

## Preliminary

SafetyDefinition: *Safety*

CRE&T has a safety manager/risk assessment manager. The safety manager is empowered to make decisions about whether conditions are safe. The safety manager **MUST** be obeyed. The safety manager has the authority, conferred by Council and sanctioned by the Board of Directors, to ask a volunteer or customer to leave the premises. One does not argue with the safety manager's decision. If a volunteer disagrees with a decision made by the safety manager, then they should refer the problem to Council and let Council deal with it. In the meantime, a volunteer must abide by the safety manager's decision. In the absence of the Safety Manager the Store Manager will assume all duties and authorities of the Safety Manager.

Work AreasDefinition: *Work Area*

Many areas at CRE&T are designated as a *Work Area*. To begin a project of any sort, it must be started in the appropriate work area. A *work area* generally will refer to a table-top surface, or station. It does NOT usually refer to the area underneath, above, or beside the surface. These are often other areas and NOT work areas. Space is at a premium here. Failure to respect space constraints and work area boundaries at CRE&T may lead to conflicts between volunteers, coordinators, and customers.

Work areas should be CLEAN and organized. When a volunteer starts to use it, the volunteer should not have to clean it up first. Work areas should end the day at least as clean and organized as they were at the start of the day. This is important. A work area is NOT a place for temporary storage of a project. A work area is NOT a place for temporary storage of tools. A work area is not a place for storage of anything at all.

If a volunteer begins a project at a work area, the volunteer must also allow enough time to cleanup before they leave. If there is not time to complete the project and cleanup the area, then the project should not be started. Failure to leave the work area clean may result in a loss of privileges.

The FUNCTIONS performed at the work areas that are available at CRE&T will change from day to day and from week to week.

In order to use a work area, a volunteer should first check in with an area Manager. Volunteers are INVITED to use an area. An invitation is only good for the day it is issued. Invitations are not permanent. Without an invitation to use an area, the area should not be used. This rule is to ensure that areas that are scheduled for use are available at their scheduled times.

**Aisles, Hallways, Stairways, Ramp**

Definition: Aisles and Hallways

Many areas at CRE&T are designated as aisles or hallways. Some are designated by black and yellow striped tape. Sometimes they are stairways. These areas are NEVER an area for storage, or for TEMPORARY storage. There is NEVER a good reason to place monitors, computers, tools, or anything else in the aisles or stairways. This is a SAFETY issue. Anyone that places items in these areas is performing an unsafe action. CRE&T volunteers must consider the safety of other volunteers at CRE&T. Be especially careful to keep the areas clear at the top and at the base of stairways. Be extra careful when opening or closing doors at the top or bottom of stairs, and be sure that they are clear before you close them.

Do not place items in undesignated areas, or obstruct the hallway. Do not place items on ramps or stairways, and do not block an entrance to a doorway. These halls and doorways are used by many volunteers and by many customers at CRE&T. Show respect for others, and do not block their path.

**Why we have a Disassembly Area**

Definition: *Disassembly*

Disassembly receives three main kinds of equipment:

- a. Broken or faulty computers and equipment.  
*example:* A computer with a bad mainboard
- b. Computers too old to rebuild.  
*example:* A computer with a 486 mainboard.
- c. Unneeded or unwanted peripherals.  
*example:* A tape drive that connects to the parallel port.

Disassembly performs these main functions:

- 1) *Recycling*. Disassembly breaks down equipment and sorts it into these *recycling* categories:
  - a. Single-Insulated Copper Wire.
  - b. Double-Insulated Copper Wire.
  - c. Pure Aluminum.
  - d. Mixed aluminum/steel.
  - e. Processors (CPUs.)
  - f. Memory (RAM.)
  - g. Plastic.
  - h. Steel.
  - i. Breakage.

- 2) *Recovery.* Disassembly breaks down equipment and sorts it into these *recovery* categories:
- a. Drives  
*examples:* Hard disk, CD-ROM, DVD-ROM, and CD-RW drives.
  - b. Reusable Cases.  
*examples:* Cases not specifically manufactured for HP, Compaq, etc.
  - c. Reusable components:  
*examples:* AGP video cards, PCI cards.
  - d. RAM.  
*examples:* PC100 and PC133 SDRAM, DDR SDRAM, RDRAM.
  - e. Reusable power supplies.  
*examples:* 300W power supply, a power supply from an HP Pavilion.
- 3) *Training.* As you work in disassembly you will become familiar with many different types of equipment and components. The ability to identify components and to remove them without damaging them is a fundamental skill used in building computers. To build computers, you must first learn how to categorize these components.

While disassembly can be a dirty job, it is also a place where neatness and precision counts. Other volunteers depend on the jobs done in disassembly to be done correctly. The Build program depends on a steady flow of reusable components salvaged in the disassembly room. The methods used in disassembly exist in all our other programs. As everywhere else in CRE&T, you should ensure that your area and tools are left ready for use by the next volunteer.

If you are careless in your disassembly work, CRE&T will suffer. If you mis-categorize components then they will likely be recycled instead of recovered, and CRE&T will not be able to maintain an effective build program.

Disassembly volunteers also need to be aware of safety issues. The way they stack recycling materials can make the difference between an effective workspace and one that is ineffective and even dangerous.

### **What Disassembly does not do.**

Disassembly does NOT 'flesh out' a computer to make it ready for build. Disassembly does not test computers, RAM, CPUs, mainboards, external drives, SCSI devices, LCD monitors, laptops, or servers. Disassembly does NOT install operating systems, nor does it recover data or attempt to recover data in systems. Disassembly does not do technical support. Disassembly does not make arrangements to buy, sell, or trade equipment. Disassembly does not set prices on equipment. Disassembly does not collect the monies owed by customers.

**Parking Lot Deals**

Items brought onto the CRE&T premises are donated to CRE&T. Disassembly volunteers may not make private deals with customers to intercept, barter, sell, or trade equipment that customers would otherwise donate to CRE&T.

**Failure to Follow The Rules**

If you notice that a volunteer is not following these rules, this should be reported to the Disassembly Manager or Store Manager.

**General**

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**Name-Brand Computers**

Definition: *name-brand computer*

Computers manufactured by Compaq, Dell, Gateway, Hewlett-Packard, IBM, Micron, Sony, Toshiba, and others shall be called *name-brand computers*. A name brand computer will often have the manufacturer's name or computer series name molded into the case. Frequently, there are stickers or asset tags attached to the cases which indicate the manufacturer name and/or model number.

The mainboard/case/power supply, modem-riser, sides, bezel(s), faceplate(s), rails, and attached peripherals of a *name-brand computer* shall, for our purposes, be considered to be a single unit. In general, those parts cannot be used on a dissimilar brand or model.

Items which likely MAY be salvaged from a *name-brand computer* are:

**AGP cards** -- any AGP video card

**PCI cards** -- PCI video, PCI sound, PCI network (NIC), PCI modem.

**Most Drives** -- floppy, Zip, Jaz, hard disk, CDROM, DVDROM, CD-R, CD-RW, DVD-RW,

**CPU** – (see below)

**System Memory** – (see below)

**Items Entering the Disassembly Room**

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New computers which arrive at CRE&T must go through the triage process.

Only computers which are successfully triaged will be used in the build program.

We have a Triage CD which we use to assist with this.

Machines that have gone through the Triage process and have then been sent to disassembly may still have usable components. There may or may not be tags on the computers sent to disassembly. There may or may not be a printout attached to the front bezel of a computer sent to disassembly. When present, these may help disassembly workers to determine which components to salvage. Before you begin, be sure to examine the computer you are going to disassemble for any special notes or instructions.

There are also some external cases and peripherals that may come into the disassembly room.

## Items Which Should Not Be Sent to the Disassembly Room

Several items should NOT be placed into the disassembly room. For various reasons, these items are deemed to be **unsuited to Disassembly: Monitors, Printers, Scanners, FAX machines, Keyboards, Mice, All-in-one computers: iMacs and other sorts of terminals.** Most of these items should be dealt with directly by members of the Triage team.

## Stacking Items

Disassembly workers may stack things in the Disassembly room or in the Recycle room.

Computers should always be stacked in such a way that the largest side is parallel to the floor. This means tower cases are stacked on their sides, and desktop cases are stacked in their normal position. The reason for this is to ensure that the stacks remain stable. This is a safety issue.

When a Disassembly volunteer has finished removing components from a computer, there is generally only a bare metal husk left. This husk should have its metal sides and covers reattached in order that it is reassembled into something resembling a box. Some screws should be reattached to hold it all together.

All areas that are suited to the stacking of equipment have been marked. Equipment should not be stacked in any other areas.

## Clean As You Go

The Disassembly area is often crowded. This is made worse if items that should be moved to recycling are allowed to accumulate in the Disassembly area. This can lead to unsafe work conditions. As soon as you are done disassembling a computer, you should move the husk to the recycling area. As soon as a box of drives or scrapped power supplies is full, it should be moved out of Disassembly. Once a bin becomes level full it should be attended to. Empty Electronic Circuit Boards (ECBs) into the large paper barrels in the Recycling Room. Move steel bins or plastic bins that are full to the Recycling Room. Do NOT fill boxes or bins more than level full as this prevents other boxes from being easily stacked on them.

## Visual Inspection:

Build candidates:

- If the mainboard is SLOT 1 and the chipset is LX, it is NOT a candidate for build.
- If the mainboard is SLOT 1 and the chipset is BX it may be a candidate for build.
- If the mainboard is a Pentium III it may be a candidate for build, if it has an AGP slot.
- If the mainboard includes on-board Network port, it may be a candidate for build.
- If the mainboard is an Athlon or P4, it generally IS suitable for build.
- Important! A system with an ATHLON mainboard, a P4 mainboard, or a socket 370 mainboard with an AGP slot, should not go into recycling without first being tested.

- Check for bad capacitors, broken pieces etc.

#### Salvage These Items for Build Team.

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Slot 1 mainboards with BX chipset supporting 700 MHz, an AGP slot, and at least 4 PCI slots.  
XEON mainboards that are ATX, BTX or WTX form factor.  
ATX, BTX, or WTX mainboards with embedded SCSI. or PCI Express slots.  
CD/sound cable: Always  
80 pin IDE cable: Always  
Rounded cables: Always  
AGP video adapters: Always  
PCI adapters: Always

**Note: All drives should be stacked with the connector end facing DOWN in a single layer. Use a box appropriate to the size of the drives --- a shallow box for hard disks and floppies, a banana box for CD-drives.**

Floppy drives: Only if immaculately clean and new looking.  
LS/120 drives: Always  
ZIP drives: Only if immaculately clean and new looking, or with capacity greater than 100M.  
JAZ drives: Always  
Syquest drives: Never  
Hard disk drives larger than 7.5G: Always.  
CD-ROM drives 50X and up: Always  
CD-R/CD-RW: Always  
DVD: Always  
DVD-RW/DVD+RW: Always  
SDRAM: Always  
DDR RAM: Always  
RDRAM: Always  
CPU: Athlon, PIII, PIV: ALWAYS  
Slotkets: Always  
BRASS Standoffs, other standoffs of various kinds, except those for AT boards: Always  
WAKE-on-LAN cables: Always  
Case Fans: If respectable  
ATX Backplates (I/O shields): Always  
4-pin Molex power splitters/adapters: Always  
ATX Power Extenders: Always  
USB Extenders: Always  
5.25" to 3.5" drive bay adapter (mount floppy or zip drive etc. in a 5.25" bay)

#### Salvage These Power Supplies

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ATX power supplies: If 300W or higher OR  
Any ATXE power supply (more than standard ATX 20-pin power plug) OR

Any ATX power supply that has an additional 4-pin or 8-pin power plug OR  
Any ATX power supply which has Serial ATA (SATA) power connectors OR  
Any ATX power supply which comes from an HP, COMPAQ, or DELL Computer OR  
Any ATX power supply which is extraordinarily small.

#### Recycle These Items:

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Mainboards: Socket 1 through Socket 8.  
SLOT 1 mainboards with LX chipset or AT-only power connectors  
Non-ATX, BTX, or WTX mainboards.  
AT mainboards.  
ATX mainboards without AGP or PCI Express, or with fewer than 4 PCI slots.  
ISA cards.

#### Instructions to Completely Disassemble an Old Computer

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- 1) First, note the time you are starting. Remove the case side or top that allows access to the internal components of the computer.
- 2) Detach all cables from the components. Most cables come loose easily and will not need excessive force to remove them. Be careful not to bend pin connectors on drives or components when you detach cables. **Note: do NOT cut or tear or yank cables unless you know exactly what you are doing.**
- 3) First detach the screws that secure them, and then remove any AGP, PCI, and ISA cards from the computer. To remove these cards, grasp their top securely at both the front and back of the card, and gently lift them out.
- 4) Place these cards into the appropriate sort bins.
- 5) Remove the drives from the computer, and place them into the appropriate boxes.
- 6) Remove the power supply from the computer.
- 7) Determine the wattage of the power supply. Set aside power supplies that meet the appropriate requirements. These will be sent to Triage for further testing.
- 8) If the power supply is less than 250W, and the power supply does NOT come from HP, COMPAQ, or Dell, then clip the copper cords coming out of the power supply. Also clip the plastic ends off these cords. Check that all the wire is single-insulated copper wire, and then place the wire in the #1 Copper Wire recycling bin.
- 9) If this is an AT-style mainboard, then the mainboard and its CPU will all go into recycling bins. Remove the battery before you place the board into the bin. Some of the wire from the power supply on an AT system will be double-insulated and go to the #2 Copper wire recycling bin.
- 10) If this is a slot type mainboard, then remove the entire CPU/Heatsink-Fan assembly from the mainboard. If this is a socket type CPU, then remove the Heatsink/Fan from the CPU. Be careful not to break the clips or the plastic parts of the CPU slot or socket when you do this. If the Heatsink/Fan appears to be in excellent condition, set it aside to send to Triage for further testing.
- 11) Remove the CPU from its slot or socket. If the CPU is a Pentium III or above, then it should be

sent to Triage for further testing. If the CPU is 500Mhz or above then send it to Triage for further testing.

- 12) Examine the mainboard for bad capacitors. If it has bad capacitors then remove the battery and place it in the mainboard recycle bin.
- 13) If the board is a slot-type mainboard, then if it had an Athlon CPU it is SLOT A mainboard. If it had an Intel CPU in it, then it is a SLOT 1 mainboard. If it is SLOT 1, examine the board to see whether it has a BX chipset. If it does not have such a chipset, then place it in the mainboard bin to recycle. Otherwise send SLOT A and Intel BX mainboards to Triage for further testing.
- 14) If the mainboard is a socket-type mainboard then examine the number impressed on the socket. Remove the battery, and then place any boards that are Socket 1 through Socket 8 into the mainboard recycle bin.
- 15) If the mainboard has a different socket such as socket 462 or Socket 370 (with an AGP slot,) or in general any 3-number socket, then send it to Triage for further testing.
- 16) Separate all plastic parts from metal parts in the remaining box. Place large flat pieces of plastic in with the recycling box that has similar features. Place irregular pieces (bezels and cages) of plastic into the plastic bin.
- 17) Re-attach the metal sides and top of the computer to the frame. You should now have a husk that should be stacked flat in the recycling room.
- 18) If any bins or boxes became level-full during this time you were disassembling the computer, then take them into the recycling room and exchange them for empty ones.
- 19) Take note of how long it took you to complete the disassembly of the computer.
- 20) If you have enough time before the end of your shift then you may start another disassembly. If you do not have at least as much time as you just spent, then you should focus on getting your station cleaned up, and your tools picked up and put away. Also be sure that any items destined for Triage are got to the appropriate volunteers.
- 21) If you are in the last shift, the floor should be swept and any trash should be taken to the garbage can.
- 22) Write down any questions that you may have had when you worked. If you found significant errors or omissions in this document, then kindly tell this to the Disassembly Manager or another manager so that this document can be updated to incorporate your suggestions.

We Hope You Had Fun!

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Rest assured that when you disassemble a computer, you are performing a valuable service both for CRE&T and the community. You have helped keep toxins out of the landfill and contributed to keeping our groundwater pure. By following the rules outlined above you are helping to train other volunteers. By keeping the workplace neat, clean, and tidy you are making CRE&T a comfortable and a welcoming place to work. The components you helped to recycle and salvage will be used to fund further activities at CRE&T and to get computers to people that need them. So from all the rest of us at CRE&T.... THANK YOU!