DSM Travel Kit

Initial ideas for things to put into a Perdigao site visit kit. I've started one using the ustar laptop case, and I'm adding things as I think of them.

DSM Access, Diagnostic, and Repair Kit

Item	In the Kit	Purpose
12V ethernet switch	✅	To allow easy ssh access to a DSM. Plug the switch into one of the 12V terminals at the back of the power supply board, move the Ubiquiti cable to the switch, add a patch cable between switch and DSM, and plug a laptop into the switch. See the laptop entry below. The one being used at Perdigao is labelled TRAM.
USB flash drives	✅	to replace a USB flash drive has filled up or failed
ftdi board and usb cable	✅	In case console access is needed immediately at bootup, or in case bluetooth is not working. Requires the DSM to be on the ground.
ethernet cables	✅	to connect DSM, Ubiquiti radio, and a laptop together
bulgin console cable	✅	Connect a laptop serial port to the console port (port 0) of Titan and Viper DSMs.
usb-serial adapter	✅	Connect regular RS232 serial cables through a laptop USB.
PC104 CPU card ethernet jack	✅	The small PCB with ethernet jack that plugs in to a Viper and a Titan CPU card, to isolate ethernet connection problems between the CPU and other devices through the interface board. From Gordon's comment: The adaptors work on both Vipers and Titans, with the "bottom" of the little circuit board (the side opposite the RJ45) nearest to the edge of the CPU card. Some adaptors needed to be shaved a bit because it was a close fit against the PC104 connector on a Titan.
fuses	✅	especially 3A fuses for LICORs, 1A fuses for standard ports, 5A fuse ❓ for the power supply board
usb extension cable	✅	to extend reach of usb connections, such as to the ftdi console board or to the EC100 USB interface
bluetooth tablet	☐	for standard bluetooth console connections, especially required for upper DSMs
usb-bluetooth adapter	✅	Give bluetooth radio to laptops without it built-in, like eddy.
multimeter	☐	handy for probing voltage in various places and checking fuse and cable continuity
laptop with wired ethernet	☐	BYO or bring eddy. Easy to plug into the switch and browse to the Ubiquiti web interface or ssh into the DSM. This is the only device to access the ubiquiti web interface, since there is no wifi at the towers.
laptop table	☐	Attach to the tower to make it easier to work when there are no good flat surfaces nearby.

markers and yellow tape	✅	Label cables on a setup or flag problems.
host list	☐	A perdigao hosts file is helpful to get the IP address of the DSM and radios at a tower in case the tower is off the net. eddy should already have one. Or cache the latest Perdigao Networking google spreadsheet on your phone. If the tower is on the net, you can resolve names by querying ustar explicitly. See the example below.
pick list	☐	Similar to the host list, the pick list spreadsheet gives an idea of what should be installed at a site, although if the dsm config (perdigao.xml) and the pick list differ, the dsm config takes precedence.
zip ties and cutter	✅	Remove, shift, or replace cables as needed. Or to remove a DSM entirely to bring back to ops, if that should be necessary.
spare PoE injector	✅	Sometimes the PoE injector in a Pi DSM is bad.
bulgin serial adapter cable	✅	Convert Bulgin to DB9 to plug into a regular serial port or USB-serial adapter, and split out power leads. Requires a separate power supply. It would be nice if we had a cable which plugs into a bulgin sensor port on a DSM and can provide separate power leads.
Bulgin plug caps	✅	Cover exposed external ports if a sensor cable has to be removed. Often there are extras inside the DSM box itself also.
misc tools	☐	Needle-nose pliers or tweezers for moving jumpers or replacing fuses. Screwdrivers.
flashlight (or smart phone)	☐	To look into dark corners of the DSM.
camera (or smart phone)	☐	Take pictures of DSM boards, ports, site, instrument orientation, whatever might be necessary to document a problem.

Other Useful Stuff for a Site Visit

Item	Description
radiometer cleaning kit	Q-tips, distilled water, lint-free cloth
compass	To check boom angles and bearings to other sites
spare mote binder cables	To replace cables which get chewed through
spare bulgin cables	To test whether existing cables are good or bad when other problems have been eliminated

Querying host addresses

```
[granger@roo ISFS]$ host tse02 192.168.1.10
Using domain server:
Name: 192.168.1.10
Address: 192.168.1.10#53
Aliases:
tse02 has address 192.168.1.153
```