit Inv. # _____
Make _____ Model _____
Discipline _____ Location _____
Inspection date _____ Inspected by _____
Log Book: Up to date Yes ___ No ___
Manual Present: Yes ___ No ___
Inventory complete: Yes ___ No ___

CRAFT

- ___ 1. Hull integrity
- ___ 2. All metal equipment grounded to craft
- ___ 3. Towing strap in good condition

GENERATOR/ALTERNATOR

- ___ 1. Electrical Connections secure and protected
- ___ 2. Mountings Secure
- ___ 3. Exhaust directed away from operator—properly screened and color coded
- ___ 4. Frame properly grounded
- ___ 5. Unit electrically bonded/connected to frame
- ___ 6. Engine serviced to date/oil change

ELECTROFISHER

- ___ 1. Controls and gauges operational
- ___ 2. High voltage checks done
- ___ 3. Adequate mechanical protection of wiring
- ___ 4. Adequate connectors and interlocking
- ___ 5. Operator's safety switch working
- ___ 6. "KILL SWITCH" working
- ___ 7. Anode switches working
- ___ 8. Wiring to anodes in good condition
- ___ 9. Anodes in good condition - attached to handle securely
- ___ 10. No screens or nets attached to anode hoops
- ___ 11. Anode handles of non-conductive material
- ___ 12. Cathode plate clean - connection secure

ANCILLARY EQUIPMENT

- 1. Fire extinguisher present - fully charged - correct type
- 2. First aid kit present - fully replenished
- 3. Protective hand and head gear for maximum crew members
- 4. Gas containers - regulation style
- 5. Dipnet handles made of non-conductive material

ANNUAL
BACK PACK CHECK

Unit Inv. # _____
Make _____ Model _____
Owner/Operator _____ Location _____
Inspection date _____ Inspected by _____
Log Book: Up to date Yes ___ No ___
Manual present: Yes ___ No ___

ELECTROFISHER

- ___ 1. Controls and gauges operational
- ___ 2. high voltage checks done
- ___ 3. Adequate protection of wiring
- ___ 4. Adequate connectors and interlocking
- ___ 5. "KILL SWITCH" working
- ___ 6. Switches on electrodes working
- ___ 7. Wiring in good condition
- ___ 8. Electrodes in good condition fastened securely
- ___ 9. Electrode handles of non-conductive material
- ___ 10. Battery fully charged, terminals clean
- ___ 11. Cathode clean and secured tightly
- ___ 12. Back-pack frame in good condition
- ___ 13. Quick release mechanism of back pack frame working
- ___ 14. High voltage light working

GENERATOR/ALTERNATOR (where applicable)

- ___ 1. Electrical Connections secure and protected
- ___ 2. Mountings secure
- ___ 3. Exhaust directed away from operator - if applicable
- ___ 4. Unit electrically bonded/connected to frame
- ___ 5. Engine serviced to date/oil changed - if applicable
- ___ 6. Engine clean and no oil or gas leaks - if applicable

ANCILLARY EQUIPMENT

- ___ 1. Protective hand gear for maximum crew members
- ___ 2. Dip nets handles made of non-conductive material
- ___ 3. First aid kit present - fully replenished
- ___ 4. Gas containers - regulation style - if applicable
- ___ 5. Fire extinguisher - present - correct type - fully charged
(where applicable)

DAILY
ELECTROFISHER BOAT
FIELD CHECK SHEET

Boat Inv. # _____ Date _____

Time _____ Location _____

Crew Leader _____

Crew Members _____

Log Book: Up to date Yes ___ No ___

Manual Present: Yes ___ No ___

BOAT

- ___ 1. Hull integrity
- ___ 2. Safety railings intact and sturdy
- ___ 3. Decks clean, free of excess water/bilges dry
- ___ 4. Adequate mechanical protection of wiring
- ___ 5. Adequate connectors and interlocking (integral with hull)
- ___ 6. All metal equipment in boat electrically bonded to hull (checked with volt/ohm meter)
- ___ 7. Batteries fully charged - properly enclosed and vented
- ___ 8. Communication gear working (where applicable)
- ___ 9. Boat clean, equipment neatly stored
- ___ 10. Auxiliary motor present and working (where applicable)
- ___ 11. Oars/paddles present
- ___ 12. Anchors/bailers present
- ___ 13. Night navigation lights working

GENERATOR

- ___ 1. Electrical connections secure
- ___ 2. Mounting secure
- ___ 3. Frame grounded

ELECTROFISHER

- ___ 1. Controls and gauges operational
- ___ 2. High voltage output checks done
- ___ 3. Adequate mechanical protection of wiring
- ___ 4. Adequate connectors and interlocking
- ___ 5. High voltage flashing light working
- ___ 6. All foot switches working
- ___ 7. "KILL SWITCH" working
- ___ 8. Operators safety switch working

ADDITIONAL EQUIPMENT

- 1. Fire extinguisher fully charged
- 2. First aid kit present and full
- 3. Enough personal safety gear present - gloves, boots, ear protection, PFD's, reflectorized clothing

DAILY
STREAM ELECTROFISHER
FIELD CHECK SHEET

Unit Inv. # _____ Date _____

Time _____ Location _____

Crew Leader _____

Crew Members _____

Log Book: Up to date Yes _____ No _____

Manual Present: Yes _____ No _____

GENERATOR/ALTERNATOR

- ___ 1. Electrical connections secure and protected
- ___ 2. Mountings secure
- ___ 3. Exhaust directed away from operator
- ___ 4. Frame properly grounded
- ___ 5. Unit electrically bonded/connected to frame

ELECTROFISHER

- ___ 1. Controls and gauge operational
- ___ 2. High voltage checks done
- ___ 3. Adequate mechanical protection of wiring
- ___ 4. Adequate connectors and interlocking
- ___ 5. "KILL SWITCH" working
- ___ 6. Anode switches working
- ___ 7. Wiring to anodes in good condition
- ___ 8. Anodes in good condition - attached to handle securely
- ___ 9. No screens or nets attached to anode hoops
- ___ 10. Anode handles of non-conductive material
- ___ 11. Cathode plate clean - connection secure
- ___ 12. Anode cables unwound from coil - connections tight

ADDITIONAL EQUIPMENT

- ___ 1. Fire extinguisher fully charged
- ___ 2. First aid kit full
- ___ 3. Enough personal safety equipment present - gloves, boots, ear protection, PFD's (as necessary), polarizing sunglasses

DAILY
BACK PACK FIELD CHECK

Unit Inv. # _____ Date _____
Time _____ Location _____
Crew Leader _____
Crew Members _____

Log Book: Up to date Yes ___ No ___
Manual Present: Yes ___ No ___

BATTERY

- ___ 1. Clean and fully charged
- ___ 2. Terminals clean and tight

ELECTROFISHER

- ___ 1. Controls and gauges operational
- ___ 2. High voltage checks done
- ___ 3. Adequate protection of wiring
- ___ 4. Adequate connectors and interlocking
- ___ 5. Visible voltage light working
- ___ 6. "KILL SWITCH" working
- ___ 7. Electrode switch working
- ___ 8. Wiring to anode in good condition
- ___ 9. Wiring to anode in good condition
- ___ 10. Electrodes in good condition fastened securely

ADDITIONAL EQUIPMENT

- ___ 1. Fire extinguisher charged (if applicable)
- ___ 2. First aid kit full
- ___ 3. Personal safety gear - gloves, boots, PFD's (as needed),
polarizing sunglasses

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