THE NATION'S URANIUM PROCESSING FACILITY

Preparer:

Anton R. Panev
UPF ES&H Issues Management

06/27/23
Date

Approval:

Kieran S. Kelly
UPF ES&H Manager, BNI

06/27/23
Date

Gary J. Cough
UPF Site Manager

06/27/23
Date

John H. Platt II
Senior Vice President and UPF Project Director

06/27/23
Date

07/31/23
Effective Date

This document has been reviewed by a Y-12 DC / UCNI-RO and has been determined to be UNCLASSIFIED and contains no UCNI. This review does not constitute clearance for Public Release.

Name: Steve Buffalo Date: 06/28/23

RC-UPF DMC
06/29/23 14:28

REVISION LOG

Revision 0	☒ Intent ☐ Non-Intent

- Initial Issue
- This document was created in response to Condition Report 25774-000-GCA-GAM-04038, *Failure to Sustain Corrective Actions Taken for Dropped Object Prevention at UPF [**CA]*
- Form changes:
  - CFN-1341, *UPF Dropped Object Prevention Checklist – Obsolete*
  - UCN-23553, *Dropped Object Prevention Checklist – New*
- An evaluation determination has been performed confirming that this Procedure does implement requirements tracked in the Programmatic Requirements Management System (PRMS)

CONTENTS

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Procedure is to establish expectations for preventing dropped objects on the Uranium Processing Facility (UPF) Project by controlling tools, materials, and equipment brought to or used at height. Such objects, if dropped, can present significant risk of injury to those below, property damage, and environmental impacts.

Examples of potential dropped objects include the following:

- Scaffolding materials
- Hand and power tools
- Cell phones
- Nails and screws
- Nuts, bolts, and washers
- Cameras
- Hard hats
- Water bottles and kegs
- Items lifted by cranes or hoists
- Plywood
- Flange covers
- Trash and debris
- Alignment pins
- Clips
- Grating
- Wedges
- Jack stands
- Welding rods
- Hoses
- Cords
- Cables

1.2 Scope

This Procedure describes multiple factors associated with dropped object prevention. This includes planning, responsibilities, risk assessment, training, safe work practices, employee behavior, and housekeeping and maintenance.

This Procedure identifies and details aspects of dropped object prevention, including:

- Responsibilities
- Risk assessment
- Training and awareness
- Safe work practices and controls
- Hazard identification (Job Hazard Analysis [JHA], Field Level Hazard Assessment [FLHA])
- Inspections and monitoring
- Incident review and corrective actions

2.0 RESPONSIBILITIES

2.1 UPF Site Manager

The UPF Site Manager is responsible for:

- Providing resources necessary to develop and implement a Dropped Object Prevention Program
- Participating in management walkdowns for performance monitoring
- Participating in management review of incidents involving a dropped object which had a serious outcome or the potential for a serious outcome

2.2 UPF Environmental, Safety, and Health Manager, BNI

The UPF Environmental, Safety, and Health Manager, BNI is responsible for:

- Interpreting the regulations associated with this Procedure
- Interpreting the procedural requirements as to intent and application
- Implementing and administering the requirements of this Procedure
- Including dropped objects in the environmental, safety, and health (ES&H) risk assessment and Risk Register
- Confirming Tethering Advisors are trained per the manufacturer on the proper methods and materials for tethering tools and coaching others

2.3 UPF Environmental, Safety, and Health Representative

The UPF Environmental, Safety, and Health Representative is responsible for:

- Evaluating and monitoring site conditions, behaviors, and controls
- Providing technical support for mitigating the risk of dropped objects
- Participating in incident investigation involving dropped objects and helps determine causal factors and the associated corrective actions

2.4 Discipline Superintendents

The Discipline Superintendents are responsible for:

- Confirming dropped object risk is part of the JHA and FLHA processes

- Confirming controls and protective equipment are available
- Planning work so that working at heights is eliminated or minimized to the extent possible
- Planning work so excess tools, materials, and equipment are not stored at height
- Identifying and selecting team members to perform the role of a Tethering Advisor
- Actively participating in performance monitoring and adjustment of controls when warranted
- Reviewing and approving UCN-23553, *Dropped Object Prevention Checklist*, prior to commencing elevated work

2.5 Supervisor

The Supervisor is responsible for:

- Evaluating work areas and activities for potential dropped objects
- Confirming dropped object prevention practices are incorporated into the JHA and FLHA processes
- Confirming personnel are trained in dropped object prevention, and providing ongoing awareness training on controls and their appropriate use
- Confirming dropped object controls are available and properly implemented
- Enforcing frequent and on-going housekeeping to prevent dropped objects
- Assessing and monitoring the effectiveness of dropped object controls and employee behavior
- Completing and signing UCN-23553 prior to commencing work

2.6 UPF Personnel

UPF Personnel are responsible for:

- Acquiring proficiency and adhering to the requirements specified in this Procedure through dedicated training on relevant topics

2.7 Tethering Advisors

The Tethering Advisors are responsible for:

- Attending training on the proper use and methods for conducting tool tethering
- Ensuring tools are tethered based on the tool tether manufacturer’s recommendations
- Inspecting tools to confirm required tethering materials and methods are used
- Coaching others and assessing and monitoring the performance of controls

2.8 Training

The Training department is responsible for:

- Providing awareness training on dropped object controls and their use
- Developing and maintaining the required courses related to elevated work

- Maintaining records for personnel who successfully complete the training module(s)

3.0 RISK ASSESSEMENT

An ES&H risk assessment must be performed during the initial phase of the project, and subsequently updated during the development phase and throughout the contract lifecycle. The risk assessment process is used to identify risks and mitigate them through alternative analysis and strategic use of controls (see UPF-CP-105, *Risk Assessment and Objectives*). It must consider work tasks, site conditions, and employee behavior.

The risk assessment on dropped objects must be conducted with emphasis on handling of construction materials, hand tools, power tools, scaffolding parts, and rigging materials and components. It also must consider the potential for wind-blown materials to fall from height. Responsibilities for implementing and monitoring controls must be defined.

JHAs and FLHAs must be completed prior to work where there is risk of dropped objects, and a hierarchy of controls must be considered (see Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard Analysis Program [FLHA/JHA] Process*). The ES&H Risk Register should be consulted when preparing a JHA and kept updated based on field observations and incidents.

The risk assessment process should identify the potential for dropped objects. Such risks must be described and documented during planning, pre-task briefings, and toolbox talks (e.g., environmental factors, housekeeping, removal or replacement of equipment at height, temporary equipment, concurrent operations, handling of tools and equipment at height).

Before starting any elevated work where the work area is six feet or more above ground or floor level, the Supervisor (e.g., Foreman or General Foreman) shall evaluate the elevated work area to ensure housekeeping is acceptable and that appropriate Dropped Object Prevention controls are implemented. The Supervisor shall complete and sign UCN-23553, and the Superintendent shall review and sign the UCN-23553. Any deficiencies observed during final approval shall be corrected prior to beginning any elevated work activities.

The Supervisor shall ensure the elevated work area is free of potential dropped objects upon task completion or before the end of each shift.

Signed UCN-23553 forms must be maintained with the UCN-23552, *Field Level Hazard Assessment Card*, or the elevated work activity and submitted to the UPF Document Management Center (DMC) for retention. The UCN-23553 should include controls around three main areas: elevation controls at the work area; tools and equipment controls (i.e., tethering); and ground controls.

3.1 Risk Minimization

The Hierarchy of Controls must be applied whenever possible to first eliminate the handling of tools, materials, and equipment at height. An evaluation must be made to determine if activities such as sorting, segregating, arranging, cutting, connecting,

installing, or attaching material can be conducted at ground level, including modularization of structures.

Non-essential tools, materials, and equipment must not be staged on elevated work surfaces such as temporary platforms, mobile elevating work platforms (MEWP), or scaffold decks. Housekeeping must be maintained to the highest degree to prevent dropped or falling objects.

4.0 WORK PLANNING AND CONTROLS

Safe work practices can include administrative and engineering controls. Training, work site organization, and employee behavior are emphasized in the following sections.

4.1 General Controls

Potential hazards associated with elevated work surfaces consisting of grating or solid flooring include smaller materials falling through the grating or floor penetrations; unsecured grating or flooring that falls when shifted (e.g., displaced by employee contact, wind uplift, equipment); objects falling from an exposed edge; objects falling through or deflecting over/through handrail; unsecured tarps/plywood; and open design penetrations (e.g., pipes, drains, cable trays, utility raceways).

Holes or openings in walking or working surfaces (including wall surfaces and grating removal) must be protected by a sufficiently rated cover and secured from displacement to eliminate the potential for items to pass through the opening (see UPF-MANUAL-SH-A001, *UPF Elevated Work Manual*).

When standard guardrail systems are used on elevated work surfaces to prevent dropped objects, they must be properly rated and constructed with top-rail, mid-rail, and toe-board. They must be equipped with screens, mesh netting, or equivalent material extending from the walking-working surface to the top rail and along the entire opening between top-rail supports (see UPF-CP-214, *Barricades and Signs*).

Grating must be covered with tarpaulins, netting, plywood, or other suitable material to prevent falling objects in work areas where the potential exists for small objects, such as nuts and bolts, to slip through. Activities involving grating removal must comply with fall protection requirements (see UPF-MANUAL-SH-A001) and the PL-SH-801768-A007, *Bechtel National Inc. Uranium Processing Facility Environmental, Safety, and Health Plan*.

Additional work practices to minimize dropped object hazards associated with grating and solid flooring include:

- Verifying flooring is secure and anchored
- Using plywood (managing weight and fire considerations) or fire blanket covering
- Covering floor and wall penetrations, gaps, holes, and openings with netting, matting, tarpaulins, or other material
- Using tool lanyards for all tools not secured in tool pouch or project-approved container with secured lid or cover container
- Installing netting or other materials that could catch or block a dropped object underneath a platform or around a work area

- Using tarpaulins to secure materials to the work surface
- Placing matting underneath tools and equipment when working on grating, scaffolding, or other areas where gaps are present
- Ensuring tools, materials, scrap, garbage, or any other items are not stored or placed on ledges, in beam webs, in pipes, in scaffold tubes, etc. as these items may be inadvertently dislodged by personnel passing through the area or by wind or vibration
- Storing welding rod stubs in approved containers
- Not storing tools, equipment, and materials on top of gang boxes, cabinets, etc.
- Not storing tools and materials on large equipment (e.g., cranes or other mobile equipment or vehicles), except in manufacturer provided storage locations on the equipment and only if the tool or material is specific to the equipment
- Providing drop-zone barricading (restricted access or exclusion zone) beneath overhead work

The working area should provide room for tools and the components that will be handled or fabricated. If small work pieces must be assembled, a drop cloth, tool bag, or tarpaulin must be used so that pieces will not fall between scaffolding boards, planks, or grating.

Where construction materials (e.g., lumber, grating, structural steel, piping, scaffold, and associated materials) must be brought to height for staging or handling prior to installation, establish a dedicated work area of sufficient size that is free of floor penetrations and with protected edges (e.g., guardrails with toe boards and netting, or solid barriers) to prevent personnel, tools, equipment, and materials from falling from height. All stacked materials must be stable, secured, self-supporting, and not above the handrail.

4.2 Tool and Equipment Tether Systems

All hand and power tools used at height must be tethered with a properly rated tool tether system or other approved means, where a dropped object potential exists. Such tethers must be properly engineered and rated for their weight to prevent them from falling if released. Tool tethers must be secured to an anchorage capable of withstanding the weight attached to it. This applies to in-use tools and tools left unattended where a fall from height is possible.

Tool tethering is a three-part system consisting of the:1) tether point; 2) tool lanyard; and 3) anchor point. Collectively, tool tether systems can prevent tools from falling from height. Attention should be given to anchorage points, in order of preference: 1) anchored to the structure; 2) anchored to the waist; and 3) anchored to the wrist.

Some tools come equipped from the manufacturer with an attachment point (i.e., tether point) that will accept a tool lanyard; however, in many instances, the end user is responsible for attaching a tether point to the tool. Where tether points are to be installed on tools, they must be rated for purpose and installed pursuant to manufacturer’s instructions by trained personnel (i.e., tethering advisor). Installation of tether points on tools should be conducted before the tool is brought to height.

Tool lanyards connect to the tether point on a tool and to an anchor point; they come in a variety of configurations (e.g., cable or webbing, bungee, coiled or retractable,

conductive, non-conductive, etc.). Tool lanyards must be rated for the tool to be secured and compatible with both the tether point and anchor point. It is recommended that each tool be issued to the user with the tether point and associated tool lanyard attached prior to the tool being brought to height.

In addition, tool tethers should be kept as short as practicable, but still allow the tool to be used safely. Where a lanyard is to be shared among tools (e.g., because of limited lanyard quantities), the user should establish a safe area at height (e.g., drop cloth, fire blanket, netting, plywood, tool box, tool bag or bucket), so that the lanyard can be detached from one tool and attached to another without either tool falling from height. When transferring a tethered tool from one employee to another, “100% tie off” must be used, where practicable.

An anchor point is the beginning point (human body or structure) at which a lanyard is attached and is relied upon to prevent a tool from dropping. Anchor points used to connect tool lanyards may consist of, but are not limited to, wrist, tool belt, and harness attachments for lighter tools. Heavier tools (e.g., a magnetic drill) should be attached to a fixed anchor point capable of withstanding the impacting force of the dropped object (e.g., structural steel beam) and not anchored to a person.

Tool tether systems should meet the design criteria specified in American National Standards Institute (ANSI) International Safety Equipment Association (ISEA) 121 Standard, *American National Standard for Dropped Object Prevention Solutions*, or other recognized standard.

Tool tether system components must not be used as part of a personnel fall protection system. Ideally, tool tether system components will be marked, labeled, or otherwise made easily distinguishable from fall protection system components.

Users of tool tether systems shall receive training on the system and shall be responsible for inspection of all system components prior to each use. Any component which is damaged or defective shall be removed from service and stored in controlled area managed by the ES&H department or appointed tethering advisor, until destroyed or sent for repair by the manufacturer.

Tools that have removable attachments (e.g., ratchets with sockets) should have a positive-locking system to prevent dropped objects. Carabiners used for securing of portable tools and equipment must be designed to prevent accidental rollout.

Approved carrying pouches or engineered clips must be used while transferring tools and equipment (e.g., radios, cellular phone, gas detectors, hard hat).

4.3 Tool and Material Bags/Buckets

Where used for raising, lowering, hand carrying, and storing loose tools and materials, properly rated tool and material bags, buckets, or pouches must be used. Standard buckets, pails, or other containers without a rated lifting point must not be used in a hand-hoisting system.

Tool and material bags and buckets used to bring objects to height should be constructed of heavy-duty vinyl, canvas, or other substantial material. They should contain a marking identifying the manufacturer’s load rating, have a closure mechanism to prevent objects from falling out if the bag or bucket is tipped over or

otherwise inverted, and have a carabiner and hoisting strap for use with lifting devices (e.g., gin wheel).

The use of a rope tied with a knot to raise and lower material bags/buckets should be avoided. Knots, bends, and hitches reduce rope strength considerably and, if not tied properly, can result in the knot slipping and the lifted item dropping. However, if this is the only alternative, the rope must be secured by a qualified rigger or someone that has been trained by a qualified person in proper knot securement. The Project should procure ropes with engineered eyelets to attach lifting bags/buckets, thereby eliminating the risk of a knot failing.

When lifting at elevation any equipment, tools, materials, etc., that can be broken down into separate pieces by latching or snapping devices (e.g., fume extractors, shop vacuums), the use of project-approved lifting bags properly rated for the weight shall be required.

4.4 Manually Carrying Tools and Materials

Manually carrying tools and materials poses several hazards including materials dropping; materials coming out of pockets, pouches, bags, belts, and buckets while climbing ladders or staircases; material getting blown from wind causing a loss of grip or balance; and ladder cages catching loose items causing them to fall.

Work practices to minimize the hazard of manually carrying tools and materials include:

- Avoiding carrying tools and materials by hand when ascending and descending ladders and staircases, instead using a tool belt, pouch, rated bag, or equivalent item that can be attached to the person and allows both hands to be free
- Using tool-tether systems to secure tools to tool belts or bags so, if they tip, the tools will not fall from height; conversely, tool belts or bags may be equipped with a closure that seals tools within should the bag tip
- Establishing dedicated hoisting stations (e.g., gin wheels) to bring materials to height in a controlled manner
- Using cranes and material-lift baskets or skip bins to transfer tools, materials, and equipment to elevated work locations

Manual handling of tools and materials without dropped-object controls requires a firm manual grip (positive control) to be maintained on the tool or material to prevent it from becoming a dropped object. This includes:

- Use of hand and power tools
- Installation, modification, and dismantling activities
- Carrying tools and material from one location to another at height
- Transferring tools and materials from one person to another

Positive control methods require barricading underneath the work area (see UPF-CP-214), and a “Grip-Twist-Confirm” (or similar) practice used while transferring tools and materials from one person to another.

4.5 Wind Load Effects

Windy conditions can increase the risk of debris blowing, stationary items (e.g., uncontained bolts) rolling off a work platform, and uncontained refuse rolling or blowing from height. Wind loads may dislodge unsecured objects from platforms and structures and cause unsecured objects to be blown from personnel working at height (e.g., a hard hat). Materials on unsecured tarpaulins, or plywood lifting in the wind, may become airborne and thus dropped objects, as can scaffold or structures that fail because of wind loading.

When working at height, material that could be dislodged or blown from a stack under windy conditions must be removed, tied down, or otherwise restrained. If tarpaulins are used to secure or protect the material, they should be fastened to independent anchorage points, not to the stack itself. Timely removal of excess or unusable materials, and minimizing material stored at height, must be part of work planning and performance.

Work practices to minimize effects from wind load may include:

- Implementing continuous housekeeping practices for timely removal or securing of loose items, including thorough cleanup of work areas, waste removal daily, and proper containment of refuse and supplies
- Not storing tools, materials, or equipment on tarps that may be subjected to wind uplift
- Securing tarps to the platform to prevent uplift and/or dislodging
- Developing a high wind policy

4.6 Temporary Work Platforms

All temporary elevated working surfaces must be constructed with a complete guardrail system equipped with toe-boards and debris netting applied from the work surface to the top rail where feasible. The primary function of the debris netting is to prevent loose items from being dropped, kicked, or blown from the work surface to a lower elevation.

Debris netting must be securely fastened, maintained, and repaired when warranted. Daily routine inspections of the netting must be made by personnel accessing the elevated work surface.

Work shall not be performed from an elevated surface until after debris netting has been verified to be securely fastened with no gaps as indicated by signatures on UCN-23553.

Temporary work platforms must be constructed in a manner to eliminate gaps and holes where tools or materials could fall through. Additional control measures must be implemented when working beyond the guardrail parameters, such as from scaffolds and other temporary work platforms. This includes use of barricaded areas underneath the work being performed at height (see UPF-CP-214).

4.6.1 Scaffold Erection, Use, and Dismantlement

Potential hazards associated with scaffolding include unsecured scaffold flooring (e.g., planks), objects falling through scaffold flooring, materials falling outside of an

exposed edge, materials falling when being passed between workers while building, modified or dismantled scaffolding, tools and materials left in scaffold tubes and on planks, improperly built scaffolding, and tools or materials dropped as work is being performed on scaffolding (see Y17-95-64-831, *UPF Scaffold Control and Management*).

Work practices to minimize dropped-object hazards associated with scaffolding include:

- Ensuring scaffolds are inspected and tagged by a scaffold competent person
- Following scaffold tag requirements
- Verifying scaffold flooring is secure and has no gaps
- Verifying standard toe-boards are in place and properly secured
- Installing netting or other material that would catch or block a dropped object, by covering platform sides or underneath the platform
- Using tool lanyards for all tools (including cameras, phones, etc.) that are not secured in a tool pouch or container
- Minimizing the need for scaffold builders at lower levels when possible or, at minimum, planning the location and movement of scaffold builders at lower levels so they are not present directly beneath materials being handled
- Installing barricades or covered walkways to protect others from dropped objects
- Using mechanical lifting of scaffolding materials instead of manual handling, where possible
- Using positive transfer control (e.g., grip-twist-confirm or similar practice) when manually transferring scaffold tools and materials from one person to another
- Inspecting scaffolding for tools, materials, and debris before dismantling or modifying

4.7 Mobile Elevating Work Platforms

Potential dropped-object hazards associated with MEWPs (see UPF-MANUAL-SH-A001) include materials falling through the platform floor, materials falling from the edge, materials hit by the basket and being dislodged, tools and other materials dropping as work is performed, and parts of the MEWP coming loose and becoming a dropped object.

Work shall not be performed from an elevated surface until after debris netting has been verified to be securely fastened with no gaps as indicated by signatures on UCN-23553.

Work practices to minimize dropped-object hazards when using MEWPs include:

- Operators only using MEWPs for which they are authorized, trained, and have familiarity
- Installing mesh netting, or other equivalent materials around work platforms (verifying that this does not prevent safe exit, impact wind load, or is contrary to the manufacturers' recommendation)
- Establishing a system of barricading or ground spotter(s) to secure the area around the chassis and MEWP platform

- Ensuring operator knowledge of the dimensions of the platform and assuring adequate clearance when moving under any overhead obstruction or when penetrating the façade of structural steel, pipe racks, etc.
- Securing the fire extinguisher to the guardrail at floor level with a substantial bracket or polyvinyl chloride (PVC) sleeve
- Storing loose tools and materials in a toolbox, material bag or equivalent container, equipped with a closed top, where possible
- Storing materials within the confines of the basket where possible (e.g., eliminating items protruding from the MEWP platform)
- Covering openings in the flooring
- Using tool lanyards attached to tool belts or material bags or buckets
- Inspecting the MEWP for loose bolts or materials prior to use

4.8 Cranes and Other Lifting Devices

Potential dropped-object hazards associated with cranes (see Y17-95-64-871, *UPF Construction Hoisting and Rigging Work Operations*) include bolts, other ancillary equipment coming loose and falling, equipment getting caught/hung-up or striking an object during lifting, lifting equipment failing during a lift, and debris and other materials left in or on the lifted material.

Work practices to minimize dropped-object hazards when using cranes include:

- Inspecting cranes and lifting equipment at regular intervals to detect damage, material fatigue, and loose components
- Verifying the lift path is free from obstructions
- Verifying the tagline will not get hung up on equipment or structures
- Verifying no loose materials are on the equipment or materials being lifted
- Establishing a system of barricading or ground spotter(s) to secure the area around the crane’s swing and work radius
- Properly using lifting baskets or rigging techniques to secure the load
- Preparing a lift plan that includes potential dropped objects and wind loading
- Verifying load attachment points are fully de-rigged prior to removing rigging (e.g., detaching spreader bars)

4.9 Rope and Gin/Well Wheel

Rope and gin/well wheel systems must be rated appropriately with a safe working load (SWL) posted. Consideration must be given to the weight of the load and the applied force necessary to safely raise and lower the load.

Small tools and materials must be placed in rated bags or buckets and raised or lowered with a rope. The rope may be lifted or lowered either manually or with a gin/well wheel, whichever is applicable. Large or heavy items should be placed in bags and lifted one at a time to prevent overloading the bag. If the large or heavy item is to be hoisted individually without a rated lift bag, a project qualified rigger must perform the lift in accordance with Y17-95-64-871. Barricaded exclusion zones must be established underneath the hoisting activity, and the user must not stand within the barricaded exclusion zone while the load is raised or lowered.

Hoist rope must be properly rated for the intended load and factored into the SWL for the gin/well wheel system. Hoist ropes must be inspected prior to use, and damaged ropes must be tagged and removed from service.

Connectors with appropriately fabricated eyelets with thimbles should be used in lieu of knots. Properly rated shackles must be the first choice for use as a connector. In the event carabiners are used, the carabiner must be a locking-type, properly rated for the intended load and used only for hoisting.

4.10 Housekeeping and Material Staging

Housekeeping requirements must be established in accordance with Y17-95-64-837, *UPF Housekeeping*. Non-essential tools and materials must not be staged or stored on elevated work platforms. Tools and materials must not be stored unsecured at height.

4.11 Drop Zone Management

Employees working at height must protect personnel below from falling objects by using controls such as hard barricades with toe-boards, debris netting, or erected overhead protection. Signage must be used to enhance awareness of the need to use and maintain controls because of personnel below.

4.11.1 Exclusion and Restricted Access Zones

The potential for dropped objects, and need to restrict or prevent access, must be determined through risk assessment for the work task or work area. Barricades with hazard and ownership signage must be erected around the drop zone and maintained (see UPF-CP-214). At minimum, the following zones must be applied:

- Restricted Access Zone – An area within which a dropped object potential has been recognized and entrants are limited to the personnel needed to perform work. Physical barricades and signage must identify the covered area and the specific risk of the zone (e.g., Danger – Dropped Objects, Restricted Access Zone, Authorized Personnel Only). An example of a restricted access zone may be scaffold erection or dismantlement where ground personnel have a need to access the area inside the restricted zone for management of scaffold materials
- Exclusion Zone – An area within which a dropped object potential has been recognized and personnel are not permitted to enter while the hazard is present or active. These zones are identified as no-entry zones, controlled to prevent unauthorized access. Exclusion zones must be distinguished from other barricading systems, including Restricted Access Zones, tagging, or signs. Tags or signs must state: “Safety Exclusion Zone, Danger Dropped Objects, Entry Prohibited” or equivalent

  An example of an exclusion zone may be structural steel erection where no ground personnel are required to be present on a lower level beneath overhead work.
- No personnel (including the barricade owner) are permitted to enter an exclusion zone while the hazard is present or active

- If the barricade owner needs to enter their exclusion zone, the hazard must be eliminated/controlled and at least one side of the barricade must be lowered to the working surface prior to entering
- Emergency entry into exclusion zones can only be gained by contacting the barricade owner or the responsible supervisor, so the hazard within the exclusion zone can be removed or controlled before entry

As a guide, the minimum radius for restricted access and exclusion zones at ground or lower level, where a straight fall exists, should be 2:1 (e.g., for every 2 feet [0.6 m] in vertical distance, the barricade is brought out 1 foot [0.3 m] in horizontal distance). Where a 2:1 ratio is impractical, the task must be assessed to determine the appropriate area of the drop zone and other mitigation methods (e.g., overhead safety watch per UPF-CP-227, *UPF Safety Watches*). Where there are intervening structures, the risk of objects deflecting off of those structures must be assessed and drop zones extended to cover the lower levels affected.

Field supervision and employees must communicate to coworkers and affected personnel the overhead hazards associated with their work tasks. Employees working below an overhead crew must inform that crew of their presence. Such hazards must be discussed and included in the FLHA and UCN-23553 for both crews.

4.11.2 Overhead Protection

Overhead protection must be used to protect employees at lower elevations who are using designated walkways where overhead work or hazards exist. Protective canopies over walkways, such as scaffold systems with decking can be used, but they must be erected by qualified personnel and capable of supporting the potential load impact. A debris net system is another option and must be of adequate strength and design, and installed appropriately, to support the potential load impact. Overhead protection includes pedestrian (public) walkways when they traverse through work areas where work is occurring above.

5.0 INSPECTIONS AND MONITORING

Formal assessments are accomplished on a predetermined scheduled in accordance with Y60-95-803, *UPF General Assessments*, and Y15-95-817, *UPF Management Assessments (MA) Program*. Informal assessments are performed utilizing Chekhov as described in DI-SH-801768-A006, *UPF Chekhov Field Observation Process*. The generated action items from the informal assessments are tracked and discussed with superintendents as part of the inspection process.

Craft-Based Leadership teams must include dropped object prevention and awareness in their field activities and assessment of workforce behaviors. ES&H Corporate and Global Business Unit (GBU) audits, and walkdowns by senior management, also will include assessment of controls, worksite conditions, and behaviors (see PL-SH-801768-A007). Opportunities for improvement and training must be identified and implemented.

6.0 INCIDENT REPORTING AND INVESTIGATION

Dropped objects must be reported and investigated in accordance with UPF-CP-108, *UPF Event Management and Investigation*. They must be recorded in the corporate ES&H data system. Incident data will be monitored by corporate ES&H and the GBU ES&H Manager for trends and corrective actions.

Projects/facilities must review their training and control measures, and appropriately adjust them, when an incident occurs.

6.1 Determining Potential Severity

The Dropped Objects Prevention Scheme (DROPS) Calculator (from dropsonline.org) provides a common benchmark for classifying the potential consequences of a dropped object by plotting the mass of a dropped object against the distance it falls to determine its possible consequences. It is endorsed by the DROPS workgroup (an industry collaborative organization).

Where the DROPS calculator is used to estimate potential severity for dropped objects, a calculated consequence of Major or Fatality typically corresponds with a Class 3 (Major) incident (see UPF-CP-108), sometimes referred to as a High Potential (HiPo) Incident, unless the area of impact was protected by an exclusion zone and no personnel were within the exclusion zone at the time the object fell.

The DROPS Calculator and similar tools are guides, providing a general idea of the potential severity of a dropped object, not a precise prediction. A detailed risk assessment can deliver a more accurate evaluation of potential severity.

7.0 RECORDS

Records generated by this Document shall be maintained in accordance with Y15-95-800, *UPF Document Management*.

The following records generated are:

Record or Form Number	Record Title	System/ Location	Document Type
UCN-23553	*Dropped Object Prevention Checklist*	InfoWorks	DOPC

8.0 REFERENCES

8.1 Source References

10 CFR 851, *Worker Safety and Health Program*

48 CFR 970.5223-1, *Integration of environment, safety, and health into work planning and execution*

29 CFR 1926.95, *Criteria for personal protective equipment*

2HC-EOS0-00203-000, Bechtel Core Process 203, *Dropped Object Prevention*

2HC-EOS0-00212-000, Bechtel Core Process 212, *Fall Prevention and Protection*

2HC-EOS0-00215-000, Bechtel Core Process 215, *Floor and Wall Openings*

2HC-EOS0-00216-000, Bechtel Core Process 216, *Roofing Works*

2HC-EOS0-00224-000, Bechtel Core Process 224, *Mobile Elevating Work Platforms*

ANSI/Scaffold & Access Security Association (SAIA) A92.5-2006, *Boom-Supported Elevating Work Platforms*

ANSI/SAIA A92.6-2006, *Self-Propelled Elevating Work Platforms*

ANSI/ISEA 121 Standard, *American National Standard for Dropped Object Prevention Solutions*

Bechtel Standard Work Process Procedure (SWPP) 4MP-T81-02102, *Housekeeping*

UPF-CP-200, *UPF General Safe Work Practices*

UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*

UPF-POLICY-CM-002*, UPF Weather Protocols*

8.2 Interfacing References

DI-SH-801768-A006, *UPF Chekhov Field Observation Process*

PL-SH-801768-A007, *Bechtel National Inc. Uranium Processing Facility Environmental, Safety, and Health Plan*

UPF-CP-105*, Risk Assessment and Objectives* (pending)

UPF-CP-108*, UPF Event Management and Investigation*

UPF-CP-214*, Barricades and Signs*

UPF-CP-227*, UPF Safety Watches*

UPF-MANUAL-SH-A001*, UPF Elevated Work Manual*

Y15-95-800, *UPF Document Management*

Y15-95-817, *UPF Management Assessments (MA) Program*

Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard Analysis Program (FLHA/JHA) Process*

Y17-95-64-837, *UPF Housekeeping*

Y17-95-64-831*, UPF Scaffold Control and Management*

Y17-95-64-871*, UPF Construction Hoisting and Rigging Work Operations*

Y60-95-803*, UPF General Assessments*

8.3 Forms

UCN-23552, *Field Level Hazard Assessment Card*

UCN-23553, *Dropped Object Prevention Checklist*

APPENDIX A
Acronyms and Definitions

Acronyms

ANSI	American National Standards Institute
DROPS	Dropped Objects Prevention Scheme
FLHA	Field Level Hazard Assessment
GBU	Global Business Unit
HiPo	High Potential
ISEA	International Safety Equipment Association
JHA	Job Hazard Analysis
MEWP	Mobile Elevating Work Platforms
SAIA	Scaffold & Access Security Association
SWL	Safe Working Load
UPF	Uranium Processing Facility

Definitions

Dropped Object	Any item with the potential to cause injury, death, or equipment or environmental damage that falls downward or over from its previous position. Dropped objects may be attributed to applied forces (e.g., from the impact of equipment, machinery, or other moving items, severe weather, or manual handling) or to gravitational or natural forces (e.g., without an applied force such as a failure of fixings).
DROPS Calculator	The DROPS (dropped objects prevention scheme) Calculator provides a common benchmark in the classification of the potential consequences of a Dropped Object by plotting the mass of a dropped object against the distance it falls to determine its possible consequences. It is endorsed by the DROPS workgroup (an industry collaborative organization).
High Potential (HiPo) Incident	A Class 3 (Major) near miss or other incident (see UPF-CP-108) that has a strong potential to cause a fatality, serious injury, major equipment or asset damage, severe environmental harm, or significant operational loss.
Tethering Advisor	An employee trained in the manufacturer's requirements for a tool tether and having demonstrated competency in tethering methods, helping to ensure proper tethering when tools are used at height.