Pantex Nuclear Weapon Dismantlement Process
Major Steps for Reentry Vehicle/Reentry Body

Pantex Process Steps	Classification	Verification Measures	Comments
1. Arrival of weapon/warhead at Pantex Location: Zone 4	Unclassified	• Visual inspection/observation • Radiation measurements • Inspection of tags and seals	• The arrival schedule for a weapon is classified • The interior of an SST is classified • Measures can be taken to protect sensitive information *Before any weapon dismantlement can begin, an extensive "start-up" activity, called the *SS-21 process*, is required. This process take a minimum of 2 years to complete.
2. Refer to work process layout guidelines (weapon-specific process requirements) - Disassembly Bay set-up. Location: Zone 12	Unclassified	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements • Inspection of tags and seals	It is important to note that work activities listed under 1-10 are generally unclassified, but the following must also be considered: • Official use only and presence of sensitive information • Disclosure of gratuitous information that exceeds the treaty/agreement language and its impact on DP operations and facilities • Each weapons system has highly customized requirements and classification issues can vary • Information should be protected because of proliferation issues

Pantex Process Steps	Classification	Verification Measures	Comments
3. Refer to pre-shift set-up requirements (designation of specialized equipment and materials) Location: Zone 12	Unclassified		
4. Refer to preshift operational requirements (designation of specialized operational requirements) Location: Zone 12	Unclassified		
5. Transportation of RV/RB container from Zone 4 to Zone 12 • Post-load inspection • Container received in Zone 12 at loading dock (12-117, or 12-98) • Container placed in interim storage in Zone 12 • Perform x-ray • Transfer to Disassembly Bay (12-84) Location: Zone 4 ⇒ Zone 12	Classified (the exact schedule of weapon movement at Pantex is classified SNSI and the number of weapons moved at Pantex is SNSI) Unclassified visual access is possible on a particular movement from Zone 4 to Zone 12	• Visual inspection of weapon moved from Zone 4 to Zone 12 per Pantex transportation operating procedure • Tracking by serial /part numbers of the nuclear weapon • Application of tags and seals	Pantex transportation and storage procedures are followed for moving nuclear explosives and nuclear components. Internal plant trucks are used for on-site transportation.
6. Receive the RV/RB in the container at the Disassembly Bay. • Verify x-ray • Collect initial radiation dose rate information • Remove protective blanket Location: Zone 12	Unclassified Visual classification issues will arise depending on RV/RB system	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	

Pantex Process Steps	Classification	Verification Measures	Comments
7. Set-up for RV/RB removal from container • Remove lead seals and lockwire from container • Remove applicable nuts and bolts • Take alpha swipes • Review Safeguards Verification Inspection Form and data Location: Zone 12	Visual classification issues will arise depending on RV/RB when removed from container	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	See statements listed for 1-5
8. Removal of RV/RB from container to mechanical work stand • Position the transport cart near work stand • Loosen container bolts and slide latches • Transfer RV/RB to work stand and attach • Verify the unit Inspection Record Card (IRC) for agreement with unit stenciling • Verify the unit is permanently marked "nuclear" • Ensure that the IRC indicates the unit contains a Weapons Unique Code for Retirement (WUCFR) Location: Zone 12	Visual classification issues will arise depending on RV/RB when removed from container. Visual observation of RV/RB is classified up to SFRD IRC can be classified as high as SFRD when filled in with data from DoD and DOE	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	Shrouding techniques will be required to protect RV/RB shape, size, antenna window locations, etc. See statements listed for 1-5 IRC documentation includes DoD data entries for the weapon when it was in DoD custody

Pantex Process Steps	Classification	Verification Measures	Comments
9. Pre-disassembly inspection/ preparation • Remove angle cover and flow switch • Inspect rupture disk • Remove plug seal • Perform helium sniff • Remove purge valve and rupture disk • Take alpha swipe Location: Zone 12	Unclassified/classified Visual observation of RV/RB aeroshell/shroud in some systems is classified up to SFRD	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	
10. Remove pressure cover and RV/RB shroud • Visually inspect for damage • Stamp components as required by the DISDOC Location: Zone 12	Classified Visual access to shape of internal components is SRD	• Track components with serial number/parts number	Internal components are visually classified. Shrouding or some other type of protective covering will be required
11. Disconnect cable assemblies and wiring harness • Cut detonator cables • Take alpha swipe • Install protective cover • Disconnect P-1 through P-4 cables and secure Location: Zone 12	Classified Visual access to shape of internal components is SRD. However, configuration of cable assemblies and wiring harness is unclassified	• Track components with serial number/parts number • Visual inspection/observation	Any visual observation will require shrouding to protect sensitive information. Pantex Nuclear Explosive Operating Procedures (NEOPs) will have to be reviewed for each weapon system to determine and modify shrouding and other protective measures that must be put into place. NEOP documentation may be classified

Pantex Process Steps	Classification	Verification Measures	Comments
12. Remove electronic components (firing sets and neutron generators) • Cut firing set wire • Remove J-1 cover and support cable • Perform helium sniff • Take alpha swipe • Remove neutron generator components • Stamp components as required by the DISDOC Location: Zone 12	Classified Component may be visually classified up to SRD if process exposes internal view of components and SNM shapes; if protected from visual access, process is unclassified	• Track components with serial /part numbers • Visual inspection/observation	
13. Remove case shielding • Remove bracket and covers • Cut outer surface • Perform helium sniff • Separate impact detectors • Remove shields Location: Zone 12	Classified Materials are SNM and classified SRD; visual access to shapes is SRD during this process step	• Track components with serial /part numbers • Visual inspection/observation	
14. Prepare for primary removal • Install milling tool • Install air motor to milling tool • Install HEPA vacuum • Mill key way • Cut support D • Operate vacuum Location: Zone 12	Classified Materials contain SNM and are classified SRD; visual access to shapes is SRD during this process step		

Pantex Process Steps	Classification	Verification Measures	Comments
15. Remove primary and package • Install primary gripper • Unscrew primary • Remove primary from RV • Install on transport cart • Ship to cell Location: Zone 12	Classified Materials contain SNM and are classified SRD; visual access to shapes is SRD during this process step	• Application of tags and seals • Inspection of tags and seals • Tracking of components with seal/part numbers • Radiation measurements	
16. Install RV and secondary in shipping container • Remove permanent marking from RV • Position RV on H1138A cart • Install and secure cross bar • Install in container • Secure end cap and cover • Emplace TID seal • Stencil unit • Move to staging area/ship to Y-12 Location: Zone 12	Classified Materials contain SNM and are classified SRD; visual access to shapes is SRD during this process step	• Application of tags and seals • Inspection of tags and seals • Tracking of components with seal/part numbers • Radiation measurements	Storage of secondary at Y-12 Schedules of movement and numbers of components are classified
17. Set-up for HE removal • Remove transportation cover • Adjust work stand to appropriate height • Engage primary and secure • Remove transport cart Location: Zone 12	Classified Materials contain SNM and are classified SRD; visual access to shapes is SRD during this process step	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Radiation measurements • Remote monitoring technologies • Track components with serial/part number	Visual classification issues for HE will arise Shrouding techniques could be used to protect sensitive information

Pantex Process Steps	Classification	Verification Measures	Comments
18. Remove case and compression pads • Install press and apply force • Remove lock ring • Install forward case ring • Install case removal tool and lower assembly • Lift case and install into shipping container • Remove outer compression pads Location: Zone 12	Classified Observation of this process is SRD since it allows visual access to classified shapes	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Radiation measurements • Remote monitoring technologies • Track components with serial/part number	
19. HE removal • Cut grindle • Remove detonators • Remove aft and forward HE • Install protective covers • Install HE in containers Location: Zone 12	Classified Observation of this process is SRD since it allows visual access to classified shapes. Until the HE is separated into pieces, it will be in a classified shape and this shape is SRD Number and configuration of detonators is classified up to SFRD	• Application of tags and seals	Detonators by themselves are visually unclassified
20. Set-up for pit packaging • Remove protective covers • Prepare pit storage containers as specified in procedures • Install bird cage • Place pit in storage container Location: Zone 12	Classified Material contains SNM and is classified SRD; visual access to shapes is SRD for the entire process		
20A. Package pit and return to Zone 4 storage Location: Zone 12 ⇒ Zone 4	Classified	• Radiation measurement • Inspection of tags and seals • Tracking of components by seal/part number • Workplace certification	Pit is packaged in ALR-8 or AT-400A container and transferred to Zone 4 Packaged pits may be stored in Zone 12 temporarily until enough are accumulated for economical shipment to Zone 4

Pantex Process Steps	Classification	Verification Measures	Comments
21. Disposal of Non-Nuclear Components Location: Zone 12	Classified and unclassified The RV aeroshell and the radar antenna window location are classified CFRD or SFRD depending on system type; however, this step may be visually unclassified	• Visual observation • Record of disassembly • Remote monitoring technology • Workplace certification	
23. Pit Storage - long term • Pit storage in Zone 4	Classification issues will be based on the information to be provided under the treaty/agreement	• Remote monitoring technology • Review of records and data • Radiation measurements • Tags and seals	

Pantex Nuclear Weapon Dismantlement Process
Major Steps for Gravity Bombs

Pantex Process Steps	Classification	Verification Measures	Comments
1. Arrival of weapon/warhead at Pantex Location: Zone 4	Unclassified	• Visual inspection/observation • Radiation measurements • Inspection of tags and seals	• The arrival schedule for a weapon is classified • The interior of an SST is classified • Measures can be taken to protect sensitive information *Before any weapon dismantlement can begin, an extensive "start-up" activity, called the *SS-21 process*, is required. This process takes a minimum of 2 years to complete.
2. Refer to work process layout guidelines (weapon-specific process requirements) - Disassembly Bay set-up. Location: Zone 12	Unclassified	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements • Inspection of tags and seals	It is important to note that work activities listed under 1-10 are generally unclassified, but the following must also be considered: • Official use only and presence of sensitive information • Disclosure of gratuitous information that exceeds the treaty/agreement language and its impact on DP operations and facilities • Each weapons system has highly customized requirements and classification issues can vary • Information should be protected because of proliferation issues

Pantex Process Steps	Classification	Verification Measures	Comments
3. Refer to pre-shift set-up requirements (designation of specialized equipment and materials) Location: Zone 12	Unclassified		
4. Refer to preshift operational requirements (designation of specialized operational requirements) Location: Zone 12	Unclassified		
5. Transportation of weapon from Zone 4 to Zone 12 • Post-load inspection • Weapon received in Zone 12 at the loading dock (12-117, or 12-98) • Weapon placed in interim storage in Zone 12, or • Immediately transferred to disassembly bay Location: Zone 4 ⇒ Zone 12	Classified (the exact schedule of weapon movement at Pantex is classified SNSI and the number of weapons moved at Pantex is SNSI) Unclassified visual access is possible on a particular movement from Zone 4 to Zone 12	• Visual inspection of weapon moved from Zone 4 to Zone 12 per Pantex transportation operating procedure • Tracking by serial /part numbers of the nuclear weapon	Pantex transportation and storage procedures are followed for moving nuclear explosives and nuclear components. Internal plant trucks are used for on-site transportation.

Pantex Process Steps	Classification	Verification Measures	Comments
5A. Receive warhead/ weapon at the Disassembly Bay. • Initial radiation dose rate information collected • Removal of the DOE acceptance stamp • Remove the protective blanket • Review safeguards verification inspection form and data • Verify the unit Inspection Record Card (IRC) for agreement with the unit stenciling • Verify the unit is permanently marked "Nuclear" • Ensure that the IRC indicates that the unit contains a Weapons Unique Code for Retirement (WUCFR) Location: Zone 12	Visual classification issues will arise depending on weapon system Classified as high as SFRD (IRC is classified when filled in with data from DoD and DOE.)	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	Shrouding techniques will be required to protect information See statements listed for 1-5 IRC documentation includes DoD data entries for the weapon when it was in DoD custody
6. Set-up for unit removal from cart (H1125/A-twin pack cart)	Unclassified	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	

Pantex Process Steps	Classification	Verification Measures	Comments
7. Removal of unit from H1125/A cart • Position the center case transport cart • Position tail cart in line to accept unit • Loosen and release the swing bolts • Remove the H1125/A upper cradle • Install tail cart template • Lift the unit from the H1125/A cart using the hoist • Adjust the tail cart to approximately mate with the template against the tail section • Secure the sections on the carts Location: Zone 12	Unclassified	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	
8. Set-up for removal of the nose and tail pre-flight assembly Location: Zone 12	Unclassified	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Remote monitoring technologies • Radiation measurements	

Pantex Process Steps	Classification	Verification Measures	Comments
9. Remove the radar nose and place on nose cart • Remove screws from the preflight center bomb joint • Separate the preflight case from the center bomb case far enough to reach the interior electrical connectors • Disconnect and cover electrical connectors • Coil cables inside preflight case • Cover preflight case Location: Zone 12	Classified Visual classification issues will arise and, if open, the radar nose is visually SFRD, components are SFRD, and antenna assembly parts are CFRD Unclassified if the nose is viewed closed as a whole assembly	• Visual inspection • Radiation measurements • Remote monitoring technologies	Internal components are visually classified. Shrouding or some other type of protective covering will be required
10. Set-up for cover plate assembly removal - center case • Remove screws and loosen bulkhead connector nuts • Remove cover plate assembly • Stamp components as required by the DISDOC Location: Zone 12	Unclassified This operation is unclassified, but the interior of the weapon (inside the nose and center case) is classified as high as SRD. Shrouding or some type of visual covering will be required	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Radiation measurements • Remote monitoring technologies	DISDOC - disposal document
11. Electronic Component Assembly (ECA) (ECA = fire sets, neutron generators and batteries) • Remove the top cover from the ECA • Ensure that electrical connector covers are installed on ECA connectors • Remove the connectors as indicated in the NEOP • Stamp components as required by the DISDOC Location: Zone 12	Classified ECA may be visually classified at SRD if process exposes internal view of components and SNM shapes; if protected from visual access, process is unclassified	• Track components with serial/part numbers • Visual inspection/observation	Any visual observation will require shrouding to protect sensitive information. Pantex Nuclear Explosive Operating Procedures (NEOPs) will have to be reviewed for each weapon system to determine and modify shrouding and other protective measures that must be put into place. NEOP documentation may be classified

Pantex Process Steps	Classification	Verification Measures	Comments
12. Support and Cap Assembly Removal • Remove the cap assembly using a vacuum fixture fitting • Remove physics package from center casing Location: Zone 12	Classified Materials are SNM and classified SRD; visual access to shapes is SRD during this process step	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Radiation measurements • Remote monitoring technologies	
13. Removal of the support and valve assembly • Remove the tube from the valve Location: Zone 12	Classified Materials contain SNM and are classified SRD; visual access to shapes is SRD during this process step	• Track components with serial/part number	
14. Fire set removal operations • Remove the screws and gold retainer plates • Remove connector covers • Install the separation fixture over fire set • Remove fire set Location: Zone 12	Classified Fire set is classified CFRD, but visual access to shapes of internal components is SRD		
15. Set-up for removal of caps and detonator cables • Loosen the rear cap/inner cap assembly • Remove cap assembly • Remove the detonator/cable assemblies • Apply and tighten the horizontal wedge screws on the separation fixture Location: Zone 12	Classified Detonators and cable components are CRD, but visual access to shapes and detonator configurations is SRD during this process step		Visual classification issues for HE and detonators will arise

Pantex Process Steps	Classification	Verification Measures	Comments
16. Set-up for HE removal • Remove the HE • Write the top level unit serial number on the HE • Place HE in storage container Location: Zone 12	Classified The observation of this process is SRD due to visual access to classified shapes. Until the HE is in separated into pieces, it will be in a classified shape and this shape is SRD	• Application of tags and seals	
17. Set up for pit packaging • Prepare pit storage container as specified in the procedure • Install the pit in the FL carriage fixture • Place FL fixture in the pit storage container Location: Zone 12	Classified Material is SNM and is classified SRD, visual access to this shape is SRD for the entire process	• Workplace certification • Review of equipment lists and set-up procedures • Review of checklists • Visual inspection/observation • Radiation measurements • Remote monitoring technologies • Track components with serial/part number • Application of tags and seals	
17A. Package pit and return it to Zone 4 storage	Classified	• Radiation measurements • Inspection of tags and seals • Track components with seal/part number • Workplace certification	Pit is packaged in ALR-8 or AT-400A container and transferred to Zone 4. Packaged pits may be stored in Zone 12 temporarily until enough are accumulated for economical shipment to Zone 4
18. Set-up for Parachute Removal • Place tail assembly on the cart • Position the tail cart • Position center case cart to receive parachute • Stamp components as required by DISDOC	Unclassified		
19. Tail disassembly • Remove fins from the tail case • Place components in routing bins	Unclassified		

Pantex Process Steps	Classification	Verification Measures	Comments
20. Set-up for disassembly of the radar nose	Classified Visual classification issues will arise and, if open, the radar nose is visually SFRD, components are SFRD and antenna assembly parts are CFRD	Unclassified if the nose is viewed closed as a whole assembly	Radar is visually classified
21. Removal of Secondary • Remove bolts • Extract secondary • Place in DT-38 container • Move to staging area	Classified Materials are SNM, which is classified SRD; visual access to the shape is SRD during this process step	• Application of tags and seals	Storage of secondary at Y-12 Schedules of movement and numbers of components are classified
22. Disposal of Non-Nuclear Components Location: Zone 12	Classified and Unclassified Minor components from CSA are classified CFRD and CRD; this step may be visually unclassified	• Visual observation • Record of disassembly • Remote monitoring technology • Workplace certification	
23. Pit Storage - long term • Pit storage in Zone 4	Classification issues will be based on the information to be provided under the treaty/agreement	• Remote monitoring technology • Review of records and data • Radiation measurements • Tags and seals	