

BURNING MAN

PLANS AND PREPARATIONS

(FREIGHT CONTAINER VERSION)



*After the fire, the fire still burns
The heart grows older, but never, ever learns
The memories smoulder and the soul always yearns
After the fire, the fire still burns*

- Peter Townshend

I. **Converted Freight Container**

Standard 40 foot size, standard height

A. **General considerations**

1. the basic unit is much more rugged than a conventional RV
2. it is virtually impervious to the type of elements that we are likely to encounter (hot, windy, dusty desert)
3. it is much less expensive than a conventional RV
 - a) initial purchase price
 - b) annual maintenance
 - c) insurance
4. it can be configured to our specifications
 - a) need not include items that we don't want or need
 - b) need not be finished to the sort of residential appearance that RV interiors tend to emulate
5. post-event cleanup should be easier (I have heard complaints that a conventional RV is never really clean again, once it has been to Burning Man)
6. admittedly, transport will be more of an issue; they can be moved cheaply by rail, but local delivery by truck is needed (a freight forwarder or "expediter" might be useful)
7. unconverted units
 - a) the empty container, a standard 40' length, standard height box, is typically offered for \$1,000 - \$3,000, used, in good condition (prices vary widely and advertised retail website prices tend to be high)
 - b) watch for unconverted units that have options that would be useful after conversion (such as wood flooring or thermal insulation)
8. already converted units
 - a) if buying an already converted unit, make sure that it has not been modified to the point where it can no longer be shipped as a freight container (watch for items that stick out beyond the box, like rooftop air conditioners)
 - b) available online from a number of sources and in a wide variety of interior configurations (a good example is Containerhouse)
 - c) they tend not to be 'all in one' configurations, like RV's; rather, they tend to be made into single purpose rooms
 - d) there are examples on various web sites of containers that have been made into bunkhouses, kitchens, break rooms, shower rooms and laundry rooms

B. Exterior

1. keep the exterior of the converted container as close to standard configuration as possible
 - a) it is important to be able to ship the box on the same basis as any other freight container
 - b) make sure that feed-through connectors and air conditioners do not present a problem, in this regard
2. change the registration numbers that are painted on the box; register the box as a private car that is owned by a non-common carrier
3. choose a box that is painted in a light color, to minimize the absorption of heat
4. check for corrosion; repair and repaint as necessary
5. try to find a box that has a ladder recessed into the side of the exterior, which will provide roof access
6. install a few exterior lights or LED's for visibility and safety; choose an unusual light pattern that will make the box more easily found among other RV's at the event

C. Interior

1. the basic concept is that of a simplified, ruggedized RV built into a freight container
 - a) some persons have commented that an RV built to these specifications will be austere and barren; I do not believe that there is anything in these notes that would necessarily lead to that result
 - b) ultimately, the unit can be as comfortable, even luxurious, as you would like, it is just a matter of selecting the right furnishings and materials, possibly installing them in unconventional ways
 - c) the key difference between this unit and an ordinary RV is that I'd like to use materials that are rugged and durable enough for the conditions that we will encounter and avoid materials that would be problematic, like fabrics or upholstery that cannot be removed and washed, I'd also like to have provisions that will make a heavy, after-event cleaning quicker and easier
2. furniture
 - a) standard RV's have conventional, upholstered furniture that is permanently installed
 - b) in our containerized RV, I want to use rugged, high quality, outdoor furniture (like Front Gate or equivalent)
 - c) it would be less susceptible to dirt and dust and could then be removed from the box for cleaning, after the event

- d) this will necessitate some sort of tie-downs or provisions for storage during shipping
- 3. a floor-plan similar to an RV of comparable size, along with the sort of appliances normally found in an RV (all appliances should be specifically intended for use in an RV)
 - a) bedroom
 - (i) beds
 - (a) *possibly* fold-down type, aka Murphy beds (with modern safety provisions)
 - (b) *possibly* folding cots
 - (ii) storage
 - (a) conventional RV bedrooms typically have a great deal of wooden cabinetry, such as a bureau and a wardrobe
 - (b) permanently installed cabinets and other enclosures that trap dust and dirt will be a liability, cabinets that can be removed and vacuumed will result in cleaner surroundings and will actually raise the overall comfort level
 - (c) I would prefer some sort of simplified storage compartments that have tie-downs to hold luggage, such as hanging garment bags or a trunk
 - (d) a portable wooden chest or trunk for bedding, blankets, towels, etc. that could be secured for shipping, left open when the box is occupied and then removed from the box after the event
 - b) full lavatory with shower
 - (i) need not be as ornate as most RV lavatories, which are sometimes advertised as being equivalent to a bathroom in a private house
 - (ii) an airline-style lavatory with a flushing toilet would be ideal
 - (iii) a simple, basic shower could be combined with it
 - (iv) the emphasis should be on ruggedness and easy cleaning
 - (v) clothes washer / dryer is a possibility
 - c) RV-type kitchen
 - (i) sink with hot and cold running water and some sort of water filter, possibly a cartridge filter
 - (ii) conventional stove (range top) - electric
 - (iii) conventional oven - electric
 - (iv) microwave oven (microwave only, not a combination unit)
 - (v) refrigerator/freezer (such as a Norcold DE / EV 0061 AC/DC unit)
 - (a) these units (AC/DC) tend to be smaller than standard RV refrigerators (the Norcold 0061 is 7 cubic feet), two of them may be needed

- (b) if two are needed, the two installations should be fully redundant, with each refrigerator wired to a separate battery, so that if any part of one system fails, the other will remain usable
 - (c) the electrical hookups should use Anderson Power Poles, wherever possible
 - (d) I do not want the propane backup capability that some RV refrigerators have
 - (e) I do not want a built-in ice-maker or water dispenser, for reliability reasons
 - (vi) a separate, ruggedized commercial ice-maker is a possibility
 - (vii) dishwasher is a possibility
 - (viii) heavy-duty, built-in, manual can opener (restaurant style)
 - (ix) airline-type latching drawers and cabinets (assume that the freight container will be subjected to steep tipping angles and swinging motion during shipping)
- d) sitting / dining area
- (i) dining table, chairs, possibly a small couch
 - (a) these would be removable, heavy-duty lawn furniture
 - (b) the dining table should be heavy enough that it won't be blown away by high winds or else it should be possible to guy it and stake it to the ground, when it is used outdoors
 - (c) possibly a table that accepts an umbrella in the center (some umbrella bases fill with water, for weight)
 - (d) metal lawn chairs with cushions that attach to them
 - (e) these could be supplemented with folding chairs of the right height to fit the table, such as director's chairs
 - (f) one or more side-tables
 - (ii) a very large cooler that can also be used as a seat
 - (a) some of the larger coolers have optional seat cushions that attach to the top (they can be difficult to find, but boating supply stores sometimes stock them)
 - (b) provide a way to attach the cooler to the floor, possibly with hard points and tie-downs
 - (iii) there may be some storage areas and cabinets in the sitting / dining area, but the emphasis should be on the use of footlockers or other storage units that could be carried into and out of the container, possibly some sort of cart

4. flooring

- a) some freight containers have wooden flooring, which could be sanded smooth, stained and covered with a thick coating of Varathane (or equivalent, non-yellowing premium brand of polyurethane)
 - b) the result would look like indoor flooring, but would not be a source of splinters, due to the coating
 - c) it would not hold dust or dirt, as carpeting would
 - d) alternately, a steel-floored container could be covered with vinyl flooring or terrazzo tile
 - e) if the steel floor is not flat or if there is only a walkway that does not extend to the side walls, plywood or rigid plastic may be needed as an under-layer
 - f) the box could be subjected to a certain amount of bending and twisting when it is moved, flooring must be able to endure that (e.g., small tiles that would break out of their mortar would be a problem)
 - g) I don't want wall-to-wall carpeting, but removable, washable area rugs are a possibility
 - h) wrestling mats
5. walls / ceiling
- a) some sort of wood paneling, wood-grained vinyl flooring or other covering will be needed to go over the insulating material, if it does not have a presentable appearance
 - b) fabric coverings should be avoided, unless they are removable and washable or replaceable, because of their tendency to hold dust
6. doors / windows
- a) any modifications involving doors and windows should be done in such a way as to maintain the ability to ship the box
 - b) since an unmodified container has only one set of doors (double doors on one end), it will probably be necessary to install some sort of emergency exit or window exit elsewhere in the box
 - c) a Plexiglas divider could be installed a few feet inside the existing doors, with a sort of "storm door;" this would let in a great deal of light, as well as providing more convenient ingress/egress
 - d) the space between the Plexiglas and the existing doors could be used as a storage area (something like a "Job Box" could be permanently installed in that space, for lockable storage)

D. Systems

- 1. electrical - 120/240 VAC, 1Ø
 - a) install an external, all-weather power inlet (with protective cover) of adequate capacity (probably a CS6375) and rely on external power, such as a portable generator

- b) make sure that the requirements of all on-board electrical devices will match up with this (voltage, number of phases, non-sinusoidal waveforms from some generators)
 - c) include an RV-style circuit breaker box / control panel
 - (i) possibly something along the lines of a "Powerline" power management system
 - (ii) something like an Intellitec Generator Logic Control is a possibility
 - (iii) some portable generators have optional remote controllers
 - d) external connector to ground the electrical system and the metal box itself
 - e) install a few electrical outlets in the interior - 120 VAC, ruggedized, with protective covers
 - f) interior lights (built in) and switches (as well as a few, small 12 VDC indoor lights of the type that are typically used in RV's)
 - g) UPS / power conditioner
 - (i) in case we connect to a generator that produces non-sinusoidal output, install a unit that can produce clean output from that input
 - (ii) capacity should be adequate for computers and any other small electronics that are likely to be brought along and may require "computer grade power"
2. electrical - 12 VDC
- a) include one or more very large batteries, like Group 8D batteries, probably deep cycle gel cells, to power lights, the refrigerators, other small items when the generator is not running
 - b) if two of them are used, both installations should be fully redundant, with separate chargers and wiring
 - c) put them in battery boxes, like Moeller Battery Box-8D 042209, but verify that heat build-up while charging will not be a problem
 - d) include enough chargers with adequate charging rates to recharge the batteries within the available time, possibly a pair of Blue Sea P12 40 amp units
 - e) install a large Astron, TrippLite or similar 12 VDC power supply (40 amps or more at 12 VDC) and a West Mountain PWRgate PG40S or similar switch (to switch between the 12 VDC power supply when the generator is running and the batteries, when it is not running)
 - f) install a West Mountain Rig Runner power strip on the wall in the sitting area
 - g) connect the outdoor lights, indoor 12 VDC lights and the refrigerators directly to the batteries and the power supply, not via the power strip, although Anderson Power Poles should still be used, wherever possible

- h) an Intellitec Generator Logic Control or similar might be installed to automatically start the generator if the battery voltage goes below a certain level or if the refrigerator needs to run
 - i) when calculating battery capacity (amp-hours) and required charging rates, I estimate that air conditioning will be needed for something like 6 to 8 hours daily; probably from late morning until late afternoon (the hottest part of the day) and since only the generator can power the air conditioner, there should be up to 6 to 8 hours of battery charging time per day
3. heating / ventilation / air conditioning (HVAC)
- a) substantial insulation will probably be needed
 - b) note that the daily temperature range is usually quite wide in the Black Rock Desert in late summer; daytime highs are typically 85° to 100°F; overnight lows are typically 45° to 60°F; all aspects of the HVAC system must be able to tolerate this
 - c) air conditioning
 - (i) must be adequate to produce at least a 20°F temperature differential in $\geq 95^\circ\text{F}$ daytime highs (e.g., 98°F outside, 78°F inside)
 - (ii) a “wall” unit that is permanently installed
 - (a) possibly a 240 VAC unit
 - (b) possibly two of them
 - (c) should be a ruggedized, portable unit
 - (iii) a “central” unit with ceiling distribution (such as a “TrueAir”), although this is unlikely in a box, due to height constraints
 - (iv) the air conditioning intake filter will have to be able to withstand the powdery alkali dust that is found in the Black Rock Desert and is, more or less, always present in the ambient air, with occasional high winds producing dust storm conditions
 - (a) the filters should be replaceable and spares should be taken along
 - (b) it might become necessary to clean or replace the intake filters during the event, so they should be readily accessible
 - d) heating - electric baseboard heating (probably not necessary for this event, but it is easily added and the unit could be considered incomplete without some sort of heating capability)
 - e) ventilation / exhaust fan(s)
 - (i) RV-type vents with electric fans
 - (ii) some sort of scupper or wind-driven exhaust fan might be adequate
 - (iii) filters will be an issue, even on simple vents
4. utility connections and misc. wiring
- a) feed-throughs for telephone, cable TV and CB/ham radio are common on RV's; it should be a simple matter to copy that model

- b) provisions for a rooftop satellite antenna, either for TV or for Internet access (presumably Swift Broadband), possibly just a run of microwave-rated coax and some connectors
 - c) *possibly* a second run of microwave-rated coax or Ethernet cable for connection to a rooftop wi-fi device
5. fuel
- a) the use of a separate, external generator will make on-board gasoline, diesel fuel or propane tanks unnecessary and will require that all appliances be electrical
 - b) I don't want any fuel storage of any sort on-board, in order to make the container safe (and legal) for shipping and to avoid "sloshing" during shipping
 - c) we will rely on external fuel tanks that will be transported separately or delivered to the site by fuel vendors
6. water
- a) internal plumbing - it should be a simple matter to install plumbing to the lavatory and the kitchen
 - b) it would be fed from a single point, an external hose connector (ruggedized, cleanable, replaceable), that would accept an ordinary garden hose that could feed from
 - (i) an external tank, such as a 55 gallon drum
 - (ii) an external tank that is bundled to a pallet
 - (iii) external running water
 - c) a water pump to pressurize the entire system (to provide hot and cold running water) when drawing from a tank
 - d) a cartridge filter (in the feed line) for drinking water
 - e) hot water heater - electric
 - f) a water supply will be necessary to feed a separate, stand-alone ice-maker, if we have one
 - (i) perhaps a small water tank would be a simpler and lower maintenance solution than a water line tap off from the main system
 - (ii) especially since maintaining potability with RV water systems can be an issue
7. holding tanks
- a) for grey and black water
 - b) tank capacity should be generous, in light of the fact that the availability of toilet service trucks can be uneven and unpredictable
 - c) these will probably be the only on-board tanks (other than the reservoir in the hot water heater)

- d) assuming that they are emptied before the container is shipped, the container will travel with no liquids on-board
- e) install standard external rv-type connectors (ruggedized, replaceable) to empty them

II. Advance Planning and Preparation

A. Equipment and Supplies

1. generator
 - a) external, portable unit, preferably diesel, ideally Caterpillar (I will assume that there is no built-in unit in the freight container, so an external one will be needed)
 - b) should be able to provide power continuously (up to 24 hours/day) for up to 10 days
 - c) should be usable in $\geq 100^{\circ}\text{F}$ ambient temperatures
 - d) should be able to handle ambient air that has a great deal of suspended particulate matter
 - (i) air filters should be easily replaceable
 - (ii) see if there are any air filtration options
 - e) should have adequate power output to drive the air conditioner, kitchen facilities, including refrigerator / freezer / ice-maker, microwave, battery chargers, portable stereo (*described elsewhere in this document*), lights, etc.
 - f) when calculating the required wattage, we should assume that all appliances will be electrical
 - g) watch the noise specification; various muffler / enclosure / soundproofing options may be available, especially with the larger diesel units
 - h) bring the operator's manual
 - i) if I were to buy a generator today, I'd get a Kubota GL-11000 Lowboy II, only because Caterpillar no longer offers a unit in this size range (like the now-discontinued D13P2S)
 - j) gasoline generators are a possibility that cannot be ruled out (someone else might bring one), however:
 - (i) gasoline generators tend to be smaller, that is, they produce less power
 - (ii) they cannot produce as large a percentage of their total rated output, over an extended span of time
 - (iii) they are less able to run continuously for long spans of time
 - (iv) they are usually air cooled, while water cooling is common with diesels, especially the larger ones
 - (v) gasoline is a bit dangerous at the 100°F temperatures often experienced at Burning Man, especially when it is being transferred from jerry cans to the engine's gas tank, even more so if the generator is hot from use
 - (vi) difficulty in obtaining gasoline refills may lead to the stockpiling of filled gas cans, which would be dangerous

- (vii) if gasoline must be used, I would like to get good cans that offer some measure of safety, like mil-spec jerry cans (gasoline cannot be stored safely in the large drums that we intend to use with diesel fuel)
 - (viii) see the Burning Man Survival Guide for more on fuel storage
2. generator supplies
- we will need a considerable quantity of supplies and consumables for the generator; all such items should be rugged enough to endure the conditions in the desert
- a) extra motor oil
 - (i) the high temperatures and extended run times might call for a grade other than the one you normally use
 - (ii) check the generator's manual for the oil change interval; it may be necessary to change the oil during the event
 - (iii) if so, bring an oil change pan and a container for the used oil
 - b) extra anti-freeze or pre-mixed coolant (some models are water cooled)
 - c) replacement air filters, oil filters, fuel filters, etc.
 - (i) include the tools needed to change them; note that the smaller size and limited accessibility of generator engines may make conventional automotive tools unusable
 - (ii) include a filter wrench, like a "Gear Wrench" oil filter strap wrench (requires a socket wrench with an extension, to turn it) or a 3-legged oil filter wrench of the right size
 - d) spare fuses (probably ATC/ATO blade fuses, but cartridge fuses are used in some larger equipment)
 - e) if sharing a generator between a number of shelters, consider getting something like a Leviton "The Box" (catalog number PB103-SGF or PB103-000) to act as a distribution point
 - f) if sharing a 3-phase generator between multiple shelters, include a box to break out the phases; it should have enough sockets of various sizes to make it easy to balance the load

- g) electrical connectors and plug adaptors, to adapt to the sockets typically found on an external, portable generator

Designation	Description
NEMA 5-20	120 VAC, 20 amp - accepts ordinary 3-prong plug
NEMA L5-30	120 VAC, 30 amp twist plug
NEMA L6-30	240 VAC, 30 amp twist plug
NEMA L14-30	120/240 VAC, 30 amp twist plug
CS 6364/6365	120/240 VAC, 50 amp

Table 1: Plugs for generator

- h) extension cords
- (i) of adequate capacity (note wire gauge or wattage rating) and length
 - (ii) note plug and socket types - some cords have more than one type of socket
- i) a cord to connect the container to the generator
- (i) in the case of conventional RV's, these are built-in, but with a container RV, it will be external and will require some sort of spool for transport
 - (ii) cords with some of the more common connectors can be ordered from Northern Tool, Leviton, etc.
 - (iii) if unusual connectors are used or if an unusual length cord is required, it may be necessary to have one made up
- j) protective covers for empty sockets, possibly locking covers
- k) some sort of grounding stakes and wires, to ground the generator chassis and the freight container
3. water, diesel fuel and related gear
- a) at the start of the event, I would like to have a 10 day supply (8 day event plus a 1 day safety margin on either side with some margin for unexpected usage) of water and diesel fuel, without relying upon on-site refills, in case of a supply interruption
- b) containers
- (i) drums (55 gallon) can be used for water or diesel fuel
 - (a) all drums should be clearly labeled "potable water" or "diesel" to avoid confusion
 - (b) it would probably be good to color code them, as well
 - (c) drums used for water
 - i) should be made of food-grade plastic (these are usually labeled "FDA approved") or
 - ii) should be made of steel

- iii) ordinary steel drums (non-stainless) should have a lining that makes them suitable for use with potable water
 - iv) the best steel drums used to be “stone” lined, but they seem to have disappeared from the catalogs
 - v) stainless steel drums don’t need a lining and are considered top quality, but they are extremely expensive (>\$600)
 - (ii) water trailer
 - (a) the standard military surplus size is 400 gallons (such as Aero Welding brand) and is made of steel
 - (b) the trailer hitch may need modification (it may be a military style ring fitting and not a class III or class IV unit)
 - (c) commercial water trailers usually have a plastic tank, can be any size and are mounted on ordinary trailers whose strength and durability vary widely
 - (iii) cargo pallet or “skid” tanks can be used for water
 - (iv) a tank that is mounted in an intermodal freight container can be used for water (tanks tend to be installed in the shorter containers, like the 10 foot size)
- c) refills
- (i) water and fuel vendors in Reno can ship directly to the site; this can now be arranged through the Burning Man web site
 - (ii) they should be able to provide secondary containment devices for the fuel drums
 - (iii) water vendors should be able to refill drums, water trailers or larger tanks, which could be used as a point of delivery for a group
 - (iv) fuel vendors should be able to refill the fuel drums
 - (v) drums or a water trailer could be driven to Gerlach and refilled, although off-site travel is difficult to arrange and must be set up in advance; still, the option should be kept as a backup in case of supply interruption
- d) a fuel pump for diesel fuel
- (i) include a hose and a spout
 - (ii) note that pumps of this type are rated for the specific types of fuel that they can handle and very few are rated for use with gasoline
 - (iii) Global Industrial has a 10 GPM, rotary crank, cast iron, manual model
 - (iv) Northern Tool and Equipment has a 12 VDC powered model (complete package) specifically designed for use with a 55 gal. drum
 - (v) alternately, get the hardware needed to use the drum as a fuel tank, including a “return” line (not all generators can feed directly from a drum)

- e) a water pump
 - (i) needed to deliver a pressurized flow into a hose to provide running water to a containerized RV that has no internal water tanks
 - (ii) some water trailers have built-in pumps; tanks on skids or 55 gallon drums will need an external, add-on water pump
 - (iii) make sure that the pump includes a pressure regulator or else take along an in-line pressure regulator that goes in a water hose line
 - (iv) include a length of water hose suitable for use with potable water
 - (v) a stainless steel hand pump could be used with a potable water drum that is placed inside the container, in the event that the RV plumbing system cannot be kept potable, which is not an unusual situation with RV's
- f) accessories
 - (i) cap hardware
 - (ii) drum wrench (multi-tool to open the drum plugs)
 - (iii) if the drum plugs have been put on with an impact wrench, it may take a breaker bar and a Snap-on A172A drum plug socket (1/2" drive) to open them
 - (iv) air filter attachment for the 3/4" vent on a 55 gal. drum, to remove airborne particulate matter (get a few)
 - (v) some sort of chlorine (or other water treatment) pellets to put in the water to keep it potable
 - (vi) a ramp or plank to load the drums into a car or a truck
 - (vii) something to set the water drums on so that they won't sink into the dirt
 - (viii) some sort of secondary containment for the fuel drums, as required by the Survival Guide
- g) Katadyn water filters
 - (i) in case we get water that is not up to potability standards
 - (ii) in case non-potable water is available on site, such as water from the hot springs, which is sometimes distributed for use in pools
 - (iii) only the military or expedition-type units are large enough, that is, capable of producing a sufficient volume of water, to be useful in this context
 - (iv) there is a foreign military unit that is operated by a bicycle-type mechanism
- h) portable camping showers
 - (i) basically, these are black plastic bags with spray nozzles; you hang them from something, the sun warms the water and then you stand under them and shower

- (ii) this would be a good use for melted ice that must be drawn off before adding more ice, as in a large cooler
 - i) a large, shallow trough or metal laundry basin that can be used to evaporate dirty water
4. coolers
- a) a heavily insulated cooler to transport perishable foods to the event and as a backup to the refrigerator
 - b) a separate cooler for drinks and other non-perishable items that will be accessed frequently
 - (i) place it carefully, because once it is filled, it will probably become so heavy as to be immobile
 - (ii) take along a hose to drain off excess water when adding ice (a pump might be needed, perhaps a foot-pump, like a “Whale Gusher”)
 - c) large (5 or 10 gallon) insulated drink coolers with pouring spouts - these can also be used to hold ice cubes
5. kitchen equipment for camping
- a) the usual package of pots, pans, plates, utensils, barbecue tools, tongs, spatula, etc.
 - b) drinking glasses, unbreakable plastic or ceramic
 - c) a wok-like grating for cooking vegetables and small items on a barbecue grill
 - d) CanCooker (steaming device)
 - e) “rib rack” for baked potatoes
 - f) a device to chop whole potatoes into french fries
 - g) pots and pans should be all-metal (including the lids and handles) and capable of being placed directly on a barbecue grill or a camp grill, as those could be our sole “stoves”
 - h) plates and utensils should be able to withstand being cleaned by being rubbed with dirt or sand and then left in direct, midday sunlight for hours
 - i) a can crushing device - large, heavy duty, possibly foot operated or crank-type
 - j) travel mug, Thermos, water bottle, canteen, etc.
6. barbecue equipment
- a) hibachi (2 or more)
 - (i) include a table or stand to set them on
 - (ii) one of them should be a covered model, like a “Smoky Joe”
 - b) charcoal
 - (i) take a very large quantity, considering that the barbecue could be our sole “stove” when the generator is not running

- (ii) see if it is available in a large, industrial size barrel or drum
- c) charcoal lighter
 - (i) electric charcoal lighter - 120 vac model (with extension cord and, possibly, a grounding wire and rod)
 - (ii) chemical lighter fluid could be taken along, just in case, although it is highly desirable to use an electric lighter instead, to avoid fumes, residue, visible flames that might alarm the fire marshals, etc.; Kingsford makes a solid chemical lighter that looks like small cubes of styrofoam and produces very little smoke
- 7. campfire equipment
 - a) a camp grill
 - (i) this is a heavy-duty, wire mesh cooking surface with fold down legs
 - (ii) it is placed over a campfire and it enables you to heat pots over the open flame
 - b) firewood
 - (i) for use with wire mesh garbage cans and with the camp grill
 - (ii) some of it should be suitable for cooking on directly, such as hickory or mesquite wood
 - (iii) calculate the right quantity; we want enough, but we don't want to have to haul away leftover wood
 - c) cinder blocks
 - (i) to enclose a campfire under a camp grill
 - (ii) they can also help control the air flow into the fire
 - (iii) to set the wire mesh garbage cans on
 - d) fire bricks - to build a fire brick floor under the campfire
- 8. deep fryer
 - a) electric, counter-top deep fryer
 - (i) should be used outdoors, for safety reasons and to prevent a buildup of residue on the interior walls and windows
 - (ii) find a unit with a wattage requirement that is not excessive for our generator
 - b) propane (outdoor) deep fryer
 - (i) sometimes called a turkey fryer
 - (ii) include a stock pot of adequate size
 - (iii) bring a propane tank, possibly two, with a propane hose that is in new condition and is equipped with a pressure gauge*

* This is for safety reasons, as the desert heat and intense sunlight create a danger of explosion (by increasing the pressure inside the tank); the 4000' elevation further increases the pressure differential; it is my hope to minimize our use of propane and to use no gasoline whatever; diesel fuel should be the primary fuel

- (iv) when exchanging your empty propane tank for a full one, pick one that looks new, appears to be in good overall condition and is free of dents
- c) a large supply of cooking oil
- 9. solar oven
 - a) there are a number of new solar cooking devices on the market, in addition to the basic, fold-out “oven,” the Solsource cooker is an example
 - b) non-standard cookware may be needed with these, perhaps something like a CanCooker, Jr.
- 10. stereo equipment
 - reliability in the harsh, desert environment is always an issue, but electronic gear is particularly susceptible, note also that there are rules about the sound level that can be produced
 - a) rugged, portable speakers like those used by DJ’s and bands, ideally JBL
 - (i) note that using powered speakers would reduce the amount of gear required and avoid a lot of complexity
 - (ii) if we don’t have powered speakers, get rugged, portable electronics, such as a Crown amplifier mounted in an ATA shipping case
 - (iii) include a connecting cable that has RCA plugs or XLR connectors for the line-level inputs on the amp, mix-down board or powered speakers on one end and RCA plugs or a stereo mini plug on the other end (impedance matching may be an issue)
 - b) all-in-one boom-box (with radio)
 - (i) should accept a USB stick
 - (ii) should have outputs (RCA jacks or stereo mini jack)
 - (iii) should be of adequate quality to function as the front end of the entire stereo, look for a ruggedized unit
- 11. electronic gear and accessories
 - a) GPS unit, hand-held or dashboard-mountable
 - b) extra storage media (for digital cameras)
 - c) camera lens filters for bright, desert conditions (skylight, polarizing, etc.)
 - d) flashlights
 - e) wearable lights
 - f) extra batteries / power cords / battery chargers
 - g) digital voltmeter, ruggedized
- 12. a wagon or garden cart that can be used to haul heavy items that you would not want to carry in those temperatures (like a large cooler full of ice)
 - a) it should have large wheels that will work on the dry lake bed, even when it is heavily loaded

- b) it should be able to carry substantial weight; it should be rated for at least a few hundred pounds
 - c) it should have a handle that can be replaced with a towing hitch (possibly a Clevis pin hitch)
13. bicycle
- a) probably a mountain bike with tires that will work on the soft surface
 - b) it could have some sort of towing hitch to pull the wagon
 - c) a rack to carry bikes behind a car (the type that plugs into the trailer hitch)
 - d) extra lights, especially wheel lights
 - e) possibly, some sort of holder for a bottle, thermos or cooler
 - f) bicycle lock
 - g) bicycle repair kit, parts and tools
14. bedding / towels
- a) inflatable mattresses and/or folding cots
 - b) sleeping bags - warm enough for use in occasional 40° - 50°F overnight low temperatures
 - c) pillows
 - d) if we have conventional beds in the freight container, we will want conventional sheets and blankets
 - e) towels, including some extra large, extra thick beach towels that can be spread on the cots
15. garbage facilities
- a) trash compactor (manual)
 - b) hefty bags (and a place to store full ones)
 - c) aluminum can crusher
 - d) wire mesh garbage cans that can be used for a bonfire (like the ones used at the beach)
16. tools and hardware supplies
- a) wooden stakes (slats), a small roll-up fence, small flags, pennants, yellow "crime scene" tape, etc. to mark off:
 - (i) access lanes for toilet service vehicles and water delivery vehicles
 - (ii) liquid fuel storage safety zone (check website for current details)
 - (iii) ropes, guy wires and other hazards (if they are present)
 - (iv) area for the barbecue, deep fryer or other open flames
 - (v) area for the generators (external)
 - b) stakes and ropes to secure tents and other temporary structures against the high winds; note that the soft surface of the playa necessitates the use of extra long stakes (12" to 18")

- c) include hammers and related tools to install the stakes and to remove them afterward
 - d) a small air compressor to fill inflatable mattresses
 - e) dry chemical fire extinguisher(s), it is required if there is fuel storage
 - f) duct tape (or equiv.)
17. cleaning items
- a) soap
 - (i) bar soap
 - (ii) liquid soap (for manually washing dishes in the sink)
 - (iii) dishwasher soap (if there is a dishwasher)
 - (iv) laundry soap (if there is a washing machine)
 - b) paper towels
 - c) Lysol or similar spray
 - d) hand sanitizer
 - e) towels, rags, cloths, sponge mop
 - f) window squeegee
 - g) Windex
 - h) plastic buckets (for use as wash basins)
 - i) some sort of bag or bucket for transporting pumps and hoses that have been used with diesel fuel
18. drugstore items and non-food groceries
- a) skin oil
 - b) mineral oil
 - c) sunscreen
 - d) Chapstick with sunscreen
 - e) eye drops
 - f) nasal spray
 - g) first aid kit, extra large, including sunburn remedies (large quantity)
 - h) tin foil - heavy enough to wrap potatoes for cooking
 - i) paper plates
 - j) wooden utensils (disposable)
 - k) matches / disposable lighters
 - l) plastic bags
 - (i) zip lock bags, various sizes
 - (ii) garbage bags
 - m) toilet paper (RV type)
 - n) rv holding tank deodorizer (large quantity)
 - o) note pads and pens
19. clothing

- a) hats, broad-brimmed, natural fabric
 - b) long-sleeve cotton shirts, thick enough fabric to give some protection from the sun, like safari shirts
 - c) hiking boots - summer weight, suitable for use on the dry lake bed
 - d) sunglasses - oversize lenses, with good UV protection
 - e) goggles or safety glasses (possibly like the ones used for paint-ball) - for use during dust storms
 - f) face mask with particle filter (inexpensive, disposable units are sold in hardware stores)
20. general storage
- a) *possibly*, a second freight container
 - (i) an ordinary, unmodified one
 - (ii) possibly a smaller size, 20' is very common and easy to transport
 - (iii) it could be filled with equipment and supplies and then shipped to the site, in addition to the converted, live-in container
 - b) this is likely to be necessary if we make the trip as a large group with multiple shelters

B. Food / Drinks / Groceries

Everything should be in aluminum cans, plastic containers or paper packaging to facilitate disposal via trash compactor; no glass bottles or jars should be taken, unless it is absolutely unavoidable and, even then, it should be kept to a minimum, as they will produce a large volume of garbage that will have to be packed out. While on-site garbage removal is not available, there is usually a group that collects aluminum cans for recycling and cans can be crushed in a device that will make them quite small. See if it is possible to get drinks in large “commercial” size containers, like drums.

- 1. drinks
 - a) Coke
 - b) ice tea - 1 gallon plastic jugs, like Arizona or Arnold Palmer
 - c) powdered ice tea mix - with lemon and sugar, possibly other powdered drink mixes (to mask the flavor of bulk water)
 - d) Snapple and other assorted, non-refrigerated drinks - 12 oz. cans, assorted flavors, some of which should be usable as drink mixers
 - e) rum or other spirits that will mix well with fruit drinks - plastic bottles, any size (larger sizes preferred)
 - f) wine, Franzia or similar - the type that comes in a foil-lined, rectangular cardboard box that has a built-in handle (“bag in a box”)
 - g) beer
 - (i) primarily in 12 oz. (or larger) cans; no glass or plastic bottles

- (ii) 5 liter mini-kegs - Beck's, Warsteiner and a few other brands are available in these (5 liters \approx 14 servings of 12 oz. each), a full size keg is a possibility, if we have a large enough group
 - (a) be sure to include enough cups, which should be sturdy plastic beer cups that will not be affected by the heat (do not use wax paper cups, the wax will melt, the paper will become waterlogged, the cup will break and the drink will be spewed)
 - (b) make sure that tap hardware is not required or is included
 - (c) they could be placed in the big cooler (along with the cans of soda) and packed with ice
 - h) water, in a 30 or 55 gal drum, bottled water grade - see section on water and diesel fuel
2. packaged, nonperishable foods
- the desert camping environment dictates that the menu will be basically "fast food" and not any sort of gourmet dining; all meals will probably take the form of chips/nuts for the appetizer, a "fast food" type of entree served with potatoes (baked potatoes on some days, french fries on other days) and a dessert of canned fruit or packaged snacks
- a) canned foods
 - (i) fruit, especially individual servings with pull-open tops; take a large quantity and a wide variety, as these would make good desserts and could be served with virtually every meal
 - (ii) tuna, salmon, etc. (these are also available in foil packages) - these could be warmed and smoked on the grill, although that would not be absolutely necessary, as they are already cooked
 - (iii) canned ham
 - (a) some brands (like Dak) state on the label that they don't require refrigeration at all
 - (b) some brands are much better tasting than others
 - (c) they tend to be much better when cooked on a barbecue grill
 - (d) they tend to get mushy when baked and microwaving will produce a nearly inedible result
 - (iv) soup - some brands (like Progresso) do not need to be mixed with water
 - (v) misc. other canned foods - get items that are ready to eat or that need only minimal preparation, whenever possible
 - b) potatoes (raw, in large bags)
 - (i) include sufficient tin foil to individually wrap them so they can be cooked on a barbecue grill, baked in a solar oven *or*
 - (ii) take a "rib rack" and a covered barbecue grill, like a "Smoky Joe"

- (iii) wash them before you leave for the event and repackage them
- c) bread (bread products go stale quickly in the desert, so watch the quantities, watch the packaging and pace your consumption)
 - (i) burger rolls
 - (ii) hot dog rolls, possibly heavy pumpernickel ones, like the ones used with bratwurst
 - (iii) hero sandwich rolls
- d) breakfast cereal
 - (i) instant oatmeal (various flavors) - note the preparation instructions
 - (ii) granola and other ready-to-eat cereals
 - (iii) granola bars
 - (iv) assorted "breakfast bars"
- e) snack foods and hors d'oeuvre items
 - (i) crackers
 - (a) Stoned Wheat Thins
 - (b) Triscuits
 - (c) Carr's crackers
 - (ii) nuts (in cans or foil packages)
 - (a) peanuts, cashews, etc.
 - (b) Planter's Caribbean Crunch (in foil pouch)
 - (c) Blue Diamond "smoke house" almonds
 - (d) Beer Nuts
 - (e) macadamia nuts
 - (iii) chips, substantial ones
 - (a) corn chips
 - (b) potato chips (assorted brands and flavors)
 - (iv) popcorn
 - (a) already popped, in a bag
 - (b) Jiffy Pop, if you have the right kind of stove
 - (v) beef jerky
- f) packaged desserts (*avoid chocolate, as it would melt*)
 - (i) Drake's doughnuts (the ones in sealed packages)
 - (ii) oatmeal cookies ("substantial" ones like Matthew Walker's oat cakes or Carr's wheat meal)
 - (iii) Pepperidge Farm cookies or Goldfish crackers in certain size packages (paper outside, foil lining inside; some sizes do not have the foil lining)
 - (iv) twinkies (and the like)
- g) condiments
 - (i) ketchup - very large quantity; take enough to use it on the potatoes, since butter will probably not be taken

- (ii) tartar sauce (in foil packets or numerous small, unopened jars, to minimize the need for space in the refrigerator or cooler)
 - (iii) barbecue sauce (in small sizes or foil packets)
 - (iv) salt
 - (v) pepper
 - (vi) sauerkraut (in numerous small cans)
 - (vii) assorted seasonings, spices and sauces as may be needed to make canned goods and frozen foods palatable
 - h) misc. other items
 - (i) walk through a large supermarket and pick up a wide variety of any well-packaged items that look interesting; they will be needed to break the boredom and monotony of living on the same few food staples for a week; the main consideration should be their ability to endure the heat without spoiling
 - (ii) smaller “gourmet markets” may have a number of less well known packaged items that would also be suitable
 - i) cooking oil (for the deep fryer)
3. refrigerated foods (*quantities limited by available cool or refrigerated storage space*)
- a) meats - be sure to get items that are fully cooked and sealed in plastic; these will have preservatives; avoid non-packaged meats (from the deli counter, butcher shop, etc.), even if they are cooked, as they are more perishable; stick to good brands, like Boar’s Head
 - (i) hot dogs
 - (ii) knockwurst
 - (iii) smoked sausage
 - (iv) kielbasa
 - (v) salami
 - b) fresh vegetables for the barbecue
 - (i) onions
 - (ii) mushrooms
 - (iii) tomatoes
 - (iv) lettuce
 - c) cheese, packaged, nonperishable
 - d) fruit juice, thick - suitable for use as a drink mix in the likes of a rum punch
4. prepared foods (pre-cooked)
- a) in the event that the container has a large enough refrigerator/freezer, pre-cooked foods could be bought just prior to the event (probably in Reno), transported to the site in a large cooler and loaded into the refrigerator once it is cold (i.e., once the generator has been running for a while)

- b) stick to items that would be found on a “summer menu,” as people often state that the conditions in the Black Rock Desert reduce the appetite
- c) even if this is done, an inventory of nonperishable food should be kept on hand as a backup, in case of a power failure / refrigerator failure

C. Sources of Equipment and Supplies

1. Northern Tool and Equipment - they have a large selection of generators, including industrial ones
2. Global Industrial - 55 gallon drum covers, drum platforms, various drum-related hardware, including safety items and tools
3. Sporty’s Preferred Living catalog
4. Front Gate - outdoor furniture
5. West Marine - coolers, related hardware, 12 vDC gear, including 8D batteries and related items
6. Mr. Solar
7. One Earth Designs - Solsource solar cooker
8. Cajun Shoppe - camp grills, heavy duty cookware
9. Leviton - they have downloadable technical manuals, as well as catalogs
10. Universal Radio - RF connectors, 12 vDC gear, Anderson Power Poles
11. C.I. Equipment - commercial water trailers
12. see the Burning Man web site and the Survival Guide for a listing of water vendors and fuel vendors that can deliver to the site

Revised 3/11/2020

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