

Lighting_Alternatives_Including_X-Miss_Tree_Bulbs_1997.txt

Subject: lighting (more thoughts) for those who don't have access to halogen or LEDs)

Survivability of polar shift shocks and vibrations:

- * The smaller the bulb the less likely to break the glass outside.
- * The lower the voltage the less likely the filament will break.
- * The higher the amperage (more light output) the less likely the filament will break.
- * Bulbs in operation at full power have a tendency for filaments to break.

In general series Christmas tree bulbs will hold up better than 6 volt bulbs which will survive better than 12 volt which is better than 120 volt and so on...

With overcast outside and a sealed meteorite proof housing (as recommended by Zetas) some level of light will be needed practically all the time. Electric lighting would be recommended till the quakes are below say 6-7 rector scale. This could be days or weeks. Every other form of lighting is for the most part two dangerous if a candle or kerosene lamp tips over you could have a fire. Even after this time some form of continuing lighting will be needed for everything will be really dark.

Some Alternative Solutions for lighting: (especially for those who don't have access to halogen OR LED lamps)

- * Series string of x-miss tree lights hooked up to a battery: x-miss tree series strings (small ones) come in say 50, 35, ... 10 bulbs per string. To determine how many bulbs to hook in series for any given battery voltage use the formula (number of bulbs in the string) times (voltage of battery) divided by (voltage for the full string - usually 120v) equals number of bulbs to use for a given battery voltage. For a 12 volt battery this means 5 bulbs at 2.4 volts each would be used for a 50 bulb-string. 3.5 bulbs (round up to 4) at 3.4 volt

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each would be used for a 35 bulb-string. 1 bulb at 12 volts would be used for a 10 bulb-string. Some things to consider: The 12 volt bulbs filament is more delicate to vibration than the 2.4 volt but if one of the 2.4v goes out the whole sting goes out till you find the right one to replace. The 2.4 volt solution allows 5 bulbs to be placed around the room more distribution and better utilization of the light than one bulb. The 2.4 volt solution allows one to add a 6th bulb so the whole sting last longer and lowering the current drain while slightly lowering the light level. If more light is needed more strings of 5-6 bulbs can be made. The filament becomes less fragile and the filament life time goes way up. This also allows one to switch bulbs out of the string when battery voltage gets low. This can be done by pulling a bulb and putting tin foil in the socket to short it out and putting the bulb back it needed. One should have backup strings in place hanging but flexibly constrained in such a way as to minimize damage due to heavy vibration. Make sure the bulb can move a bit (.5-1") but will not hit anything solid no matter which way it moves. Tin foil can be use to direct the light so as not to be directly into the eyes. More indirect lighting is best.

* These bulbs are more fragile than halogen bulbs as described by deal and halogen bulbs are more ideal however, we all have lots of these types of lights. I believe if mounted say with good nylon cord across the room or taped to coat hanger wire screwed to a wall so they are able to move only a small amount in any direction but not able to hit anything solid that for the most part they will come through the worst of it. The filament is the most delicate part and even if some don't make it threw we all have or can stock up on a lot of them cheaply before we need them. The ones not in use should be carefully packaged to with stand the shaking. I have personally dropped these while lit during mounting them on my house and Christmas tree and have been very surprised at there durability. Especially the low voltage ones. If you have a choice Halogen should be the main ones relied on during the majority of the shaking. The main advantage besides being cheaper is these bulbs offer many times lower drain on a battery as compared to most available tail light/halogen bulbs. My measurements show 5 bulbs out of a 50 string to use about .12 Amps at 12 volts. When a 6 bulb is added then it went to .11 amps. They also might work well as

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night lights for those who do not wish to sleep in total darkness. They offer a low end cost effective minimum wattage solution to those who don't look forward to the labor of recharging their batteries. Not much light is output will take some getting used to. Sure beats being in the total dark. Will make the gloom outside look real bright. We all should plan to have several types of lights. These can be picked up after X-miss fairly cheaply. Be sure to get the white non-blinking bulbs. Depending on how many you have working you may want to have some blinking to remind you there are stars still up there. Much blinking at real low light levels is probably not a good idea will drive you batty. Don't use the Colored bulbs. They waste light for they filter out all colors but one color.

* X-miss tree bulbs can be used to trap insects at night by attracting them. One way would be to put them close to the ground and send the kids out once in a while to net or otherwise catch them for cooking. Colors could be used for signaling neighbors of current local conditions i.e. all is ok. Used for birthdays etc. Used as night lights to guide movement around at night/day.

* Regular 12 volt auto bulbs non-halogen may be useful for some after the main shaking: Your local "99" store or equivalent has a "mini trouble light" with a 12 volt 8 watt (.74 Amps measured) bulb that plugs into a cigarette lighter. It comes in black or red plastic 4.5" high with a 1.5" hook on top and a 9 foot cord. It looks surprisingly durable for its price of \$.99. However, if this is not good enough, your auto parts supply house should have a better quality. This could be adapted to a permanent location by cutting off the cigarette lighter socket and hooking it in parallel with others and then to a switch and a battery. Recommend to line the inside of the light shield with tin foil to more adequately reflect and use the light.

* Most Auto parts supply houses have "rough usage" or "rough service" 3000 hr. (for drop or trouble lights) regular 110 and 12v full standard sizes socket for 50, 60 and 75 watt incandescent lamps if some feel they want to try this out. Typical price is about \$.75/bulb. My own thoughts are they may work in some cases after the main shocks are over and we are going down in size of quakes.

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* Xenon lamps are showing up an approximately 2x or more the cost and are more efficient than the halogen "80% more efficient than a standard bulb" also gives a whiter light.

Battery power consumptions usage notes:

Assumptions: (till better data is available)

Typical side marker or instrument light bulb draws .26 amps

Typical tail light draws .55 to 2.5 amps depending on filament used

Head light bulb draws

# Bulb type	Amps	Time to drain 100 amp-hrs (roughly 2 auto bats)	
6 X-miss tree	.11	909 hrs	37.9 days
5 X-miss tree	.12	833 hrs	34.7 days
1 side marker	.26	385 hrs	
1 tail light	.55	182 hrs	
1 tail light	2.50		
1 head light			

Garage sale items to watch for old x-miss tree light strings.