



Dry Fork Station Procedure

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Originating Department Ashley Fraser - Safety Department	Final Approver <u>Terry Ackerman</u> <small>Terry Ackerman (Oct 11, 2024 13:51 MDT)</small>	Date 10/4/24	RMP
Subject Dropped Object Prevention Plan			

1.0 PURPOSE / SCOPE

1.1 Purpose

- 1.1.1 Basin Electric Power Cooperative (BEPC) Dry Fork Station (DFS) is committed to providing a safe and healthful environment for employees. It is our policy to protect employees from occupational injuries by implementing and enforcing safe work practices.
- 1.1.2 The Dropped Object Prevention Plan is to elevate awareness to the potential for falling objects, and the damage and injury that can be prevented by an evaluation of our areas, recognition of the hazards, and implementing established procedures.
- 1.1.3 The plan will provide guidance for both management and workers to recognize the hazards and select the most appropriate preventative actions.

1.2 Scope

- 1.2.1 Intended to significantly reduce both hazards and severe injury and risks to employee(s) that dropped objects pose.
- 1.2.2 To establish minimum requirements for securing tools and equipment to minimize the risk of injury to employees exposed to dropped objects.
- 1.2.3 To ensure that workers are trained to secure tools at height and understand correct procedures.

2.0 DEFINITIONS

Anchorage	a secure point of attachment for tethers, tools and transport buckets with closure systems which is independent of an anchorage used for fall protection for personnel.
Drop Hazard	any tool, material or object that has an opportunity to fall from elevation to lower level causing potential for damage to property, injury or death
Dropped Object Zone (DOZ)	an area with potential to be impacted by drop hazards currently present in a work-in-progress above. The DOZs are to be secured with barricade tape to prevent unauthorized entry. Signage stating the hazard and who to contact for information will be posted at the DOZ as well.



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Mitigation	the elimination or reduction of the frequency, magnitude, or severity of exposure to risks by the minimization of the potential impact of a threat or warning.
On-Site Coordinator	Basin Electric Power Cooperative (BEPC) on-site employee that interfaces with contractors.
Operating Authority	the Supervisory Staff in the Operation Section is the "Operating Authority" in the power plant. Operating Authority duties may also be assigned to the Lead Station Operator.
Qualified Employee	a person that has been trained in and familiar with the safe work practices, safety procedures and programs, and other safety requirements that pertain to their respective job assignments.
Safety Net	netting or fencing installed between handrail and toe board to prevent objects from falling to lower levels.
Spotter	an individual that is assigned the responsibility preventing entry to an area when there is a danger of dropped tools, materials or sparks.
Supervisory Authority	the Plant Manager is the "Supervisory Authority" of this program and administers manning the installation, maintenance and the operations of the procedure. This person may designate this authority if necessary.
Tool Arrest System	include tool tethers, which will arrest the fall of the tool and prevent it from striking a lower level and others below.
Tool Belt	a device that is designed to ergonomically support and manage other dropped prevention items such as, lanyards, tethers or pouches on the person working.
Tool Bucket	a bucket designed for the purpose of carrying tools and materials. Tool buckets must be capable of being closed and secured to prevent the contents of the bucket from spilling. <i>Maximum load in buckets not to exceed 50lbs when manually lifting.</i>
Tool Lanyard/Tether	an extension made of durable materials that is designed to prevent an object from being dropped. A connection point on either end of the tether for securing an object to a worker or stationary item shall be utilized.
Tool Pouch	a bag or pouch designed to secure single tools or items (hammer, wrench, radios, etc.) from being spilled or dropped.

3.0 APPLICABILITY/RESPONSIBILITY

3.1 Applicability

This program applies to all employees, contractors and visitors at Dry Fork Station (DFS).

3.2 Responsibility

3.2.1 Safety Coordinator is responsible for:

3.2.1.1 Developing and administering the Dropped Object Prevention Plan.



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- 3.2.1.2 Correcting any unsafe practices or conditions immediately.
- 3.2.1.3 Reviewing and updating the program at least once every three years.
- 3.2.1.4 Conducting necessary training on this program.
- 3.2.1.5 Monitoring work areas in a way that reduces the potential for workers to be exposed to hazards from falling objects.
- 3.2.1.6 Stopping work if hazardous conditions prevent the job from being done safely.
- 3.2.2 Supervisory Authority is responsible for:
 - 3.2.2.1 The safe administration of this program.
 - 3.2.2.2 Enforcing the program and disciplinary action regarding violations of this program.
 - 3.2.2.3 Stopping work if hazardous conditions prevent the job from being done safely.
- 3.2.3 Supervisors are responsible for:
 - 3.2.3.1 Providing employees with appropriate dropped object prevention training.
 - 3.2.3.2 Enforcing and ensuring compliance by all employees with the Dropped Object Prevention Plan.
 - 3.2.3.3 Correcting any unsafe practices or conditions immediately.
 - 3.2.3.4 Planning tasks and monitoring work areas in a way that reduces the potential for workers to be exposed to hazards from falling objects.
 - 3.2.3.5 Ensuring employees are accounting for dropped object potential on Job Safety Analysis (JSAs).
 - 3.2.3.6 Stopping work if hazardous conditions prevent the job from being done safely.
 - 3.2.3.7 Enforcing the program and disciplinary action regarding violations of this program.
 - 3.2.3.8 Immediately reporting any dropped or fallen objects to safety.



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3.2.4 Qualified Employee is responsible for:

- 3.2.4.1 Correcting any unsafe practices or conditions immediately.
- 3.2.4.2 Conducting work only after all drop hazards have been eliminated or properly mitigated.
- 3.2.4.3 Stopping work if hazardous conditions prevent the job from being done safely.
- 3.2.4.4 Immediately reporting any potential drop hazards and dropped or fallen objects to supervisor.
- 3.2.4.5 Including potential drop hazards in Job Safety Analysis's and Pre-Job Planning.

3.2.5 On-Site Coordinators are responsible for:

- 3.2.5.1 Enforcing and ensuring compliance by all contractors with the Dropped Object Prevention Plan.
- 3.2.5.2 Correcting any unsafe practices or conditions immediately.
- 3.2.5.3 Providing training on the DFS Dropped Object Prevention Plan.
- 3.2.5.4 Stopping work if hazardous conditions prevent the job from being done safely.
- 3.2.5.5 Immediately reporting any dropped or fallen objects to safety.

3.2.6 Contractors are responsible for:

- 3.2.6.1 Providing employees with appropriate dropped object prevention training.
- 3.2.6.2 Enforcing and ensuring compliance by all employees with the Dropped Object Prevention Plan.
- 3.2.6.3 Correcting any unsafe practices or conditions immediately.
- 3.2.6.4 Planning tasks and monitoring work areas in a way that reduces the potential for workers to be exposed to hazards from falling objects.
- 3.2.6.5 Reporting any dropped or fallen objects to the DFS On-Site and/or Safety Coordinator.
- 3.2.6.6 Stopping work if hazardous conditions prevent the job from being done safely.



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4.0 GUIDELINES/PROCEDURE

4.1 Guidelines

4.1.1 Dropped Object Zones

4.1.1.1 Dropped Object Zones are to be clearly marked with red barricade tape to restrict access.

4.1.1.2 Only employees directly engaged in the activity conducted overhead will be admitted into a Dropped Object Zone.

4.1.2 Scaffolding

4.1.2.1 Red barricading around scaffolding when erecting, modifying and dismantling to ensure no foot traffic in the dropped object zone.

4.1.2.2 If work is to be performed from scaffolds over areas where employees must walk or work below, scaffolds shall have complete toe boards, netting and/or covered walkways installed. If not applicable document deficiencies on scaffold tag (i.e. toe board cannot be installed due to space constraints).

4.1.3 Tool Lanyards/Tethers

4.1.3.1 Tool Lanyards and tethers shall be required when barricade tape is not installed, and work requires tools to be utilized outside of protected edges. (i.e. reaching over/through handrail to work on a valve with the potential to drop an object to a lower platform/level)

4.1.3.2 After establishing an adequate attachment point on a tool, a proper tool tether will then need to be selected which has an appropriate load rating for the tool to be tethered.

4.1.3.3 Tethers come in different lengths, strengths, and design. Some are basic lanyards, some retract, and others coil. Be sure to select a tether that best fits the tool(s) being used for the job.

4.1.3.4 Squids 3100 Tool Lanyard- Carabiner and Cinch Loop, CAT 194329 – ANSI rated up to 10lbs





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4.1.3.5 Squids 3400 Glove Clip Holder with Dual Clips, CAT ID 198161



4.1.4 Tool Holsters/Pouches

4.1.4.1 For some tools and objects, a tool holster or pouch may be appropriate. Tools used in these holsters should weigh less than or equal to the manufactured stated load-rating.

4.1.5 Tool Buckets

4.1.5.1 For the safe transportation of tools and materials at heights or while lifting, buckets may be utilized only if they are manufactured with a closure system which allows the user to secure the contents of the bucket from potential spills.

4.1.5.2 Tool buckets not to exceed 50lbs max weight. If exceedance occurs, other methods shall be utilized such as a hoist/overhead crane.

4.1.5.3 Hoist bucket with zipper closure, CAT ID 268813



Arsenal 5974 Large Nylon Hoist
Bucket Tool Bag - Swiveling
Carabiner, Zipper Top



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4.1.5.4 Safe Bucket with Hook and Loop Closure, CAT ID 268776



4.1.6 Anchorage Points

4.1.6.1 Upon choosing a proper method for tethering, it becomes necessary to select an appropriate anchor point for the remaining end of the tethering device. For many small tools, connecting to the worker can be the best option.

4.1.6.2 Anchor points on a person may include:

4.1.6.2.1 Tool Lanyard/Tether

4.1.6.2.2 Tool Pouch/Holster

4.1.6.2.3 Tool Belt

4.1.6.2.4 Sometimes a harness

4.1.6.3 Anchor points on a structure may be:

4.1.6.3.1 Walking/working surface.

4.1.6.3.2 Handrail/guardrail/toe board systems.

4.1.6.3.3 Non-insulated piping that does not exceed 200F.

4.1.6.3.4 Fixed/A-frame or rolling ladders or aerial work platforms with working platform systems as long as it does not interfere with the mechanics or manufacturer's instructions intent of the ladder.

4.1.6.3.5 Scaffolding bars.

4.1.6.4 Only tools up to 10lbs. shall be tethered to a person. Tools 10lbs. in weight or greater shall be tethered to a structure capable of supporting the object in the event of a fall.



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4.1.6.5 Restrictions for tethering equipment:

4.1.6.5.1 Maximum temperature of 200 degrees F for nylon and polyester tethers.

4.1.6.5.2 Keep tethered equipment on a person to a minimum.

4.1.6.5.3 Total weight of all tools being tethered to a person with the addition of a harness must not exceed 310 lbs.

4.1.6.5.4 Keep tool tethers clear of rotating equipment.

4.1.6.6 Tool Belts designed with tether points are also a good option for an anchorage point.

4.1.7 Toe Boards

4.1.7.1 Toe boards will be erected along the edge of overhead work in order to protect employees below as applicable.

4.1.8 Safety Netting / Fencing

4.1.8.1 Nets designed for use to prevent falling objects shall not be used as fall protection for human beings.

4.1.8.2 The use of safety nets shall be evaluated by On-Site Coordinators when planning outage work.

4.1.8.3 Snow fencing (CAT ID 167083) or netting is to be zip-tied from the top rail to toe board height in order to prevent objects from being tipped over from walkways or scaffolding in high traffic areas if the area is not barricaded below.

4.1.8.4 Visual inspections of safety netting shall be completed, and defective netting will not be deployed.

4.1.9 Decking / Floor Openings

4.1.9.1 If decking is to be engaged, it will need to be evaluated to ensure any openings are not large enough for tools or materials to pass through.

4.1.9.2 It is recommended they be enclosed with a blanket, hole cover, screen, etc. to prevent materials from passing through.



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4.1.10 Housekeeping

- 4.1.10.1 Trash and waste should be kept in appropriate containers which are to be located in convenient locations across the workplace. When removed from elevated locations, trash and materials need to be properly placed to not fall over edges. When lowering filters, packing, insulation, etc. a barricaded drop zone is required.
- 4.1.10.2 Employees should “clean as you go” and maintain an orderly work area, resulting in a lower chance for dropped material.
- 4.1.10.3 Tools and other materials should also be kept in an organized, orderly fashion.
- 4.1.10.4 At a minimum, a daily cleanup of scrap, trash, tools and excess materials will take place.
- 4.1.10.5 Holes and openings in decks and platforms shall be managed. Fire blankets or other adequately constructed coverings shall be utilized over floor penetrations and other small openings in order to prevent dropping smaller objects. (i.e. nuts and bolts)
- 4.1.10.6 Special attention shall be given to cleaning up of smaller objects such as bolts, welding rod, etc. that could be dropped or kicked through smaller openings, and tin or plywood that could be blown off by wind gusts.
- 4.1.10.7 Materials used for construction activities such as boards, plywood, sheet metal, and other material that can be blown off by high winds or gusts shall be adequately secured to prevent displacement.

4.1.11 Tool and Material Storage

- 4.1.11.1 Where tools or materials are stacked higher than the edge of the toe boards, screening or paneling will be constructed from the working surface to the top of the guardrail or mid-rail. This will be done for a sufficient distance to ensure these objects will not have an opportunity to become drop hazards.
- 4.1.11.2 Using wire or s-hooks to secure objects to mid-rails to prevent objects from being tipped or kicked over elevated edges.
- 4.1.11.3 All stacked materials should be stable and self-supporting.
- 4.1.11.4 Blankets can be placed to prevent objects from falling through grating, buckets can be used to store small parts and tools, wire or straps can be used to secure larger materials and buckets.



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4.1.12 Tool and Material Handling

4.1.12.1 Employees should utilize positive tool transfer.

4.1.12.2 When transferring a tethered tool from one employee to another, “100% tie off” should be engaged. The tool should be tethered to the passing employee. Prior to handing off, the receiving employee should connect their tether to the tool as well. After positive connection has been completed, the passing employee may disconnect their tether from the tool. By utilizing this passing method, the tool never has an opportunity to become a drop hazard.

4.1.12.3 Secure loads and do not overload carts when moving material.

4.1.13 Demolition

4.1.13.1 When equipment is to be demolished, special attention must be given to securing, leveling and rigging the material to be removed.

4.1.13.2 When sheet metal, wall board or panels, or plating is to be cut out, a hole shall be drilled or cut to allow for cables and shackles to be attached to eliminate the potential to drop the material when the cut is complete. If this is not feasible, other adequate and equally effective means shall be considered and documented on the JSA.

4.1.13.3 Insulation shall be evaluated for integrity and properly abated or secured, if necessary, before demolition.

4.1.14 Hoisting and Lifting

4.1.14.1 Should tools and equipment need to be raised / lowered to or from an upper work area, this work will be performed by a crane wherever feasible. If use of a crane is not feasible, the material will be raised using a rope with the tools and equipment securely tied or in a closed top tool bucket.

4.1.14.1.1 Only manufactured tool buckets designed for rigging shall be used.

4.1.14.1.2 Plastic or metal buckets with wire handles shall not be used for hoisting or lifting.

4.1.14.1.3 Ropes shall be inspected for tears, frays, grease, knots, etc. Ropes must be in good working condition.

4.1.14.2 Do not overload the bucket based off manufactures ratings.



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- 4.1.14.3 Any bucket on an elevated surface with an unprotected edge must be secured to the work platform or located appropriately to prevent the bucket from tipping over or falling to a lower level.
 - 4.1.14.4 The area below must be barricaded with red tape or have a spotter.
 - 4.1.14.5 If a minimum of two employees are working and one employee is manually hoisting a tote, using a mechanical hoist or lowering one object, the other employee may be utilized as a spotter for a short duration to ensure no one enters the drop zone. This would not require barricade tape to be erected.
 - 4.1.14.6 Lifting areas must be barricaded to prevent unintentional access beneath the suspended load per the DFS Barricade Tape and Identification Tag Program.
 - 4.1.14.7 When utilizing a crane, to hoist materials and tools to elevated work areas, the spotter(s) shall ensure that workers are not under suspended loads during the lift.
 - 4.1.14.8 The area to be barricaded must be large enough to account for the potential for tools and material to bounce off or deflect from piping and structures in the event they should fall.
- 4.1.15 Equipment Inspection
- 4.1.15.1 Drop prevention equipment shall be inspected prior to use by the individual utilizing the tether, bucket, etc.
 - 4.1.15.2 Excessively worn or damaged tools or materials must be immediately removed from service and replaced.
 - 4.1.15.3 Job Safety Analysis (JSA) of the area shall be completed prior to work.

4.2 Procedure

4.2.1 Injury Prevention Strategy

- 4.2.1.1 Utilize Job Safety Analysis (JSA) to identify and mitigate dropped object potential.
- 4.2.1.2 Frequent communication between supervisors, safety, employees and/or contractors to control these hazards.
- 4.2.1.3 Focused safety inspections by safety, supervisors, on-site coordinators and/or contract supervisors.



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4.2.1.4 Outage and construction project environments with limited “real estate” or work areas require a higher level of protection from falling objects for workers engaged in their work tasks. DFS expects these factors to be considered to provide a safe working environment.

4.2.1.4.1 Housekeeping

4.2.1.4.2 Barricading

4.2.1.4.3 Overhead protection or side protection (netting)

4.2.1.4.4 Effective work coordination and scheduling

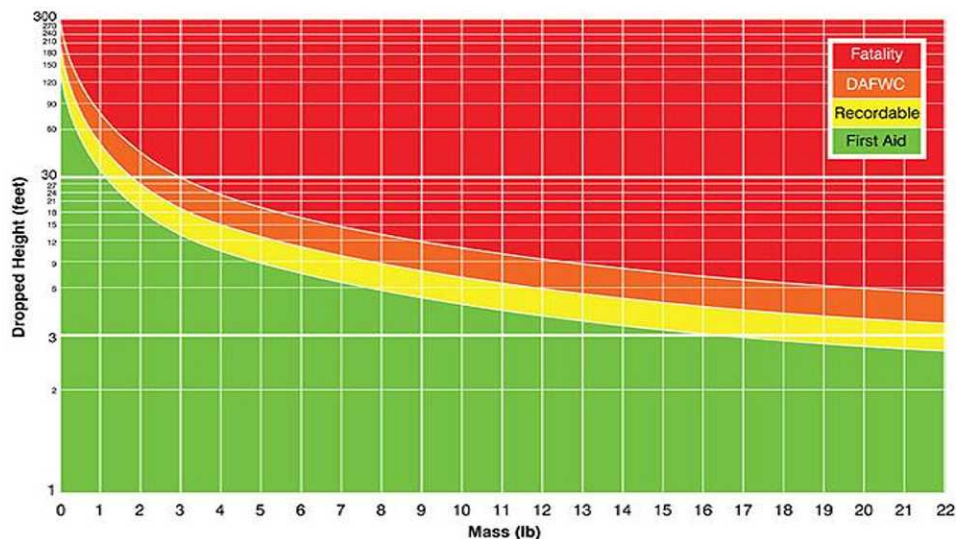
4.2.1.4.5 Human factors (fatigue, inattention, lack of pre-planning)

4.2.2 Reporting and Classification for Dropped Objects

4.2.2.1 Dropped objects that do not result in an injury or are found shall be reported as a near miss.

4.2.2.2 Potential dropped objects shall be reported as an Observation.

4.2.2.3 The Safety Department will determine the potential for injury by utilizing the Dropped Objects Calculator.



4.2.3 Training Requirements

4.2.3.1 Employees shall be trained initially and every three years thereafter.

4.2.3.2 Training shall include but not limited to:



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- 4.2.3.2.1 Nature of drop hazards and dropped objects in the workplace.
- 4.2.3.2.2 Correct procedures and equipment use for drop prevention.
- 4.2.3.2.3 Proper storage and handling of equipment and materials at heights.
- 4.2.3.2.4 Reporting requirements for incidents and near misses.

4.2.3.3 Circumstances where retraining is required include, but is not limited to:

- 4.2.3.3.1 Changes in the workplace that render previous training obsolete.
- 4.2.3.3.2 Changes in the type of prevention systems or equipment.
- 4.2.3.3.3 Inadequacies in affected employee (s) knowledge or use of prevention systems or equipment indicated by supervisory observations.

4.2.3.4 Training and retraining must be documented.

4.2.4 Recordkeeping Requirements

4.2.4.1 Training records shall be kept in accordance with Basin Electric's record retention schedule.

5.0 ATTACHMENTS

5.1 Impact Force Chart

6.0 REFERENCES

6.1 OSHA Regulations

6.1.1 1910.28 Walking-Working Surfaces

6.1.2 1926.759 Falling Object Protection

6.2 00-SP-06 DFS Barricade Tape and Identification Tag Procedure

6.3 00-SP-034 DFS Scaffold Program

6.4 00-SP-040 DFS Fall Protection Program

6.5 00-SP-025 DFS Pre-Job Site Inspections and Job Safety Analysis (JSA) Program

6.6 00-SP-024 DFS Mobile Elevating Work Platform (MEWP) Operation Program



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6.7 00-SP-009 DFS Incident Investigations

6.8 00-SP-043 Overhead Crane Operation and Inspection Program

6.9 00-SP-042 Mobile Crane Operation and Inspection Program

7.0 REVISION HISTORY

Revision No.	Description of Change	Revised By	Approved By	Revision Date
A	New Procedure	Ashley Fraser	Terry Ackerman	10/3/24



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Attachment 5.1

Impact Force Chart

Impact force of a dropped object

Measured in pounds per square inch

		Weight of Dropped Object (pounds)									
		1	2	3	4	5	6	7	8	9	10
Drop Height (feet)	300	434	867	1,301	1,735	2,168	2,608	3,036	3,469	3,903	4,337
	200	354	708	1,062	1,416	1,771	2,125	2,479	2,833	3,187	3,541
	150	307	613	920	1,227	1,533	1,840	2,147	2,453	2,760	3,067
	100	250	501	751	1,002	1,252	1,502	1,753	2,003	2,253	2,504
	50	177	354	531	708	885	1,062	1,239	1,416	1,593	1,771
	20	112	224	336	448	560	672	784	896	1,008	1,120
	10	79	158	238	317	396	475	554	633	713	792
6	61	123	184	245	307	368	429	491	552	613	

SERIOUS **SEVERE** **FATAL**



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Final Audit Report

2024-10-11

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