

EDGES Report #161

Planning for MRO site trip in February 2020

Judd Bowman
Nivedita Mahesh
Titu Samson

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Objectives

1. Install new ground plane at Pad 3 for future EDGES-3 deployment
2. Extend ground plane at Pad 4
3. Reinstall receiver-2 and restart low-2
4. Reinstall receiver-1 and restart mid-band
5. Install absorber on hut
6. Install soil conductivity monitor (TBD)
7. Test air conduit leakage for EDGES-3

Current site status



Figure 1. Layout of instrument locations (“pads”) at EDGES site.

Currently, the instruments on site are setup as follows:

- Pad 1: low-3 -- 5x5 ground plane with “plus” meshes, low-1 antenna, no receiver
- Pad 2: mid-band -- 30x30 ground plane, mid-band antenna, no receiver
- Pad 3: Unused, no ground plane, conduits available for air/cables
- Pad 4: low-2 - 30x30 ground plane, low-2 antenna, no receiver

Other site status:

- Three data acquisition computers are on site. Two of which have Signatec cards installed. (The third had its card removed in November and sent to Haystack)
- Environmental monitoring is generally operational, although needs to be verified.
- Low-2 needs a receiver, but is otherwise connected in the hut and ready to run.
- Low-3 needs a receiver (and backend?), but is otherwise connected in the hut and ready to run.
- Mid-band needs a receiver, a backend, and pass-throughs in the cabinet in order to be connected. Or it could be connected using the pass-throughs currently used for low-3.
- There is nothing installed on Pad-3, although there are four 80mm conduits going to it. One of the conduits is used for cables to Pad-4 and two of which are currently used for forced air cooling for low-2.

Planned site activities

Install new ground plane at Pad 3 for future EDGES-3 deployment

1. Full mesh installation
 - a. Work done mostly by contractors (TBD)
 - b. Don't forget to paint over welds
2. Check air seal in conduit that will be used for EDGES-3
 - a. Use compressed and test for time to pressure drop -- will need to think through some kind of adapter for conduit.

NOTE: Not doing on this trip:

3. Pull cables/air tubing to Pad-3
 - a. Power
 - b. Fiber
 - c. Adapt air conduit (will require venting of air for low-2 at low-2)
 - d. Need to filter DC power lines at the ground plane
4. Installing antenna

Modify and restart low-2

1. Extend ground plane with new mesh
 - a. Remove existing triangular tips.
 - b. Add mesh out to 48 meter tip-to-tip (Work done mostly by contractors; TBD)
2. Rotate antenna 45 degrees
3. Install receiver-2
4. ?? Install a backend in hut ??
5. Reinstall Fieldfox in hut

Restart mid-band

1. Install receiver 1
2. ?? Install a backend in hut ??
3. Rewire connections in the control building because low-3 is using the cable connections usually used for mid-band
4. Possibly replace cable(s) in conduit -- the LMR-400 has a bad connector at the pad.
5. Reinstall Fieldfox in hut (repeated from low-2)

Install absorber on hut

1. Assemble panels of absorber
2. Mount on hut

Install soil conductivity monitor

1. TBD

Orders and Shipments

1. Mesh fabrication - ordered end of December
2. Baseplate fabrication - to be ordered early January
3. Send receiver-1, receiver-2, and Fieldfox from ASU (backup plan - carry on airplane)
4. Arrange to have contractors on site
5. Arrange earth berm changes with MRO

Next trip:

6. Order and send 60-meter, 2-conductor, 12? AWG power cable for Pad-3
7. Order and send 60-meter fiber(s) for digital data from Pad-3
8. Order and send air conduit supplies
9. Send EDGES-3 from Haystack
10. Order and send/take more T-nuts and bolts for rotated low-2 feet placement (make sure we have more spares)
11. Do we need more 12V power in the hut to supply more conduit fans?

Pre-trip activities

ASU

1. Verify receiver-1 recalibration
2. Verify receiver-2 recalibration
3. Think through tools on site and make sure we have everything needed
4. Think through pressure test of air conduit -- need some adapters to the PVC?

