

## PROCEDURE / JOB HAZARD ANALYSIS

**JOB NAME:** Physical move of a BLS POWER SUPPLY to/from Dzero Collision hall storage locations to/from the Dzero detector platform racks.

**LOCATION:** DZERO COLLISION HALL

**ESTIMATED DATES OF OPERATION:** 10/21/08 – 10/20/09

**DESCRIPTION OF WORK:** Remove bad power supply from detector platform rack and move to the storage location. Move the good power supply from the storage location to the platform rack.

**GENERAL:** The BLS power supply is a heavy, bulky object. It is approximately 18 1/4" deep excluding handles, 19" wide at the front panel, and 10 1/4" tall. It weighs approximately 120 lbs. The lifting bars add about 6 lbs. of additional weight. This object should only be moved by strong, physically fit, workers capable of handling this weight. The power supply has fragile internal components that must not be subjected to shocks. The preferred orientation is horizontal as installed or with the front panel up. Do not turn it upside down.

**REQUIRED TRAINING:** Back works training, crane training (one person), Collision hall access required training that includes, radiation worker, controlled access (if applicable), basic electrical safety, D0 hazard awareness.

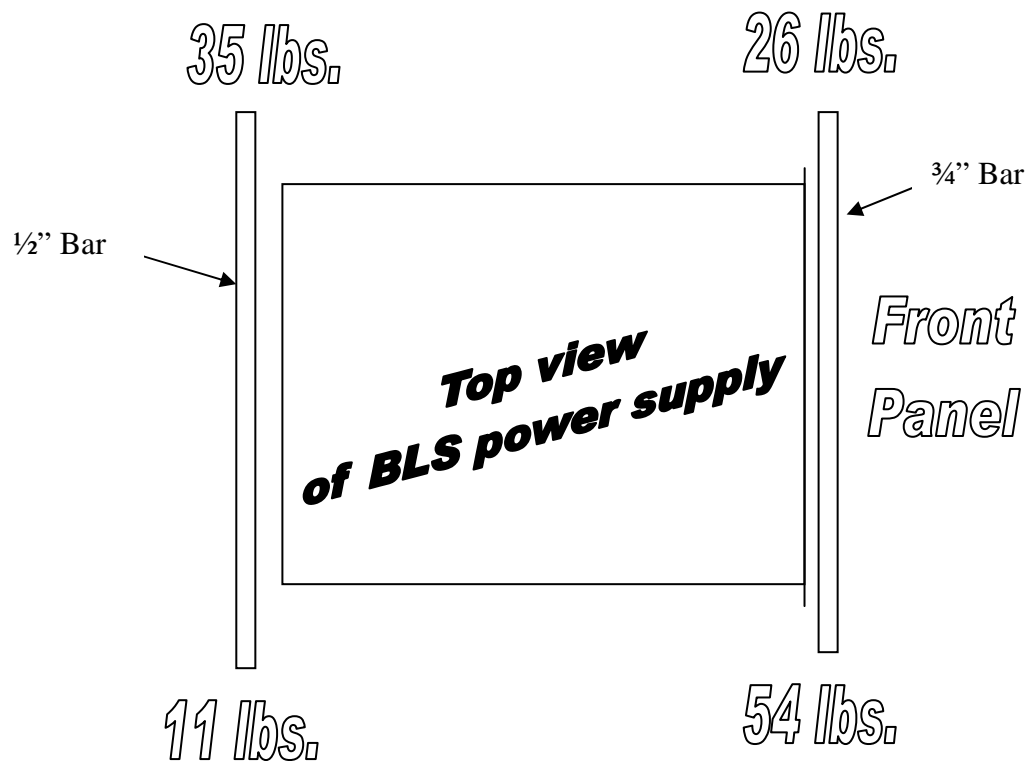
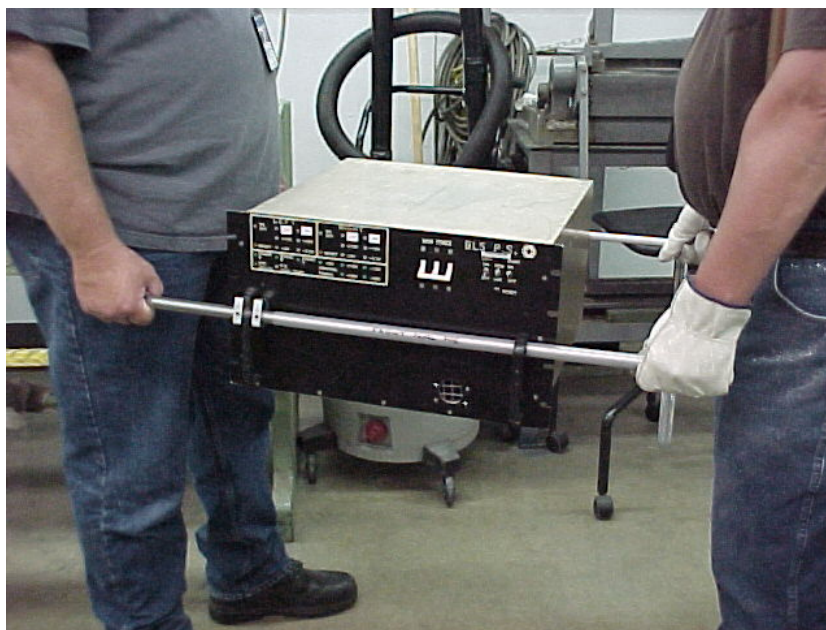


Fig. 1. Weights (including bars) when carried horizontally. Total weight = 126 lbs.



Picture 1. BLS power supply carried horizontally with two lifting bars. Note the square collars capturing left front handle. Leather gloves are optional.

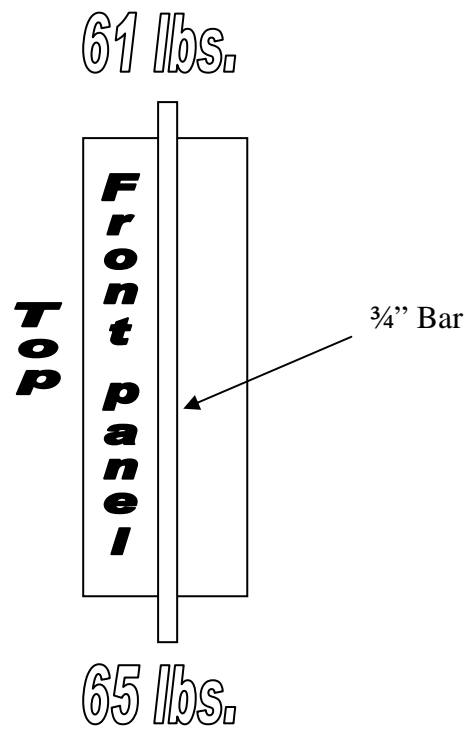
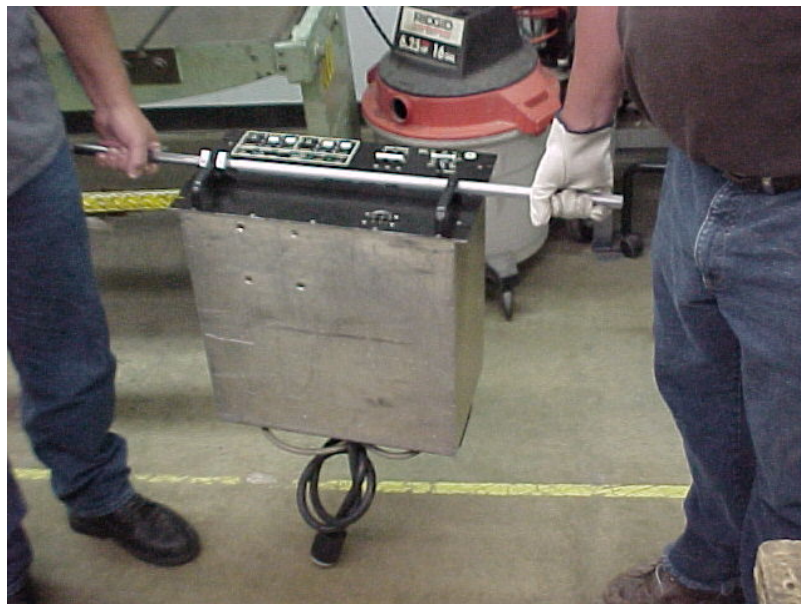
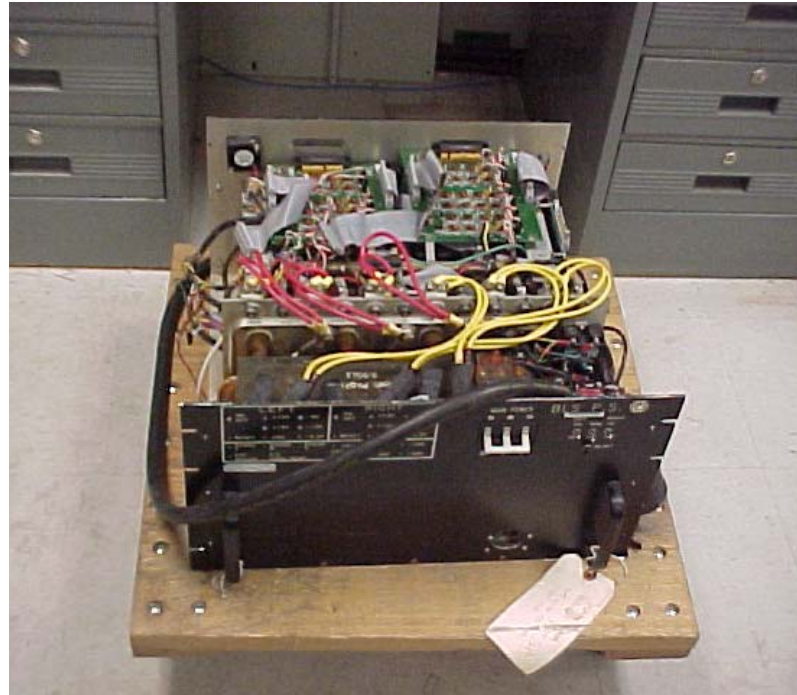


Fig. 2. Weight (including bar) when carried with one bar with front panel up. Total weight = 126 lbs.



Picture 2. BLS power supply carried vertically with front lifting bar. Note the square collars capturing left front handle. Leather gloves are optional.



Picture 3. BLS power supply with top cover removed. Heavy transformer is located on left near the front panel.

Step/Phase of Job	Safety Hazard	Precautions/Mitigation of Hazard
1) De-energize and disconnect power supply water connections and cabling. Use BLS power supply electrical and water disconnection and reconnection procedure, D0_ELE_CAL_001.	See hazards covered by the disconnection procedure.	Use D0_ELE_CAL_001 procedure. Operation is performed by those familiar with the power supply disconnection procedure. Verify disconnection has been performed.
2) Plan out route to be taken from the rack to the storage location. Set an empty four wheeled cart in the vicinity of the storage location to accept the bad PS. Inspect all floor panels along the route to be certain they are positioned correctly. Clear any obstacles. Survey route with LSM (if under controlled access conditions).	No real hazards once floor panels are checked. Floor panels can shift so they should be inspected.	Both persons should participate and be in agreement on route and plan. Note that hard hats are not required within the detector platform area. A more upright posture can be accomplished without a hard hat on the platform.

<p>3) Remove the front panel screws. Slide power supply about 5" out of the rack to allow final disconnection of hoses and wires. Position the cords and hoses as necessary. Slip the ¾" diameter lifting bar through the front handles. Position bar so that collars engage one handle. A person stands on each side of the PS as it is slid out, each holding one end of the ¾" bar. Each person holds the bar at the front end of the PS and gives some support near the back end as it exits the rack. When it is clear of the rack, slowly lower the rear of the PS and set it down on the platform floor with the front panel up. At least one person needs to hold the ¾" bar while the PS is resting on the floor.</p>	<p>PS with bars weigh ~ 126 lbs. Possible back or muscle injury if proper lifting technique isn't used. Scrapes and bumps. Pinched hand on bar against handle.</p>	<p>Persons must have completed back works safety training, are capable to lift 65 lbs and are feeling capable to do the lift on this day. Lower the load by bending legs and keep back straight. Do not reach or twist during lifting and moving. Steel toed shoes and long pants are recommended. Lifting bar has a feature to lock it to handles and keep it from sliding.</p>
<p>4) Keeping your back straight, lift the PS with the bar. Move slowly and in a calculated manner through the aisle ways of the detector platform. When moving a PS from the center platform area, temporarily rest the PS in the archway while crawling through the archway. Lower the PS into a resting position on the platform floor when you get to the edge of the detector platform</p>	<p>Same as above. Damage to other detector components during the move. Muscle strain due to awkward body positioning through archway (for center platform PS's only).</p>	<p>Same as step 3. Be aware of the perimeter of your body and the PS as you pass by other racks. Obstacles and protrusions should have been remedied during the route planning step. The PS is set down when passing through the archway. The PS is set down when making a walking surface elevation change at the edge of the platform.</p>
<p>5) While PS is resting on the floor, both persons move off the platform one at a time while the other keeps the power supply stable. While keeping back straight, both lift the PS and move it onto the empty 4 wheeled cart at the storage location. Rotate the PS to the flat horizontal position.</p>	<p>Same as steps 3 &amp; 4</p>	<p>Same as steps 3 &amp; 4.</p>
<p>6) Take a moment to refresh. Lift good PS using the same good lifting techniques and lifting bar. Move PS to the edge of the platform and rest it on the platform floor.</p>	<p>Same as steps 3 &amp; 4.</p>	<p>Same as steps 3 &amp; 4.</p>
<p>7) While PS is in a stable resting position, one person at a time steps onto the platform. When one person is on the platform, slide the power supply on the floor a bit to make room for the second person to stand on the platform floor.</p>	<p>Awkward climbing next to power supply.</p>	<p>Hold onto something like a rack to stabilize as you move up the steps onto the platform. The person on the floor can hold the PS steady when the first person gets on the platform.</p>
<p>8) Keeping your back straight, lift the PS. Move slowly and in a calculated manner through the aisle ways of the detector platform. For center platform, set the PS down in the archway as you crawl through. Lower the PS into a resting position on the platform floor when you get to the rack that it goes in.</p>	<p>Same as steps 3 &amp; 4.</p>	<p>Same as steps 3 &amp; 4.</p>
<p>9) Position an electrical helper (3<sup>rd</sup> person) at the back of the rack to help guide plug and hoses into rack.</p>	<p>None.</p>	<p>None.</p>
<p>10) Keeping a straight back, each person should grab the lifting bar and back side of the PS and lift the PS to the angle supports in the rack. Slide the PS most of the way into the rack as the helper guides the appendages.</p>	<p>Same as step 3. Heavy object could scrape legs or pinch fingers.</p>	<p>Same as step 3. Full length pants recommended. Be aware of what you are doing.</p>
<p>11) Connect power supply water connections and cabling. Use BLS power supply electrical and water disconnection and reconnection procedure, D0_ELE_CAL_001.</p>	<p>In other procedure.</p>	<p>Use D0_ELE_CAL_001 procedure. Operation is performed by those familiar with the power supply connection procedure.</p>
<p>12) Slide PS the rest of the way in. Install the front panel screws.</p>	<p>None.</p>	<p>None.</p>



**PROTECTIVE EQUIPMENT CHECKLIST  
 (CHECK ALL PPE REQUIRED FOR THE JOB TASK)**

EYE & FACE

- Safety Glasses w/ side shields
- Chemical/Splash Goggles
- Impact Goggles
- Full Face Shield (worn over 1, 2, or 3 only)
- Cutting Goggles
- Welding Hood
- Other \_\_\_\_\_

HAND (Gloves)

- Cloth
  - Leather - Optional
  - Welding
  - Metal Mesh
  - Electrical Insulated
  - Synthetic (Circle One)
- Rubber, Neoprene, Latex,  
 Butyl, Vinyl, Nitrile
- Other \_\_\_\_\_

FOOT

- Hard Toe Shoes/Boots
  - Dielectric
  - Neoprene
  - Rubber
  - PVC / Urethane
- Metatarsal Guard
  - Other \_\_\_\_\_

RESPIRATORY PROTECTION

- Dust Mask
- Fumes/Mist Mask
- Half Face Filter
- Full Face Filter
- Full Face Airline
- Full Face SCBA
- Emergency Escape Pack
- Emergency Escape Disposable

PROTECTIVE CLOTHING

- Nomex / FRC
- Tyvek Suit
- Rainsuit
- Acid Suit
- Encapsulating Suit
- Other Full length pants to protect against scrapes – are recommended but not required. \_\_\_\_\_

HEARING

- Ear Plugs.....or
- Canal Caps
- Ear Muffs.....
- Dual Protection
- Other \_\_\_\_\_

HEAD

- Class A Hard Hat (limited voltage) Collision hall requirement. Not required in platform.
- Class B Hard Hat (High voltage)
- Chin Strap
- Other \_\_\_\_\_

List Any Other PPE Not Indicated Above: Radiation film badge required for Dzero collision hall access.

Log survey meter (LSM) required during controlled access to DZero collision hall.

Does the task present potential exposure to hazardous chemicals? YES NO

If yes, has the MSDS for each hazardous chemical been reviewed? YES NO