



MDRS 2013-2014 Field Season

Personal Equipment List

These lists are suggested equipment for each MDRS crewmember. They do not cover all details of what you should consider bringing for your tour of duty.

Environment

The MDRS is located in the high desert plateau country near Hanksville, Utah. Weather can range from pleasant to very hot or cold, depending on the season. In winter and early spring, temperatures may drop well below freezing (20°F or approx. -5°C, especially early in the morning) and rise to very pleasant levels (60°F/15°C on some afternoons). The air is usually very dry, but it may snow, sleet or rain. Winds can peak to 50 kts and wind chill is an important factor to consider. The area can be muddy during the rainy season (October through March). Late spring and summer are usually quite hot and dry (100°F/ 37°C daily highs), and afternoon thunderstorms are common in the highlands. Flash floods are a potential hazard. If you plan to do field work, familiarize yourself with basic desert safety.

A few bits of MDRS jargon:

- ATV = "All-Terrain Vehicle", i.e., 4-wheeled motorbikes for use on marked desert roads
- EVA = Extra-Vehicular Activity (field work done in simulation)

Internet Connection

If possible, bring a personal laptop. Beware, the environment is dusty and hardware will suffer (MDRS is not an airtight structure). Power to recharge laptops will be available, but we don't recommend desktop computers (without batteries) because of occasional blackouts caused by generator malfunctions.

Connection to the MDRS LAN (local area network) is usually straightforward. All computers **MUST** have anti-virus software (Norton recommended). No machines without protection will be allowed on the network. Computers must be equipped with a PCMCIA Ethernet card, 10/100 Base T is preferred. From the hub on the wall above the desks there are RJ45 jacks to connect your laptop. NOTE: Shut down your laptop when not in use. Power is scarce at the Hab!

Internet service at the Hab uses a satellite connection through Hughesnet and is extremely limited in bandwidth. Between the hours of 7 am and 2 am Mountain time, the habitat as a whole is limited to about 350 Mb total transmission each way. If this allotment is exceeded, the internet connection automatically downgrades to extremely slow for a period of 24 hours. For this reason it is imperative to control automatic downloads to your computer. Before you come to MDRS, make sure all your applications are updated (e.g. operating system updates, virus/malware protection, application updates such as MS Office etc. Then

turn off all automatic updating and put a reminder on your calendar to turn them back on after your mission is over. Don't forget to cancel updates on your smartphone – if it plugs into your computer it may try to download its own software and app updates.

Batteries

All crewmembers should bring the batteries (rechargeable or not) they will need. NOTE please remove dead or near-dead batteries from the MDRS after use. Be sure to dispose of the batteries in an environmentally sound way and in accordance with applicable laws.

NOTE: NOTHING you bring can stay at the HAB!!

Unless with item by item very explicit permission of the Mission Director!

NO EXCEPTIONS!

Toilet

There is a normal flush toilet at the MDRS. The toilet formerly used recycled water from the GreenHab, but it is now plumbed with potable water. Because water has to be hauled out to MDRS in a tank, it must be conserved even though the toilet is a "low flow" design and is plumbed to a septic system. Please flush only solid waste and allow urine to accumulate for several uses before flushing. Please put NOTHING into the toilet except human waste and the minimum amount of toilet paper that you need to clean up after using the toilet. NO wet wipes in the toilet, no Q-tips and certainly NO TAMPONS and NO SANITARY NAPKINS In the toilet. All of these will settle in the lines to the septic system and clog the pipes.

Feminine hygiene items should be wrapped in toilet paper or some other covering, and placed in the bathroom wastebasket. If you are in the habit of discarding your feminine hygiene products in the toilet, practice an alternative way of removing them before you get to MDRS so that you don't drop them into the toilet by mistake.

Toiletries/Personal Care Products

In the past, crews were allowed to use only a particular brand of biodegradable soap due to limitations of the wastewater treatment system. Now that we have upgraded the plumbing, crews are allowed to use their own toothpaste and biodegradable shampoo, conditioner and body soaps (liquid soaps recommended). Each crewmember will have a small cubby in the shower room for storage of toiletries.

What to Pack

In the list of items below:

"Required" designates equipment/gear that each field team member MUST bring along. In some cases, a spare is required. You should definitely have ALL of this equipment in order to be properly prepared for your rotation at the MDRS.

"Recommended" designates equipment/gear that each field team member is strongly advised to bring along. These are items that are not required but are likely to make your life A LOT more pleasant.

"Optional" designates additional suggested equipment/gear. This is equipment that you should bring along if you think you will enjoy having it.

Personal Clothing and Gear

What to Bring	How Much	Need	Notes
Clothing	For 15 days with re-wearing	Required	Bring at least one change of warm clothing (heavy sweater, fleece, long pants, long/thermal underwear) as the Utah high-desert can be cool at night. The Hab has colder and warmer sections; for maximum comfort, dress in layers.
Underclothes	8-15	Optional	There are no laundry facilities at MDRS but space is also limited so consider wearing undergarments for more than 1 day.
Socks	8-15 pairs	Required	Bring 15 if you want to wear a clean pair of socks daily. It gets dirty out here quickly.
Bath towels, washcloth	2+	Required	You'll get a 2 minute Navy shower every 2-3 days. Practice at home especially for hair washing. A washcloth is helpful for low-water-use bathing. Consider a shower cap if your hair is long.
Baseball cap or brimmed hat	1	Optional	Great for keeping your head out of the sun when outside and not "in sim". Not suitable for wearing during EVA, though.
EVA Gear	see right	Required	<u>Hiking boots</u> – sturdy and already broken in. You must wear your personal boots on EVA. Be aware that they will get extremely muddy and/or dusty. <u>Black gloves</u> – 2+ pairs. Inexpensive "Brown Jersey" work gloves are good for cool to warm weather. Use heavy winter gloves in wintertime. Expect gloves to get very dusty and muddy. <u>Stocking Cap</u> – or "do-rag" or bandana in black or dark blue, essential to control your hair and secure sunglasses & radio mic on EVAs <u>Long underwear</u> – or long sleeve t-shirt or turtleneck, plus full length leggings or yoga pants. Worn inside EVA suit to keep the suit clean and to protect you from chafing by the rough suit fabric. <u>Wristwatch or pendant watch</u> to wear on the sleeve of your EVA suit or around your neck.
Windbreaker or winter jacket	1	Required	Bring a light jacket for night-time activity in the high desert in the warm season. If your mission occurs during the cold season, a winter jacket is essential.
Slippers or indoor sandals	1 pair	Recommended	To reduce dust, outdoor footwear is not worn in the living space (upper floor of Hab), but going barefoot is not recommended due to splinters & rodents.
Bathrobe and/or Pajamas	1 +	Recommended	It's a long way to the bathroom: through a cold, dark lab at night, and through a throng of fellow crewmembers in the morning.

Personal Items

What to Bring	How Much	Need	Notes
Duffel Bag or big suitcase	1	Required	There is limited storage space in the Hab for personal gear. All of your personal belongings must be stored in your stateroom, except your toiletries (in washroom cubby) and hiking boots (in EVA room) Staterooms average 4' wide x 11' long.
Laundry bag	1	Optional	No washer or dryer is available so washing is not really feasible
Ziploc bags and facial tissue	1-2 boxes each	Recommended	Great for collecting and protecting samples as well as protecting personal gear (i.e. cameras) from dust in the field. Consider slide lock zipper bags as gloves impair manual dexterity on EVA.
Sleeping bag	1	Required	A winter bag is recommended. Stateroom bunks contain NO bedding. Spring temperatures in the desert can drop below 0° C at night, and you must be prepared for potential loss of power in the Hab.
Thermarest pad/sleeping pad	1	Required	No padding is provided in your stateroom bunk. Full body length padding is recommended for warmth and comfort.
Pillow	1	Recommended	No pillows are provided; bring one if you need it for a good night's sleep. Alternatively, stuff a pillowcase with clothing/jacket and sleep on that.
Flashlight or head-lamp	1	Recommended	Useful at night, for repairing stuff, on EVAs... Bring spare batteries too.
Personal water bottle	1	Required	Helps you remember to stay hydrated in the dry desert climate
Hand or body lotion, lip care (e.g. chapstick, blistex)		Recommended	The high desert is an extremely dry environment. You will be more comfortable and thus more productive if your face and hands are protected by a lotion, and your lips by a lip balm.
Hydrating eye/nose drops	1	Recommended	The high desert is both dry and dusty. Required if you are prone to nosebleeds or eye irritation, or if you wear contact lenses
Sunscreen	1	Required	Desert sun can be intense; the high altitude further increases its intensity. EVA suit helmets provide only partial protection.
Sunglasses	1 or 2	Recommended	For UV protection. If you intend to wear them on EVA, bring something to secure them behind your head so they don't slip down your nose.
Personal first-aid kit		Optional	For small cuts, abrasions etc. MDRS has a well stocked first aid kit and a doctor on call at all times.

Personal Field Gear

What to Bring	How Much	Need	Notes
Utility knife (like a Swiss Army knife or Leatherman combo tool)	1	Strongly recommended	Very handy for repairs and field work. Note the airline restrictions on these items – bring yours in checked baggage.
Rock Hammer	1	Optional	Recommended for geologists. Rocks in the area are mostly "soft" so a standard sedimentary pick/hammer ("mason's tool") should suffice; the Hab has one sledge hammer. Ship in checked baggage. NOTE: THERE ARE NO ROCK HAMMERS AT THE HAB.
Hand Lens/Loupe	1	Recommended	10X-14X for close examination of specimens in the lab.
Brunton	OMIT		
Personal (handheld) GPS & charger or batteries	1	Recommended	If you have one, bring it; if you don't, use the ones at MDRS. Note that MDRS data are recorded in UTM NAD 27***** Zone 12 North Northings/Eastings. Know how to use the GPS and to set it to the correct measurement system. Bring spare batteries.
Field Book, Pens	1	Recommended	Waterproof recommended.
Topographic Maps	As needed	Recommended	MDRS has one or two copies of the local (Skyline Rim Quad) topo maps at 1:24,000. Detailed mapping may require additional maps at better scales; check on-line with the USGS for information. http://www.usgs.gov/pubprod/ The maps in the hab are getting beat-up and old.
Camera/digital camera with charger and/or extra batteries	1	Recommended	If you have it, bring it. Digital images can be downloaded to the MDRS computer. Bring the appropriate cables and thumb-drives or memory cards, spare batteries or rechargeable batteries with charger, a sturdy case and a lens care kit (recommended). It is very difficult to take pictures with a non-digital camera through the helmet of the space suits.
"Canned Air"		Optional	Useful for cleaning cameras and other personal equipment in the field and in the Hab. Buy it in Grand Junction as aerosol cans are not welcomed aboard commercial flights.
Camcorder (tape or digital) plus charger and batteries	1	Optional	Great for outreach, YouTube videos, etc. Videorecorders allowing digital stills are very useful. Be sure to bring enough storage media, batteries, cables, and of course the charger.

Tripod	1	Optional	Extremely useful for field photos – the desert is windy and spacesuit gloves are awkward.
Photo scale or ruler	1	Optional	Recommended for taking field photos.
Bungee cords	1-2	Optional	Useful for securing items on ATVs & backpacks
Bubble wrap/Foam padding	as needed	Optional	If you need to transport delicate equipment on ATVs, be sure to bring adequate padding for the ATV cargo rack. Unpadded equipment and gear can take a severe beating when jolting over the uneven desert surface.
Personal laptop	1	Recommended	The MDRS computers are older and slower than yours. Bring all necessary peripherals: cables, mouse, AC power adapter, network cable.

Other Personal Gear

What to Bring	How Much	Need	Notes
Reading materials	As needed	Optional	Books, magazines, textbooks related to your field of work. Internet bandwidth is small so you can't just download everything you might need.
Movies	as needed	Optional	Note: MDRS doesn't have a DVD player – DVDs are usually watched from a crewmember's laptop.
Other fun stuff	As needed	Optional	Crew members should consider bringing something they might like to do – cards, board games, a toy, a small musical instrument, an art or craft project. However, there is no guarantee of spare time. The Hab has a backpacking guitar ("strum stick")
Food & candy	None	Not permitted	External food is not permitted according to the food study rules. Finish it before you arrive at MDRS. If you really need something, consult with the food study group in advance.
Perfume or Cologne	None	Not permitted	Some individuals are sensitive to fragrance products. Be kind and don't use them at MDRS.
Alcoholic beverages	None	Not permitted	Not permitted at NASA stations and analogs and not permitted at MDRS.
Vitamins, food supplement capsules	As needed	Optional	Permitted, but kindly disclose them to the food study group.