THE NATION'S URANIUM PROCESSING FACILITY

UPF JOB HAZARD ANALYSIS

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
Startup Operations	Operating System	Equipment Under Test	· Operating System applies to Startup Scoped Systems (SSS) and areas where testing is complete and in an operational state
			· The SU SS utilizes the corresponding system Startup Operating Instruction (SOI) to operate the system
			· Should an Event occur outside of the SOI direction, the SU SS ensures the system is in a safe state
			Notify SU Lead Shift Supervisor or designee for further direction
Startup Operations	System Under Test	Equipment Under Test	· This applies to all SSS/areas that are actively under test and require the system to be monitored as directed by the Test Engineer
			· In the event of an Emergency condition, the SU SS ensures the system in a safe state and notify the SU Lead Shift Supervisor
			· The SU SS monitors the system as directed by the Test Engineer with required actions recorded on UCN-23317
			If the monitored condition deviates from the Startup Test Engineer's (STE) direction, notify the STE for direction
Startup Operations	System Not Under Test	Abnormal Condition	· This applies to all systems/areas that have been turned over to SU but are not under test.
			All systems/areas owned by SU will be monitored. Any abnormal condition will be logged on UCN-23317
			· In the event of an abnormal condition, the SU SS ensures the system is in a safe state
			Notify the SU Lead Shift Supervisor.

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Activity	Sub-Activity	Hazard	Control
Startup Emergency Response	General	Emergency	· 4.1.1 Communications – Accurate and efficient communications are integral to a successful response. The phonetic alphabet shall be used for all communications. During Events, personnel make efforts to keep communications channels open and clear of unnecessary traffic. Frequent phone calls or radio transmissions requesting updates of the status of the Event should be avoided. Upon completion of Event response actions, review UPFCP- 108, UPF Event Management and Investigation, for additional guidance.
			· Event-specific Conditions - Use of this Procedure relies on additional information specific to, and at the time of, the Event or Emergency. During any Event, a specific approach may be necessary based on situational factors. Personnel managing the Event work to understand the situation, establish the strategy, execute the strategy, and (if necessary) revise the approach based on the situation.
			Assembly Areas -The Assembly Areas are designated for evacuated personnel. Each Assembly Area is identified by a post-mounted, orange dish-shaped sign with the assembly station number in black.
			Recovery/Reentry - This applies to all scenarios addressed in these Emergency response Events. The Recovery/Reentry for normal operations will be given by the SU SS through consultation with the Operations Center (OC), Environmental Safety and Health (ES&H), or the Y-12 National Security Complex (Y-12) Fire Department as required.
Startup Emergency Response	Fire Alarm System Activation	Fire	All fire Events shall be reported in accordance with UPF-CP-211, *Fire Prevention and Protection*. In the event of fire and/or a fire alarm system activation, the SU SS is primarily responsible for evacuating themselves and others safely from the area and performing notifications.
			The discoverer of the fire or fire alarm shall perform or direct the following immediate actions:
			Evacuate the area and ensure all personnel report to the Assembly Area.
			Notify the Y-12 OC by:
			· -Activating a fire alarm (pull box), if available
			· Calling Y-12 OC at (865) 574-7172 from a cell phone

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· Contacting the OC via Channel 1 from a Project radio
			· Calling 911 from a Y-12 landline
			Notify the SU Lead Shift Supervisor or designee.
			Establish control of the area, ensure access for Emergency Services and provide directions as necessary.
			Stage personnel at all entrances prohibiting entry into the building until the reentry order is given.
Startup Emergency Response	Electrical System Emergency	Electrical	All electrical Events shall be reported and investigated in accordance with UPFMANUAL- CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, using OT-SH-801768-A038, *UPF Electrical Hazard and Incident Investigation*, as a reference.
			In the event of electrical Emergency, the SU SS shall perform or direct the following immediate actions:
			Notify the Y-12 OC by:
			· Calling Y-12 OC at (865) 574-7172 from a cell phone
			· Contacting the OC via Channel 1 from a Project radio
			· Calling 911 from a Y-12 landline
			Ensure the Bechtel National, Inc. (BNI) Electrical safety Committee Chairman has been notified
			· Place the equipment in a safe condition and barricade the area.
			· Notify the SU Lead Shift Supervisor or designee.
Startup Emergency Response	Refrigerant Detection Alarm in Mechanical Electrical Building	Asphyxiation Emergency	In the event of refrigerant detection alarm in Mechanical Electrical Building (MEB), SU SS are primarily responsible for evacuating themselves and others safely from the area. The SU SS of the refrigerant detection alarm shall perform or direct the following immediate actions:
			· Evacuate the MEB South Mechanical room

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Activity	Sub-Activity	Hazard	Control
			· Notify the Y-12 OC by:
			o Calling Y-12 OC at (865) 574-7172 from a cell phone
			o Contacting the OC via Channel 1 from a Project radio
			o Calling 911 from a Y-12 landline
			· Ensure personnel remain out of the area, staging personnel at doors and top of west stairwell prohibiting entry to the south mechanical room until the reentry order is give
			· Notify the SU Lead Shift Supervisor SU to sweep the south mechanical room with a Freon detector
			· Notify Project Startup Manager (PSUM) for direction (Standing Order) in accordance with UPF-CP-108
Startup Emergency Response	Loss of Utilities	Electrical	In the event of Loss of Utilities (Loss of Power of Medium Voltage Power [MVP], Low Voltage Power [LVP], or Direct Current Power [DCP]), the SU SS shall perform or direct the following immediate actions:
			· Notify the Y-12 OC by:
			o Calling OC at (865) 574-7172 from a cell phone
			o Contacting the OC via Channel 1 from a Project radio
			o Calling 911 from a Y-12 landline
			· Notify the responsible STE (System Owner)
			· Notify the SU Lead Shift Supervisor or designee
			· Provide input on potential cause of loss and attempt to restore as directed by system owner

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Activity	**Sub-Activity**	**Hazard**	**Control**
Startup Emergency Response	Loss of Heating, Ventilation, and Air Conditioning	Equipment Deficiency	In the event of loss of Heating, Ventilation, and Air Conditioning (HVAC), SU SS is primarily responsible for notifying the system owner. The discoverer of the loss of HVAC shall perform or direct the following immediate actions:
			· Notify the responsible STE (System Owner)
			· Notify the SU Lead Shift Supervisor or designee
			· Provide input on potential cause of loss and attempt to restore as directed by system owner
			· If necessary, set up temporary units to maintain climate controls
Startup Emergency Response	Loss of Potable Water	Equipment Deficiency	In the event of Loss of Potable Water (SW), the SU SS shall perform or direct the following immediate actions: Potable Water feeds the fire water systems on the UPF Project site.
			· Notify the Y-12 OC by:
			o Calling OC at (865) 574-7172 from a cell phone
			o Contacting the OC via Channel 1 from a Project radio
			o Calling 911 from a Y-12 landline
			· Notify the SU Lead Shift Supervisor or designee
			· Notify the responsible STE (System Owner)
			· Suspend all hot work activities
			· Notify Fire Protection Engineer
Startup Operations	Emergency Eye Wash and Shower	General Work Area and Task	· Work must be performed in accordance with TPST-SU-801768-A033, *Emergency Eye Wash and Shower Equipment Testing*, and the corresponding Test Record
			· ENSURE areas under test are clean and free of loose debris and only Authorized Personnel are permitted in test areas

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Activity	Sub-Activity	Hazard	Control
	Equipment Testing	Specific Hazards	· Conduct a walkdown of systems (complete or partial) of equipment under initial test and ENSURE unauthorized personnel have been removed from test areas
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify all emergency egress routes and ensure they are clear of obstructions
			· Implement equipment Lockout/Tagout requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*.
			· Conduct a pre-test briefing incorporating FLHA/JHA, in accordance with Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard Analysis Program (FLHA/JHA) Process*, and discuss test performance and the expected results with involved personnel
			· Provide special attention for the protection of personnel and equipment. Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test, in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*.
			· ENSURE precautions (i.e., barriers, flagging, danger signs, horns, area restrictions) are used to protect personnel and equipment, in accordance with UPF-CP-214, *Barricades and Signs*.
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately and notify the PSUM and the Site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding OR a man-lift in accordance with jobsite procedures
			· Establish appropriate level of communication between Test and Operations personnel

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· Obtain Authorization from the required authorities (TL and System Owner) of testing prior to test activities
Startup Operations	Insulation Resistance (Megger) Testing	Electrical Hazard Release of Hazardous Energy	· Work must be performed in accordance with TPST-SU-801768-A001, *Insulation Resistance (Megger) Testing and corresponding Test Record*
		System Failure	· ENSURE areas under test are clean and free of loose debris and ensure only
			authorized personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial
			test where high energy will be introduced for the first time and ensure unauthorized
			personnel have been removed from test areas
			· Station personnel, as required, at designated locations to keep test areas free of
			unauthorized personnel
			· Identify emergency egress routes and ensure they are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements for this test activity in
			accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*.
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment, as appropriate
			· Conduct a pre-test briefing, including a discussion with involved personnel about test
			performance and expected results

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Activity	Sub-Activity	Hazard	Control
			· ENSURE precautions (e.g., barriers, flagging, danger signs, horns, area restrictions,
			etc.) are used to protect personnel and equipment
			· Monitor exposed cable ends continuously during insulation testing to prevent
			unauthorized personnel from contacting cables under test
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits are exceeded and may compromise the safety of personnel or equipment, THEN terminate testing immediately and notify the Startup Manager and UPF ES&H Representative, if applicable
			· Use temporary jumpers before making physical contact with the load and DISCHARGE the capacitors safely before beginning work on any capacitors or capacitive loads.
			· Disconnect devices that cannot tolerate test voltages
			· IF phase-to-phase tests are made in addition to phase-to-ground tests, THEN ensure no shunt-connected coils (e.g., potential transformers) are connected during the tests.
			· ENSURE equipment has been de-energized and made safe prior to starting insulation resistance testing
			· WHEN testing is complete, THEN ground the test specimen to DISCHARGE the accumulated charges to protect the test set as well as for test accuracy
			· ENSURE the ground time is at least four times the charge time at minimum
			· The ground time for sufficient DISCHARGE may require several hours
			· ENSURE ground connections required during performance of this test are solidly made to a clean connecting surface, free of dirt/debris, rust, or paint
			· Document and control all Temporary Test Changes which are required to support testing or operation. IF the change will remain in effect after the Test Instruction is completed, THEN convert to a Temporary Modification as required by Y15-95-100, *UPF Control of Temporary Modifications*

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· Obtain Authorization from the required authorities (TL and System Owner) of testing prior to conducting test activities
Startup Operations	AC/DC High-Potential Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A002, *AC/DC High-Potential Testing and corresponding Test Record*
		Release of Hazardous Energy	· Areas under testing must be clean and free of loose debris, and only authorized personnel must be permitted in test areas
		System Failure	· Systems (complete or partial) or equipment under initial testing, where high energy will be introduced for the first time, must be physically walked down to ENSURE unauthorized personnel are removed from test areas. As required, personnel may be stationed at designated locations to keep test areas free of unauthorized personnel
			· Emergency egress routes must be identified and verified clear of obstructions
			· Equipment Lockout/Tagout (LOTO) requirements in support of this activity must be implemented in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing. Discuss test performance and expected results with involved personnel. Personal Protective Equipment (PPE) identified in the FLHA/JHA is required to be worn during performance of this test
			· Special attention must be provided for protection of personnel and equipment
			· ENSURE precautions, such as barriers, flagging, danger signs, horns, area
			· Restrictions, etc., are used to protect personnel and equipment
			· Immediately terminate testing if any unusual noises, smoke, or anomalies occur, or if design limits that may compromise the safety of personnel or equipment are exceeded. Immediately notify the PSUM and the site ES&H Representative (if applicable) of such occurrences

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· Assure adequate access is provided to all required areas during the test. Where permanent access is not provided, scaffolding or a man-lift must be provided in accordance with jobsite procedures
			· Establish appropriate level of communication between Test personnel
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment as appropriate
			· Due to high voltage being used, appropriate safety precautions (in accordance with UPF-MANUAL-CM-001) shall be taken to avoid injury to personnel and damage to property
			· This test shall be performed only by personnel who are properly trained on the test
			equipment, safety rules, testing procedures, and interpretation of the results
			· Due to the potential of an arc while equipment is under testing, a Limited Approach Boundary (LAB) will be established for voltages as established by the requirements of UPF-MANUAL-CM-001 for working on or near energized equipment
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
Startup Operations	Driven Mechanical Equipment Testing	Potential Energy Release (Mechanical and Electrical)	· Work must be performed in accordance with TPST-SU-801768-A003, *Driven Mechanical Equipment Testing and corresponding Test Record*
			· ENSURE test areas are clean and free of loose debris
			· ENSURE only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel

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Activity	Sub-Activity	Hazard	Control
			· Identify emergency egress routes and ensure obstructions are cleared
			· Implement equipment Lockout/Tagout requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) –Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing and discuss test performance and expected results with all personnel involved
			· Provided special attention for protection of personnel and equipment. Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test
			· ENSURE precautions (i.e., barriers, flagging, danger signs, horns, area restrictions, etc.) are used to protect personnel and equipment
			· Provide special attention to areas parallel to rotating equipment shafts, including couplings, mechanical seals, and stuffing boxes
			NOTE: *These zones are especially susceptible to debris and or fluid being launched*
			tangentially from rotating equipment during a failure.
			· DO NOT stand adjacent to shaft seals (mechanical or packing) during startup
			· IF any unusual noises, smoke, or anomalies occur, OR if design limits that may compromise the safety of personnel or equipment are exceeded, THEN immediately terminate testing and notify the PSUM and the site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding or a man-lift in accordance with job site procedures
			· Establish appropriate level of communication between Test and Control System personnel
			· Properly secure loose-fitting clothing or long hair to prevent entanglement when working around moving equipment

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			NOTE: *Rotating parts, such as couplings, pulleys, external fans, and unused shaft extensions, should have permanent guards installed to prevent accidental contact with hands or clothing. This is particularly important where the parts have surface irregularities, such as keys, keyways, or setscrews.*
			· Close and secure inspection/access doors, as appropriate
			· Inspect internal pathways on all large, internally accessible equipment (e.g., fans, air heaters, or gas paths) for personnel, construction debris, obstructions, and scaffolding prior to initial start
			NOTE: *Obtain Authorization from required authorities (TL and System owner) of testing prior*
			to test activities
Startup Operations	Vessel Closure	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A018, Vessel Closure and the corresponding Test Records.
		Release of Hazardous Energy	· ENSURE the system/component punch list is free from open items that will affect the vessel after closure.
		System Failure	· ENSURE upstream and downstream units (if applicable) are notified of the intent to close the vessel.
			· ENSURE a unit review of possible impacts to operation of those units has been conducted.
			· Implement Project equipment Lockout/Tagout (LOTO) requirements in support of this activity.
			· Conduct a Pre-Job Briefing incorporating the FLHA/JHA in accordance with Y17-95-64-823, Field Level Hazard Assessment/Job Hazard Analysis Program (FLHA/JHA) Process.
			· Discuss plan of action and expected results with involved personnel.

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			· Provide special attention to protection of personnel and equipment. Personal Protective Equipment (PPE) identified in the FLHA/JHA is required at all times in accordance with UPF-CP-205, Personal Protective Equipment and Safe Work Apparel.
			· ENSURE barriers, flagging, danger signs, horns, area restrictions, etc., are in place in accordance with Project safety procedures and UPF-CP-214, Barricades and Signs.
			· IF any unusual noises or anomalies occur, OR IF unsafe situations arise that may compromise the safety of personnel or equipment associated with the vessel, THE halt work immediately, place equipment in a safe condition, and NOTIFY the PSUM and ES&H Representative (as applicable).
			· Establish an appropriate level of communication among vessel closure personnel.
			· ENSURE adequate access is provided to required areas during the evolution.
			· IF permanent access is not provided, THEN provide scaffolding or a manlift, in accordance with jobsite instructions.
			· Refer to the Project-specific confined space procedure (as appropriate).
			· In accordance with the MNL-SU-801768-A001, UPF Startup Test Program Manual, Temporary Test Changes (including any Forced Input/Output [I/O] points) are allowed during testing and recorded on a Test Record (as generated by Smart Completions), and IF the changes are to remain after testing is completed, THEN they must be converted to a Temporary Modification in accordance with Y15-95-100, UPF Control of Temporary Modifications.
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities.
Startup Operations	Line/Containment Break	Potential Energy Release	· Work must be performed in accordance with TPST-SU-801768-A004, *Line/Containment Break*, and corresponding Line/Containment Break Permit UCN-23467

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Activity	Sub-Activity	Hazard	Control
		Hazardous Material	o A. Areas under test must be clean and free of loose debris and only authorized personnel are permitted in test areas
			o B. Equipment isolation/LOTO requirements in support of this activity must be implemented in accordance with Y17-95-64-801
			· Conduct a pre-job brief incorporating FLHA/JHA (see Y17-95-64-823)
			· Discuss work execution and expected results with involved personnel
			· Personal Protection Equipment (PPE) (refer to UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*) identified in the FLHA/JHA is required to be worn during performance of testing, as appropriate
			o C. Special attention must be provided for protection of personnel and equipment. Ensure precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment
			o D. Ensure adequate access is provided to all required areas during the test
			· Where permanent access is not provided, scaffolding or a manlift must be provided in accordance with job site procedures
			o E. Establish an appropriate level of communication between test and control room personnel
Startup Operations	Scheme Checking	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A005, *Scheme Checking and corresponding Test Record*
		Release of Hazardous Energy	· Ensure test areas are clean and free of loose debris
		System Failure	· Ensure ONLY Authorized Personnel are permitted in test areas

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			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time to Ensure unauthorized personnel have been removed from the test areas
			· Station personnel, as required, at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and Ensure they are clear of obstructions
			· Implement any equipment Lockout/Tagout requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) -Lockout/Taggout (LOTO)*
			· Conduct a pre-test briefing incorporating FLHA/JHA in accordance with Y17-95-64-823, Field Level Hazard Assessment/Job Hazard Analysis Program (FLHAIJHA) Process, and discuss test performance and the expected results with involved personnel.
			Provide special attention for protection of personnel and equipment
			· Personal Protective Equipment is identified in the FLHA/JHA and is required during performance of this test, in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*
			· ENSURE precautions (e.g., barriers, flagging, danger signs, horns, area restrictions) are used to protect personnel and equipment, as necessary, in accordance with UPF-CP-214, Barricades and Signs
			· IF any unusual noises, smoke, or anomalies occur, OR if design limits that may
			compromise the safety of personnel or equipment are exceeded, THEN terminate
			testing immediately and notify the PSUM and the site ES&H Representative (if
			applicable)
			· ENSURE adequate access is provided to all required areas during the test.

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			• Provide scaffolding or a manlift where permanent access is not provided, in
			accordance with job site procedures
			· Establish appropriate level of communication between Test and System Control
			personnel
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility*
			Construction Electrical Safety Manual, for working on or near energized equipment, as appropriate
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
Startup Operations	Motor Run Testing	Potential Energy Release (Mechanical and Electrical)	· Work must be performed in accordance with TPST-SU-801768-A006, *Motor Run Testing and corresponding Test Record*
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits are exceeded that may compromise the personnel or equipment, THEN terminate testing immediately and notify the PSUM and the Project ES&H Representative (if applicable)
			· ENSURE areas under test are clean and free of loose debris
			· ENSURE only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time and ENSURE unauthorized personnel are removed from test areas
			· Personnel may be stationed at designated locations, as required, to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE they are clear for use

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Implement all equipment lockout/tagout (LOTO) requirements that support this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing incorporating Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard Analysis Program (STAART/JHA) Process*, with assistance from the ES&H Representative
			· Discuss test performance and expected results with involved personnel
			· Provide special attention to protection of personnel and equipment
			· Personal Protective Equipment identified in the FLHA/JHA is required during testing, in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*
			· ENSURE precautions such as barriers, flagging, danger signs, horns, and area restrictions are used to protect personnel and equipment
			· Give special attention to areas near and parallel to rotating equipment shafts. These areas present a risk of entanglement with the rotating parts during operation and are especially susceptible to debris launched tangentially from rotating equipment during a failure
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding or a manlift, in accordance with Project procedures
			· Establish appropriate level of communication between Test and Control System personnel
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment, as appropriate
			· ENSURE loose-fitting clothing or long hair has been properly secured to prevent entanglement when working around moving equipment

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· ENSURE rotating parts, such as couplings, pulleys, external fans, and unused shaft extensions, have permanent guards installed to prevent accidental contact with hands or clothing
			· This is particularly important where the parts have surface irregularities such as keys, keyways, or setscrews
			· Tie off loose parts of the coupling that cannot be removed for the motor uncoupled run-in OR affix in such a way that they SHALL not contact the motor shaft or any other rotating part
			· Obtain Authorization from the required authorities (TL and System Owner) of testing prior to conducting test activities
			· DO NOT operate any equipment unless its supervisory and protective devices are calibrated, tested, and functional. No protective devices SHALL be de-rated or bypassed unless temporary protection is provided
Startup Operations	Motor-Operated Valve and Damper Testing	Potential Energy Release (Mechanical and Electrical)	· Work must be performed in accordance with TPST-SU-801768-A007, *Motor-Operated Valve and Damper Testing and corresponding Test Record*
			· Ensure test areas are clean and free of loose debris
			· Ensure only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time and Ensure unauthorized personnel have been removed from test areas
			· Station personnel, as required, at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and Ensure they are clear of obstructions
			· Implement all equipment Lockout/Tagout requirements that support this activity accordance with Y17-95-64-801, UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Conduct a pre-test briefing, and discuss the test performance and expected results with all personnel involved
			· Provide special attention for the protection of personnel and equipment
			· Personal Protective Equipment identified in the FLHA/JHA is required during performance of the test
			· Ensure precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment
			· IF any unusual noises, smoke, or anomalies occur, OR if design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately and notify the PSUM and the site ES&H Representative (if applicable)
			· Ensure adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding or a manlift in accordance with job site procedures
			· Establish appropriate level of communication between Test personnel and Control System Engineer
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment as appropriate
			· Ensure loose-fitting clothing or long hair has been properly secured to prevent entanglement when working around moving equipment
			· De-energize the MOV control circuit before making electrical adjustments
			· Review drawings and understand external alternate power sources

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· MOVs may have alternating current (AC) or direct current (DC) potential present from other control, Integrated Control System (ICS), or annunciation circuits Obtain Authorization from the required authorities (TL and System Owner) of testing prior to conducting test activities.
Startup Operations	Battery and Charger Testing	Fire	· Work must be performed in accordance with TPST-SU-801768-A008, *Battery and Charger Testing and corresponding Test Record*
		Explosion	· Ensure test areas are clean and free of loose debris
		Chemical Exposure	· Ensure only authorized personnel are permitted in test areas
		Electrical Shock	· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time
		Spill	· Station personnel, as required, at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and Ensure they are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) –Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing, and discuss test performance and the expected results
			with involved personnel
			· Special attention SHALL be provided for the protection of personnel and equipment
			· Personal Protective Equipment (PPE) identified in the FLHA/JHA is required during performance of this test Review applicable Safety Data Sheets as part of the FLHA/JHA, and have copies available and on display at the test location
			· Ensure precautions such as barriers, flagging, danger signs, horns, and area restrictions are used to protect personnel and equipment

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· IF any unusual noises, smoke, or anomalies occur, OR IF the design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately, place equipment in a safe condition, and notify the Startup Manager and the site ES&H Representative
			· Ensure adequate access is provided to all required areas during the test
			· Provide temporary access, in accordance with jobsite procedures, where permanent access is not provided
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment, as appropriate
			· Establish appropriate level of communication between Test and Control System personnel
			· DO NOT operate any equipment unless its supervisory and protective devices are calibrated, tested, and functional
			· No protective devices shall be de-rated or bypassed unless temporary protection is provided
			· The UPF Project utilizes Valve-Regulated Lead Acid batteries (VRLA) and Standard Lead Acid batteries. Safety-related work practices shall be used to protect personnel who might be exposed to the electrical hazards involved with 24 Volts Direct Current (VDC) and 48 VDC Battery Systems. Batteries with solid electrolyte (such as most lithium batteries) or immobilized electrolyte (e.g., VRLA) present little or no electrolyte hazard
			· Before a battery system may be worked on, a risk assessment (e.g., JHA) shall be performed to identify any PPE requirements that would be required, the chemical, electric shock, and arc flash hazards and to assess the risks associated with the types of tasks to be performed. Live parts of equipment operating at less than 50 V need not be de-energized if there will be no increased exposure to electrical burns or explosion from electrical arcs

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Use facemasks and rubber aprons, gloves, and boots when handling, checking, filling, charging, or repairing Normal Lead Acid style batteries
			· ENSURE at least temporary shower and/or eyewash facilities have been made available and are in-service near the test area for acid-splash first aid for Normal Lead Acid batteries
			· Neutralize acid spills with an alkaline material (such as soda ash, lime, or sodium bicarbonate), and Ensure they are absorbed with an inert material (such as vermiculite, dry sand, or earth) and have then been placed in a chemical waste container for disposal
			· ENSURE proper amounts of neutralizing agent and absorbent agent are onsite and ready for use before starting operations
			· DO NOT USE combustible materials (such as sawdust) as absorbing agents
			· DO NOT flush materials to sewer
			· For small spillage (a few drops) and residue on individual battery cells: It may be more convenient to prepare a mixture of bicarbonate of soda and water (approximately 16 ounces:1 gal or 100 g:1 L) and have it available for cleanup
			· ENSURE, at minimum, a Class C fire extinguisher is available in the test area
			· Some battery manufacturers consider the CO2 propellant in some fire extinguishers to be a cause of thermal shock to otherwise undamaged cases
			· VERIFY suitability with vendor to prevent damage
			· ENSURE personnel are NOT wearing metallic objects, such as jewelry, while working around a battery (to prevent personal injury)
			· Use insulated tools while working around a battery
			· Neutralize static buildup before working on a battery by touching a grounded surface
			· Prohibit smoking and open flames to avoid chances of sparking/arcing in the immediate vicinity of the battery

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· Maintain adequate ventilation to prevent the buildup of explosive gases generated from the battery
			· Obtain Authorization from the required authorities (TL and System Owner) of testing prior to conducting test activities
Startup Operations	Current Transformer Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A009, *Current Transformer Testing and corresponding Test Record*
		Release of Hazardous Energy	· ENSURE test areas are clean and free of loose debris
		System Failure	· ENSURE only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time and ENSURE unauthorized personnel have been removed from test areas
			· Station personnel, as required, at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE they are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements in support of this in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) –Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing, and discuss test performance and the expected results with involved personnel
			· Provide special attention for protection of personnel and equipment
			· Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· ENSURE precautions such as barriers, flagging, danger signs, horns, and area restrictions are used to protect personnel and equipment
			· IF any unusual noises, smoke, or anomalies occur, OR IF the design limits (that may compromise the safety of personnel or equipment) are exceeded, THEN terminate testing immediately, place equipment in a safe condition, and notify the PSUM (and the Site ES&H Representative, if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· Provide scaffolding or a manlift, in accordance with jobsite procedures, where permanent access is not provided
			· Establish appropriate level of communication between Test and Control System personnel
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment, as appropriate
			· DE-ENERGIZE the switchgear or transformer and ENSURE it is safe prior to starting CT testing
			· When testing for CT knee point voltage, a step-up transformer may be required because the saturation point may not be reached using a secondary injection set alone, and these voltages can reach over 2,000 volts of alternating current Use correct test leads and connections to ENSURE personnel safety and barricade the test area to protect unauthorized personnel
			· ENSURE primary cables are capable of carrying the currents to be used before
			connecting to the test set
			· When testing for CT ratio, high currents will be used in some cases Obtain Authorization from the required authorities (TL and System owner) for testing prior to test activities.

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
Startup Operations	Voltage Transformer Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A010, *Voltage Transformer Testing and corresponding Test Record*
		Release of Hazardous Energy	· ENSURE test areas are clean and free of loose debris
		System Failure	· ENSURE only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) and equipment under initial test where high energy will be introduced for the first time
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE routes are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements that support this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) –Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing AND discuss test performance and expected results with all personnel involved
			· Provide special attention to the protection of personnel and equipment. Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test, in accordance with UPF-CP-205, Personal Protective Equipment and Safe Work Apparel
			· ENSURE precautions such as barriers, flagging, danger signs, horns, area restrictions, etc. are used to protect personnel and equipment in accordance with UPF-CP-214, *Barricades and Signs*

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment have been exceeded, THEN terminate testing immediately, place equipment in a safe condition and notify the PSUM and the site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding OR a man-lift, in accordance with jobsite procedures
			· Establish an appropriate level of communication between Test and Control System personnel
			· Follow requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment, as appropriate
			· De-energize the switchgear or transformer and ENSURE it has been made safe prior to starting VT testing
			o Obtain Authorization from required authorities (TL and System owner) of testing prior to test activities
Startup Operations	Medium Voltage Circuit Breaker Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A011, *Medium Voltage Circuit Breaker Testing and corresponding Test Record*
		Release of Hazardous Energy	· Ensure test areas are clean and free of loose debris
		System Failure	· Ensure only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of all systems (complete or partial) or equipment under initial test where high energy is introduced for the first time
			· Station personnel, as required, at designated locations to keep test areas free of unauthorized personnel

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Identify emergency egress routes and Ensure they are clear of obstructions
			· Implement equipment Lockout/Tagout requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) –Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing and discuss test performance and the expected results with all personnel involved
			· Provide special attention for protection of personnel and equipment
			· Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test
			· Ensure precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment, as necessary
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately, place equipment in a safe condition, and notify the PSUM and the site ES&H Representative (if applicable)
			· Provide adequate access to all required areas during the test
			· Establish appropriate level of communication between Test and Control System personnel
			· IF the breaker/contactor is to be energized during testing, THEN Ensure sufficient testing has been completed to support energizing the device
			· WHEN conducting tests with the breaker/contactor in the operating position, THEN Ensure the primary circuit is de-energized or the load is disconnected
			· Exercise extreme care when making adjustments, checking clearances, or performing other testing on charged breakers/contactors
			· WHEN testing is complete, DO NOT leave a breaker/contactor in an intermediate position in the cubicle

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· ENSURE the device is in either the DISCONNECTED, TEST, or CONNECTED position
			· Follow the requirements of UPF-MANUAL-CM-001, Uranium Processing Facility Construction Electrical Safety Manual, for working on or near energized equipment, as appropriate
			· Obtain Authorization from the required authorities (TL and System owner) of testing
			prior to test activities
Startup Operations	Protective and Auxiliary Relay Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A012, *Protective and Auxiliary Relay Testing and corresponding Test Record*
		Release of Hazardous Energy	· ENSURE test areas are clean and free of loose debris
		System Failure	· ENSURE only Authorized Personnel are permitted in test areas
			· Perform a walkdown of systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE routes are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing and discuss test performance and expected results with all personnel involved
			· Provide special attention for protection of personnel and equipment: Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· ENSURE precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment as necessary
			· IF any unusual noises, smoke, or anomalies occur, or IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN immediately terminate testing and notify the PSUM and the site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding or a man-lift in accordance with job site procedures
			· Establish appropriate level of communication between Test and Control System personnel
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment, as appropriate
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
Startup Operations	Power Transformers	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A015, *Power Transformers and the corresponding Test Records*
		Release of Hazardous Energy	· ENSURE areas under test are clean and free of debris
		System Failure	· ENSURE only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time
			· Station personnel at designated locations (as required) to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE routes are clear of obstructions

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Implement equipment Lockout/Tagout requirements in support of this activity in accordance Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing incorporating the FLHA/JHA process and discuss test performance and expected results with all personnel involved
			· Provide special attention for protection of personnel and equipment
			· Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test
			· ENSURE precautions (i.e., barriers, flagging, danger signs, horns, area restrictions, etc.) are used to protect personnel and equipment (as necessary), in accordance with the requirements of UPF-CP-214, *Barricades and Signs*
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately, place equipment in a safe condition, and notify the PSUM (and the site ES&H Representative, if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· Establish appropriate level of communication between Test personnel and Operations personnel
			· Follow requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment (as appropriate)
			· IF applicable, manipulate transformer de-energized (off-circuit) tap changers only with both the high and low sides of the transformer isolated, in accordance with Y17-95-64-801
			· IF applicable, padlock de-energized (off-circuit) tap changers in position and secure the keys prior to energization of the transformer
			· ENSURE tap changers and keys remain in such condition

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JHA NO.:	**JHA-00726**	**REV:**	**0**	**ISSUE DATE:**	**11/22/2023**
JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
Startup Operations	Miscellaneous Electrical Equipment	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A013, *Miscellaneous Electrical Equipment and corresponding Test Record*
		Release of Hazardous Energy	· ENSURE test areas are clean and free of loose debris
		System Failure	· ENSURE only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (partial or complete) or equipment under initial test where energy will be introduced for the first time and ENSURE unauthorized personnel have been removed from test areas
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE routes are clear of obstructions
			· Implement all equipment lockout/tagout requirements that support this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing and discuss test performance and expected results with all personnel involved
			· Provide special attention for protection of personnel and equipment. Personal protective equipment identified in the FLHA/JHA is required during performance of this test
			· ENSURE precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment as necessary, in accordance with UPF-CP-214, *Barricades and Signs*

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Activity	Sub-Activity	Hazard	Control
			· IF any unusual noises, smoke or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately, place equipment in a safe condition, and notify the Project Startup Manager and the site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding or a manlift in accordance with jobsite procedures
			· Establish appropriate level of communication between Test and Control System personnel
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, for working on or near energized equipment as appropriate
			· Obtain authorization from the required authorities (TL and System owner) of testing prior to test activities
			o DO NOT operate any equipment unless its supervisory and protective devices are calibrated, tested, and functional. No protective devices shall be de-rated or bypassed unless temporary protection is provided.
Startup Operations	Medium and Low Voltage Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A014, *Medium and Low Voltage Switchgear Testing and corresponding Test Record*
		Release of Hazardous Energy	· ENSURE test areas are clean and free of loose debris
		System Failure	· ENSURE only authorized personnel are permitted in test areas
			· Conduct a physical walkdown of systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time to ENSURE unauthorized personnel are removed from test areas

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE routes are clear of obstructions
			· Implement equipment Lockout/Tagout requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing and discuss test performance and expected results with all personnel involved
			· Provide special attention for protection of personnel and equipment
			NOTE: *Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test*
			· ENSURE precautions (i.e., barriers, flagging, danger signs, horns, and area restrictions are used to protect personnel and equipment)
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately, place equipment in a safe condition, and notify the PSUM and the site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding or a manlift in accordance with Project procedures
			· Establish appropriate level of communication between Test and Control System Personnel
			· Follow the requirements of UPF-MANUAL-CM-001, Uranium Processing Facility Construction Electrical Safety Manual, for working on or near energized equipment as appropriate

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
			· DO NOT energize any equipment unless its supervisory and protective devices are calibrated, tested, and functional
			· No protective devices shall be de-rated or bypassed unless temporary protection is provided
Startup Operations	Pressure Relieving and Pressure Controlling Device Inspection and Setting	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A016, Pressure Relieving and Pressure Controlling Device Inspection and Setting and the corresponding Test Records
		Release of Hazardous Energy	· Ensure areas undergoing testing are clean and free of loose debris and that only Authorized Personnel are permitted in test areas
		System Failure	· Conduct a walkdown of systems (complete or partial) or equipment under initial testing where high energy will be introduced for the first time and Ensure unauthorized personnel have been removed from test areas
			· Station personnel, as required, are present at designated locations to keep test areas free of unauthorized personnel
			· Identify all emergency egress routes and Ensure they are clear of obstructions
			· Implement equipment Lockout/Tagout requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing incorporating FLHA/JHA, in accordance with Y17-95-64-823, *Safety Task Analysis & Risk Reduction Talk/Job Hazard Analysis Program (FLHA/JHA) Process*, and discuss test performance and the expected results with involved personnel
			· Provide special attention for the protection of personnel and equipment: Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test, in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*

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Activity	Sub-Activity	Hazard	Control
			· Ensure precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment, in accordance with UPF-CP-214, *Barricades and Signs*
			· Pay special attention to areas parallel to rotating equipment shafts
			· WARNING Zones parallel to rotating equipment shafts are especially susceptible to debris launched tangentially from rotating equipment during a failure
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately and notify the PSUM and the Site ES&H Representative (if applicable)
			· Ensure adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding OR a man-lift in accordance with jobsite procedures
			· Establish appropriate level of communication between Test and Operations personnel
			NOTE: *With the exception of PSVs with welded inlet connections (e.g., on large boilers), PSVs and Pressure Relief Valves (PRVs) are generally set, documented, and sealed by the manufacturer before shipment to the jobsite.*
			· IF a valve seal is subsequently found broken or missing, the possibility exists that the set pressure may have been altered OR was never initially set therefore, the set pressure must be verified and the seals must be replaced
			· Verify, where possible, the set pressure and replace the seals prior to initial operation of the system
			· Take suitable steps, where pressure verification and seal replacement are not possible, to preclude the possibility of over-pressurizing the system
			· NOTE: Unless specifically required by a regulating authority, accumulation tests to verify safety valve capacity shall not be performed

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· IF an accumulation test is required, THEN the STE shall initiate the process to pursue alternatives to eliminate the need for such a test
			· IF the test cannot be avoided, a specific instruction for the test shall be prepared to address the high level of risk associated with this activity
			· In locations under the jurisdiction of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, PSVs, and PRVs must be assembled and tested/set by an entity that holds a current, valid ASME V OR UV stamp
			· Project Engineering is responsible for determining if there are also any additional local requirements
			NOTE: *In other locations, assembly and setting of PSVs/PRVs must comply with applicable local, state (provincial) and national regulations*
			NOTE: *Bechtel's Builder's Risk Insurance is typically based on adherence to the ASME Code requirements*
			· CAUTION On drum boilers equipped with superheaters, it is generally not permissible to set drum safety valves by actual lifting of the valve. Lifting of these valves while the boiler is firing may starve the superheater of cooling flow and cause overheating damage to superheater tubes
			· Because of their extremely high set pressures (typically 125% of normal operating pressure), PSVs on supercritical boilers should only be set with a hydraulic setting device
			o Obtain authorization from the required authorities (TL and System owner) of testing prior to test activities.
Startup Operations	Water Flow Balance Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A017, *Water Flow Balance Testing and the corresponding Test Records*
		Release of Hazardous Energy	· ENSURE test areas are clean and free of loose debris

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Activity	**Sub-Activity**	**Hazard**	**Control**
		System Failure	· ENSURE only authorized personnel are permitted in test areas
			· Conduct a walkdown of all systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time and ENSURE unauthorized personnel have been removed from test areas
			· Station personnel, as required at designated locations to keep test areas free of unauthorized personnel
			· Identify all emergency egress routes and ENSURE routes are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements that support this activity, in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing incorporating FLHA/JHA in accordance, with Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard Analysis Program (FLHA/JHA) Process*, and discuss test performance and the expected results with all personnel involved
			· Provide special attention to protection of personnel and equipment. Personal Protective Equipment (PPE) identified in the FLHA/JHA is required during performance of this activity in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*
			· ENSURE precautions such as barriers, flagging, danger signs, horns, area restrictions, etc. are used to protect personnel and equipment in accordance with UPF-CP-214, *Barricades and Signs*
			· WARNING Special attention should be paid to areas parallel to rotating equipment shafts. These zones are especially susceptible to debris launched tangentially from rotating equipment during a failure
			· IF any unusual noises, smoke or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately and notify the PSUM and the ES&H Representative (if applicable)

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Activity	Sub-Activity	Hazard	Control
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding OR a man-lift, in accordance with jobsite procedures
			· Establish an appropriate level of communication between Test and Control Room personnel
			· Secure all loose-fitting clothing and long hair to prevent entanglement when working around moving equipment (refer to UPF-CP-205, Paragraph 3.1, *PPE/Safe Work Apparel Criteria*, for additional guidance)
			· ENSURE rotating parts (i.e., such as couplings, pulleys, external fans, and unused shaft extensions) have permanent guards installed to prevent accidental contact with hands or clothing
			NOTE: *Permanent guards are particularly important where parts have surface irregularities such as keys, keyways or setscrews.*
			· Close and secure inspection/access doors, as appropriate
			· ENSURE leakage testing is complete and results are approved
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
			· WARNING DO NOT operate any equipment unless its supervisory and protective devices are calibrated, tested, and functional. No protective devices shall be de-rated or bypassed unless temporary protection is provided.
Startup Operations	Installation and Use of Blinds	Release of Hazardous Energy	· Work must be performed in accordance with TPST-SU-801768-A025, *Installation and Use of Blinds*, and the corresponding Mechanical Isolation and Blinding Log
		Strains, Sprains, Overexertion	· Ensure test areas are clean and free of loose debris

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Activity	Sub-Activity	Hazard	Control
		Lacerations, Abrasions, Contusions	· Ensure that only Authorized Personnel are permitted in test areas
		Slips, Trips, & Falls	· Exercise caution when installing or removing slip blinds
			· CAUTION Separating flanged connections, done improperly, can force loading on vessel nozzles or pumps and may cause equipment damage
			· Ensure the connections to be blinded are geometrically adequate to have a blind installed (i.e., the flanged connection can be easily separated, and the blind installed) without imposing undue loading on adjacent equipment (pumps, vessels, hangers, etc.)
			· Ensure the appropriate thickness steel is used to function against the calculated pressures
			· Slip blinds installed for hydro testing, or that experience severe transients, can deform, making removal difficult
			NOTE: *Barriers installed without proper consideration for the process conditions shall not be considered "blinds."*
			· WHEN disassembly of a joint is required, THEN Ensure there is no pressure in the line prior to loosening the bolts
			· CAUTION As an added precaution, the bolts shall be loosened starting with the bolts opposite of personnel
			· Under no circumstances will a pressure relief device ever be blinded, either upstream or downstream of the device unless there is redundant pressure relief provided in the design
			· In instances where relief lines must be isolated from (for example) flare systems,
			the relief device (pressure relief valve) shall be rotated 90 or 180 degrees, and the discharge line to flare blinded

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· The discharge of the pressure relief device shall be routed to a safe location (temporarily), and the equipment/system over-pressure protection shall remain in service at all times
			· Positive isolation is preferred when making a confined space entry
			· In some cases, single isolation can be used to allow removal of equipment for maintenance
			NOTE: *When positive isolation for pressure and temperature protection has been provided, downstream blinds for vapor may be installed for local protection at a reduced pressure.*
Startup Operations	Instrumentation and Loop Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A019, *ICS Field Testing and Commissioning and the corresponding Test Records*
		Release of Hazardous Energy	· CAUTION Prior to starting any initial calibration or setup activities, ENSURE the impact of said activities on operational systems is fully understood and agreed upon by the responsible STE or Test Lead, as applicable. Follow Y15-95-912, and TPST-SU-801768-A004, *Line/Containment Breaking*, at all times. Authorization is required during certain startup, testing, and commissioning activities in order to prevent unauthorized entry to energized systems
		System Failure	· CAUTION Immediately terminate testing if any unusual noises, smoke, or anomalies occur or if design limits that may compromise the safety of personnel or equipment are exceeded. Immediately after this, restore the equipment to a safe state and notify the UPF PSUM and the site ES&H representative (if applicable) of such occurrences
			· ENSURE areas being tested are clean and free from loose debris
			· ENSURE only authorized personnel are permitted in test areas
			· Initial testing performed on systems (complete or partial) or equipment where high energy will be introduced for the first time must be physically walked down to ENSURE unauthorized personnel are removed from test areas
			· ENSURE emergency egress routes are identified and cleared of obstructions

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Activity	**Sub-Activity**	**Hazard**	**Control**
			· ENSURE equipment Lockout/Tagout requirements in support of this activity are implemented in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· VERIFY the Safety-significant Components (SSCs) are ready for testing by performing a walkdown of Systems to be tested with this Instruction
			· Conduct a pre-test briefing incorporating FLHA/JHA in accordance with Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard (FLHA/JHA) Process*
			· Discuss test performance and expected results with involved personnel
			· Special attention must be provided for protection of personnel and equipment
			· ENSURE precautions such as barriers, flagging, danger signs, horns, and area restrictions are used to protect personnel and equipment as necessary in accordance with the requirements of UPF-CP-214, *Barricades and Signs*.
			· ENSURE adequate access is provided to all required areas during the test. Where permanent access is not provided, scaffolding or a man-lift must be provided in accordance with job site procedures
			· Follow requirements found in UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*, when working on or near energized equipment (as appropriate)
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities.
Startup Operations		Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A020, *ICS Field Testing and Commissioning and the corresponding Test Records*

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Activity	Sub-Activity	Hazard	Control
	ICS Field Testing and Commissioning	Release of Hazardous Energy	· CAUTION Immediately terminate testing if any unusual noises, smoke, or anomalies occur or if design limits that may compromise the safety of personnel or equipment are exceeded. Immediately after this, restore the equipment to a safe state and notify the UPF PSUM and the site ES&H representative (if applicable) of such occurrences
		System Failure	· Subsections in this section may be performed in any order with the exception of Obtain Authorization Subsection, which SHALL be performed last
			· ENSURE test areas are clean and free of loose debris
			· ENSURE only authorized personnel are permitted in test areas
			· VERIFY the readiness of the Structures, Systems, and Components that are to be tested by performing a walkdown of Systems with this Test Instruction. Conduct a pre-job briefing incorporating FLHA/JHA in accordance with Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard (FLHA/JHA) Process*. Discuss test performance and expected results with involved personnel
			· ENSURE to station personnel, as required, at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and Ensure they are clear of obstructions
			· Implement equipment lockout/tagout (LOTO) requirements that support commissioning activities in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Provide special attention to protection of personnel and equipment personal protective equipment identified in the FLHA/JHA is required during performance of this test, in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*
			· Ensure precautions such as barriers, flagging, Danger signs, horns, and area restrictions are used to protect personnel and equipment, as necessary, in accordance with the requirements of UPF-CP-214, *Barricades and Signs*

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Activity	Sub-Activity	Hazard	Control
			· Ensure adequate access is provided to all required areas during the test
			· Establish clear communications between Field Test personnel and ICS personnel
			· Ensure the requirements of the UPF-MANUAL-CM-001, Uranium Processing Facility Construction Electrical Safety Manual, have been met for working on or near energized equipment (as appropriate)
			· BEFORE Applying Power to Any ICS Cabinet:
			o ENSURE ALL applicable Authority Having Jurisdiction (AHJ) and Nationally Recognized Testing Laboratory (NRTL) Inspections have been completed, and Startup has the Electrical Contractor Authority Having Jurisdiction (ECAHJ) concurrence for ENERGIZING PRIOR to Proceeding to ENERGIZING the Cabinets. At least 48 hours prior to ENERGIZING the ICS system in a given Facility, ENSURE a Notice of Energization Plan has been processed in accordance with Y15-95-915, *Notice of Energization (NOE)*
			o Post "Panel Energized" signs on the cabinet doors (front and back) and inform any affected personnel working in the cabinet to consult with their supervision as to when and under what conditions work may resume. Initial power-up activities require the presence of UPF Control Systems Engineering
			o ENSURE prior to performing any ICS testing that will manipulate devices in the Field, Ensure the process is in a condition that will support the evolution (VERIFY that any smart positioners are properly configured)
			o Document and control all Temporary Test Changes in the ICS configuration related to either software (e.g., forced points, logic modifications), or hardware (e.g., input/output [I/O] point location, network switch, engineering workstation), which are required to support testing or operation. IF the change will remain in effect after the Test Instruction is to be completed, THEN make permanent with an ECP and/or an Software Change Request (SCR) or convert to a Temporary Modification as required by Y15-95-100

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Activity	**Sub-Activity**	**Hazard**	**Control**
			o DO NOT operate any remote equipment unless its supervisory and protective devices have been calibrated and tested, and are functional
			o Grant access to ICS cabinets ONLY to authorized personnel in accordance with Y15- 95-912, *UPF Completion and Turnover, as applicable*
			o ICS cabinets are to remain locked when internal work is not required in accordance with Y19-95-210, UPF Selected Network Equipment Control. Cabinets SHALL NOT be used for storing tools or materials
			o WARNING To avoid potential eye injury, never look into a fiber-optic cable connected to an active circuit at the opposite end
			o Ensure the areas are physically blocked to prevent personnel entry where equipment interfaces with ICS systems, particularly robotic equipment designed to handle/perform operations on nuclear equipment, or equivalent
			o Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
			WARNING First-of-a-Kind (FOAK) equipment may be required to "operate" as part of the testing program and unintended operation or movement presents a personnel risk.
Startup Operations	Vibration Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A021, *Vibration Testing and the corresponding Test Records*
		Crushed By, Struck By, Caught Between	· ENSURE test areas are clean and free of loose debris
		Release of Hazardous Energy	· ENSURE only authorized personnel are permitted in test areas

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time and ENSURE unauthorized personnel have been removed from test areas
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE routes are clear of obstructions
			· Implement equipment lockout/tagout requirements that support this activity, in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing and discuss test performance and expected results with all personnel involved
			· Provide special attention to protection of personnel and equipment. Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test, in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*
			· ENSURE precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment, in accordance with UPF-CP-214, *Barricades and Signs*
			· IF any unusual noises, smoke or anomalies occur, OR IF design limits that may compromise the safety of personnel OR equipment have been exceeded, THEN terminate testing immediately and notify the PSUM and ES&H Representative (as applicable)
			· Where feasible, inspect internal pathways for personnel, construction debris, obstructions, and scaffolding on all large, internally accessible equipment (e.g., fans and blowers) prior to initial energization
			· WARNING Personnel SHALL NOT be stationed in a cooling tower cell with the fan in operation

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· ENSURE all loose-fitting clothing and/or long hair has been properly secured to prevent entanglement when working around rotating equipment
			· Obtain Authorization from required authorities (TL and System owner) of testing prior to test activities.
Startup Operations	Interlock Testing	Electrical Hazard	· Work must be performed in accordance with TPST-SU-801768-A022, *Interlock Testing and the corresponding Test Records*
		Crushed By, Struck By, Caught Between	· WARNING Areas under test must be clean and free of loose debris, and only Authorized Personnel are permitted in test areas
		Release of Hazardous Energy	· Implement all equipment Lockout/Tagout (LOTO) requirements that support this activity in accordance with Y17-95-64-801, *UPF Construction Phase System and Equipment Safety Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing and discuss test performance/and expected results with involved personnel
			NOTE: *Personal Protective Equipment identified in the FLHA/JHA is required during testing, in accordance with UPF-CP-205, Personal Protective Equipment and Safe Work Apparel. Special attention must be provided for protection of personnel and equipment.*
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding or a manlift in accordance with Project procedures
			· Establish clear communications between Field Test personnel and Control System Personnel
			· ENSURE Control System personnel are kept up-to-date regarding testing activities
			· Follow the requirements of UPF-MANUAL-CM-001, *Uranium Processing Facility Construction Electrical Safety Manual*

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· Obtain Authorization from the required authorities (TL and System owner) of testing prior to test activities
Startup Operations	HVAC Air Flow Balance Testing	Crushed By, Struck By, Caught Between	· Work must be performed in accordance with TPST-SU-801768-A023, *HVAC Air Flow Balance Testing and the corresponding Test Records*
		Release of Hazardous Energy	· ENSURE test areas are clean and free of loose debris
			· ENSURE only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of any systems (complete or partial) or equipment under initial test where high energy will be introduced for the first time
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and ENSURE routes are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) - Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing incorporating FLHA/JHA, AND discuss test performance and expected results with all personnel involved
			· Provide special attention for the protection of personnel and equipment
			NOTE: *Personal Protective Equipment (PPE) identified in the FLHA/JHA is required during performance of this test*
			· ENSURE precautions (i.e., barriers, flagging, danger signs, horns, area restrictions, etc.) are used to protect personnel and equipment in accordance with UPF-CP-214, Barricades and Signs

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· WARNING Special attention should be paid to areas parallel to rotating equipment shafts. These zones are especially susceptible to debris launched tangentially from rotating equipment during a failure
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately and notify the PSUM and the site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding, a ladder, OR a manlift in accordance with job site procedures
			· Establish appropriate level of communication between Test and Control System personnel
			· ENSURE all loose-fitting clothing and long hair have been properly secured to prevent entanglement when working around moving equipment
			· Refer to UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*, for additional guidance
			· ENSURE permanent guards have been installed at rotating parts (i.e., couplings, pulleys, external fans, and unused shaft extensions) to prevent accidental contact with hands or clothing
			· This is particularly important where parts have surface irregularities such as keys, keyways or setscrews
			· Close and secure inspection/access doors (as appropriate)
			· CAUTION DO NOT operate any equipment unless its supervisory and protective devices are calibrated, tested, and functional. No protective devices shall be de-rated or bypassed unless temporary protection is provided

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	**Sub-Activity**	**Hazard**	**Control**
			· Inspect internal pathways on all large, internally accessible equipment (e.g., fans, air heaters, or ductwork) for personnel, construction debris, obstructions, and scaffolding prior to initial start
			· Obtain Authorization from required authorities {TL and System owner) of testing prior to test activities
Startup Operations	Diesel Testing	Crushed By, Struck By, Caught Between	· Work must be performed in accordance with TPST-SU-801768-A024, *Diesel Testing and the corresponding Test Records*
		Fire, Burns, Property Damage	· ENSURE test areas are clean and free of loose debris
		Release of Hazardous Energy	· ENSURE only authorized personnel are permitted in test areas
			· Conduct a walkdown of systems (complete or partial) or equipment under initial test where high energy will be introduced for the first and Ensure unauthorized personnel have been removed from test areas. Station personnel, as required, at designated locations to keep test areas free of unauthorized personnel
			· Identify emergency egress routes and verify that they are clear of obstructions
			· Implement equipment Lockout/Tagout (LOTO) requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) - Lockout/Tagout (LOTO)*
			· Conduct a Pre-Test Briefing incorporating FLHA/JHA, in accordance with Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard Analysis Program (FLHA/JHA) Process*, and discuss test performance and the expected results with all personnel involved

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Provide special attention to the protection of personnel and equipment Personal Protective Equipment (PPE) identified in the FLHA/JHA is required during performance of this test in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*
			· ENSURE precautions such as barriers, flagging, danger signs, horns, area restrictions, etc., are used to protect personnel and equipment in accordance with UPF-CP-214, *Barricades and Signs*
			· **WARNING** Special attention should be paid to areas parallel to rotating equipment shafts. These zones are especially susceptible to debris launched tangentially from rotating equipment during a failure
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately, place the equipment in a safe condition, and notify the PSUM and the site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test.
			IF permanent access is not provided, THEN provide scaffolding or a man-lift in accordance with jobsite instructions
			· Establish an appropriate level of communication between Test and Control System personnel
			· ENSURE loose-fitting clothing and long hair have been properly secured to prevent entanglement when working around moving equipment
			· ENSURE rotating parts, such as couplings, pulleys, external fans, and unused shaft extensions, have permanent guards installed to prevent accidental contact with hands or clothing
			NOTE: *This is particularly important where the parts have surface irregularities such as keys, keyways, or setscrews*

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Activity	Sub-Activity	Hazard	Control
			· Tie off any loose parts of the coupling that cannot be removed for the diesel uncoupled run-in, OR affix them in such a way that they cannot contact any rotating part
			· **WARNING** DO NOT operate any equipment unless its supervisory and protective devices are calibrated, tested, and functional. No protective devices shall be de-rated or bypassed unless temporary protection is provided
			· ENSURE proper fire protection equipment is functional and that it is located in the immediate vicinity of the diesel engine
			· **WARNING** Diesel fuel is injected under pressure. Be alert for fuel oil leaks, particularly in mist form. Diesel fuel is especially flammable as a mist
			· **WARNING** Diesel fuel is corrosive and is an irritant to the respiratory system. Avoid skin contact and prolonged breathing of vapor
			· **WARNING** Jacket water systems are typically treated with biocides and corrosion inhibitors. Use caution and appropriate PPE while working around jacket water systems
			· Prior to Initial Diesel Run: ENSURE a means is available (manual fuel shutoff or combustion air damper closure) to perform an emergency shutdown
			NOTE: *Larger diesel engines can motor at low speeds on lube oil introduced through the combustion air system*
			· Obtain authorization from the required authorities (TL and System owner) of testing prior to test activities.
Startup Operations	Emergency Eye Wash and Shower Equipment Testing	General Work Area and Task Specific Hazards	· Work must be performed in accordance with TPST-SU-801768-A033, *Emergency Eye Wash and Shower Equipment Testing and the corresponding Test Record*
			· ENSURE areas under test are clean and free of loose debris and only Authorized Personnel are permitted in test areas
			· Conduct a walkdown of systems (complete or partial) of equipment under initial test and ENSURE unauthorized personnel have been removed from test areas

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JHA TITLE:	**Startup Operations and Emergency Response**	**WORK PACKAGE NUMBER:**	**N/A**	**SPECIFIC LOCATION:**	**N/A**

Activity	Sub-Activity	Hazard	Control
			· Station personnel (as required) at designated locations to keep test areas free of unauthorized personnel
			· Identify all emergency egress routes and ensure they are clear of obstructions
			· Implement equipment Lockout/Tagout requirements in support of this activity in accordance with Y17-95-64-801, *UPF Energy Isolation Management (EIM) – Lockout/Tagout (LOTO)*
			· Conduct a pre-test briefing incorporating FLHA/JHA, in accordance with Y17-95-64-823, *UPF Field Level Hazard Assessment/Job Hazard Analysis Program (FLHA/JHA) Process*, and discuss test performance and the expected results with involved personnel
			· Provide special attention for the protection of personnel and equipment. Personal Protective Equipment identified in the FLHA/JHA is required during performance of this test, in accordance with UPF-CP-205, *Personal Protective Equipment and Safe Work Apparel*
			· ENSURE precautions (i.e., barriers, flagging, danger signs, horns, area restrictions) are used to protect personnel and equipment, in accordance with UPF-CP-214, Barricades and Signs
			· IF any unusual noises, smoke, or anomalies occur, OR IF design limits that may compromise the safety of personnel or equipment are exceeded, THEN terminate testing immediately and notify the PSUM and the Site ES&H Representative (if applicable)
			· ENSURE adequate access is provided to all required areas during the test
			· IF permanent access is not provided, THEN provide scaffolding OR a man-lift in accordance with jobsite procedures
			· Establish appropriate level of communication between Test and Operations personnel.
			Obtain Authorization from the required authorities (TL and System Owner) of testing prior to test activities

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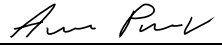
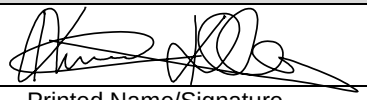
Ensure a new corresponding CFN-1251, *UPF Construction Attendance Sheet*, is signed and inserted in the CWP to document JHA briefing.					
PREPARER:		**Anton R. Panev**  Printed Name/Signature		**11/22/2023** Date	
APPROVAL:					
ES&H:		**Kieran S. Kelly**  Printed Name/Signature		**11/22/2023** Date	
SITE MANAGER: (COI-CM-801768-A087)		**Matthew W. Schmid**  Printed Name/Signature		**11/22/2023** Date	