

DSES Technical and Operations Meeting 11-12-2018

Location: IHop restaurant, Constitution Street, Colorado Springs

Attendance: Gary Agranat, Ed Corn, Dave Molter, Rich Russel, Bill Miller and new member Phil Gage

Attending Remotely via TeamViewer: Jamie Riggs, Tony Bigbee, Jon Richardson and Don Lewis

Last Trips: The work trip of Sept. 15 was documented and posted. Bill, Bob Haggart, and Ed Johnson went on Sept 23rd, Ed Corn and Steve Plock went down on the 27th. Dave Molter worked on the retaining wall on Sept. 30th.

Next Trips to site: The regularly scheduled 3rd Saturday of the month, Saturday November 17th, Observation planned on the 16^h Friday night before. Rich is planning to go on the 16th.

Meeting Schedule:

DSES Technical and Operations Meeting; 2nd Monday of every month

DSES Science Meeting ; 4th Monday of every month

Accuracy: As always if I have misstated, omitted or misrepresented anyone please feel free to correct me WKM.

Agenda and Minutes for this meeting:

1. Update System 1

Dave Molter: No Changes from last month.

Glenn: Adding a GPS "Time Machine" time source to synchronize data from the various PCs. The PC's are looking for the NTP sources and this will be the first one in the table. Rich and Glenn will coordinate the setup for this. Will put newest SW that Phil and he did.

Check your coordinates as its moving to be sure that you are getting good position.

2. Update System 2

Bill Miller: Ed Johnson met Bill and Bob Haggart at the site on Sept 23rd. Ed brought the System 2 controller back and Bill installed it behind the three 25 Pin Dsub A/B switches in the tower. Checked the pointing calibration and Ed made a few code changes. We concluded that the lower powered computer was still causing an ethernet interruption, so we decided to replace it with a more capable computer. We then started a PID (Proportional, Integral, Derivative) constants adjustment process on both axes. Bill watched the motor control from the tower control deck describing performance by radio to Ed while he adjusted the SW constants in the Comm. Trailer. This process eventually yielded parameters that provided a smooth start and stop movement slowing and landing on position.

The initial experiments showed the dish stopping within several encoder counts of commanded position or less than 15 arc minutes. This looked great and was demonstrated to Steve Plock.

We removed the controller leaving System 1 in place and Ed took the System 2 controller back with him to make more SW enhancements.

3. Update Comm Trailer Porch Project

Bob Haggart, NOCTV, and his Grandson, Allan, and Allan's friend, Ben traveled to the Haswell site on November 4th. They delivered and installed the new comm trailer front door stairway and landing that Bob had been fabricating at home.

The landing and wide stable stairs are a great improvement for the access to our main center of technical operations. See the separate report on this in the website. <http://dses.science/bob-haggarts-work-building-a-new-porch-and-stairway-for-the-communications-trailer>

4. Update Tower Project

Ed Corn will complete the Rohm radio tower above the bunker as weather and assisting help permits.

Steve Plock dropped off an additional tower section and Ed will take it down to the site on the next trip.

5. Water resupply

Dave Molter has a contact in Crowley who could be a resource to pump more water into the tanks in the Underground. Ed will see if we can open the sky lights to allow access to the water resupply.

6. Don Lewis, attending via TeamViewer, said that there is a tube that was installed to provide access to the water storage tanks in the Underground from the surface so that they could be easily refilled without removing the skylights.

Don also cautioned us that the cover on the drain in the hallway just before the door jam needs to be removed and cleaned out occasionally to clear any mud that would clog it.

7. Hallway door project in Underground:

Myron Babcock obtained a large door several months ago and we will need to frame out, cut down and install the door in the hallway with a threshold to help containment of water running down the hallway and into the drain mentioned above.

8. Myron Babcock's Treasures Report:

- Membership is now at 63 paid members. Latest member signed up is in Georgia. Phil Gage also joined after attending the meeting.
- Savings \$5733.15
- Checking \$894.17
- Electric Bill Aug. 63.13, Sept. \$79.82, Oct. \$69.75 79, 63 Averages about \$70/Month
- Telephone: Dial Tone had been dead but was fixed in Oct.

August \$48.65, Sept. \$40 Oct \$78.20

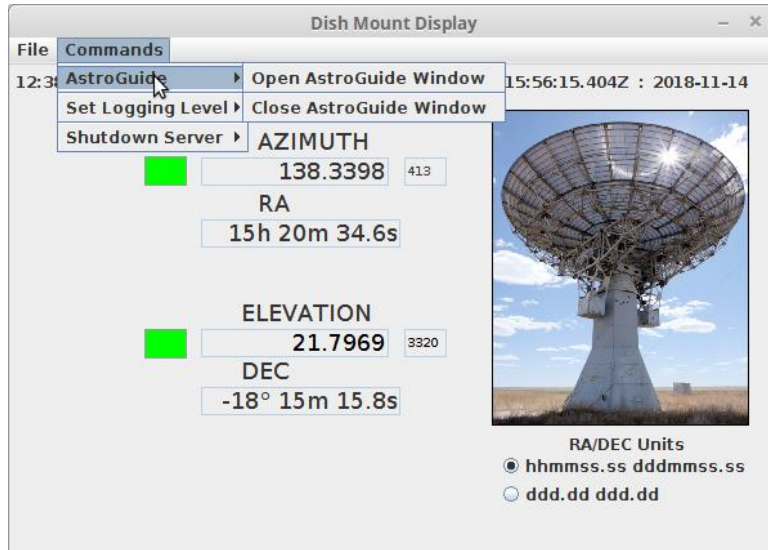
- Steve working on getting DSL cost and specification from the Eastern Slope Rural Telephone company.
- Hot Spot on Myron's account is about \$22 Month. Not too much usage lately with lots of roll over data.
- Myron has a CushCraft A3 3 element Triband antenna to donate. 20, 15, 10 meter bands only.
- Also has proceeds from sale of items Kirby Stafford's estate to the Org. thanks to his generous family who is donating it.
- The trencher cost to install the RV park wiring will be reconciled with Ed.

9. Rich: Up and Coming Observation Plans

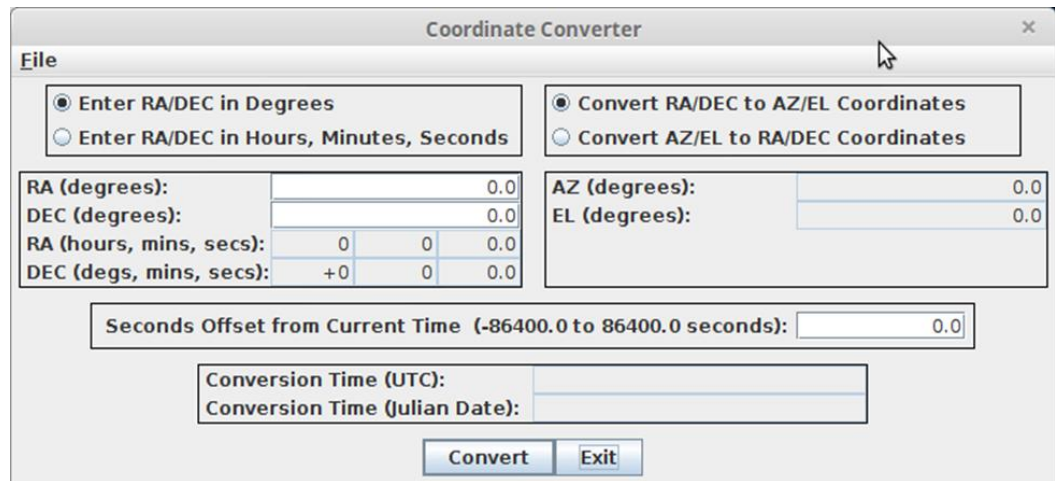
- Phil and Glenn updated the observation list for Rich and will use that for his observation session this Friday night.
- Rich will observe the list of radio sources and the specific sources for the Galactic rotation rate calculation for a paper for SARA.
- The December observation trip could be done on December 14th and the Science meeting would be rescheduled for Dec. 17th.
- The quarterly Sara Journal is now edited and released online. We have three papers in it.
- The next Journals papers are due on Dec 5th and the SARA Western conference paper abstracts are due on Jan 15th. Submit abstracts for the Journal and Rich will collect.
- Sara west is in Boulder with a tour on March 22nd, conference on the 23rd and 24th. A tour and observation trip are planned to Haswell on the 25th.
- Ralph Boyd is the software developer who developed the SpectraCyber Elite program. He is also the owner of HighQ Software Group. Jeff Lichtman is the owner of Radio Astronomy Supplies, located in Sanger, Texas.
<https://sites.google.com/site/radioastronomygroup/the-team> They have teamed up to update the SpectraCyber with a Raspberry Pie controller that would replace the PC that is required now. They have this in a beta version that we should try.

10. Ray had an antenna dismantling party at KCME last Saturday with Rich, Steve, Myron, Tony, and one of Ray's coworkers. It only took about 1.5 hours to disassemble. Ray got a scrape on the head (which seems to be a habit with him) and he took everyone to breakfast. Steve went out to Ray's place afterward and helped get the dish mount attached to Ray's pedestal.

11. Glen Martin and Phil Gage did a demo of their new "Astro Guide" position calculator program shown in the next few screen shots provided by Glenn.



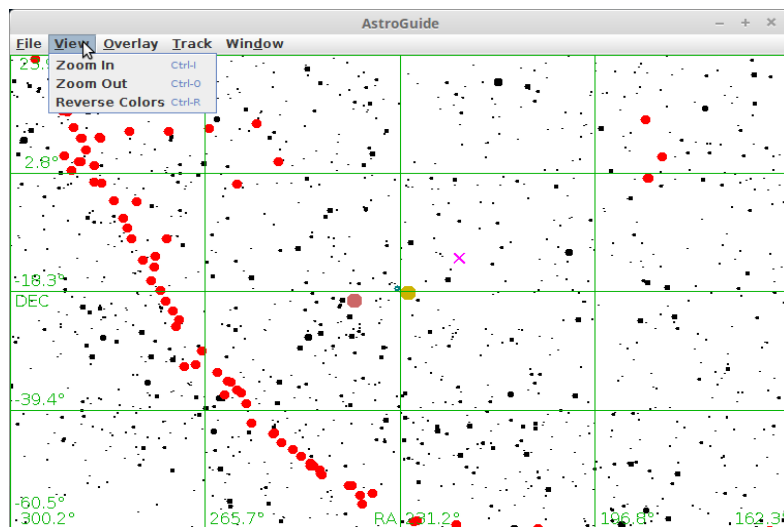
This program can be used with the System 1 controller to position the dish. The program has several different feature windows.



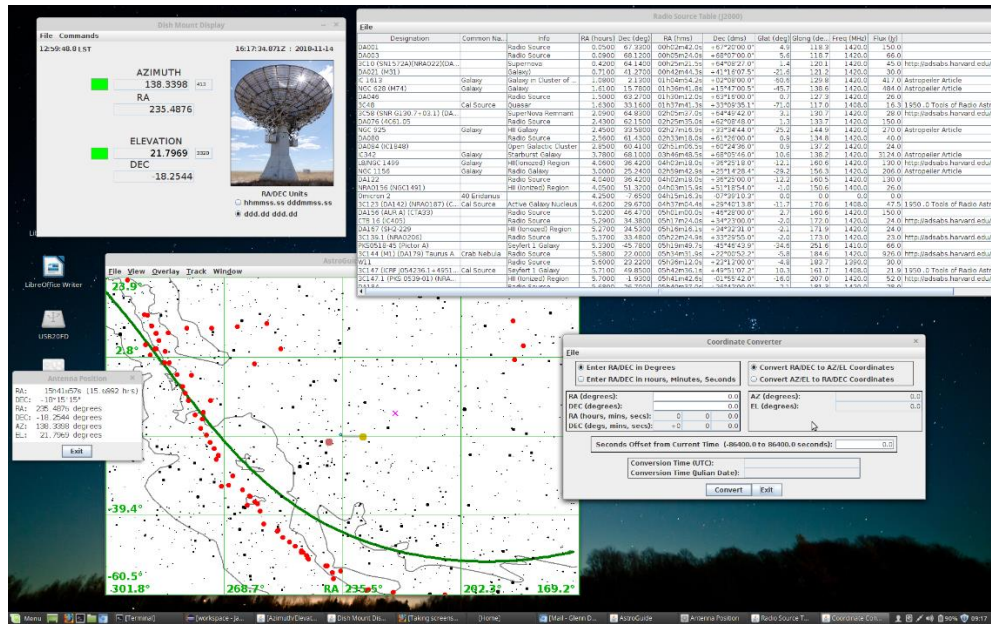
One feature window can do translations from RA/DEC to AZ/EL and vice versa.

Radio Source Table (J2000)												
File	Designation	Common Na...	Info	RA (hours)	Dec (deg)	RA (hms)	Dec (dms)	Glac (deg)	Gleng (de...	Freq (MHz)	Flux (jy)	Source
	DA001		Radio Source	0.0500	67.3300	00h02m42.0s	+67°20'00.0"	4.9	118.3	1420.0	150.0	
	DA003		Radio Source	0.0900	68.1200	00h05m24.0s	+68°07'00.0"	5.6	118.7	1420.0	66.0	
	3C10 (SN1572A)(NRAO22)(DA...		Supernova	0.4200	64.1400	00h25m21.5s	+64°08'27.0"	1.4	120.1	1420.0	45.0	http://adsabs.harvard.edu/full/1968AJ...
	DA021 (M31)		Galaxy	0.7100	41.2700	00h42m44.3s	+41°16'07.5"	-21.6	121.2	1420.0	30.0	
	IC 1613	Galaxy	Galaxy in Cluster of ...	1.0800	2.1300	01h04m54.2s	+02°08'00.0"	-60.6	129.8	1420.0	417.0	Astropeller Article
	NGC 628 (M74)	Galaxy	Galaxy	1.6100	15.7800	01h36m41.8s	+15°47'00.5"	-45.7	138.6	1420.0	484.0	Astropeller Article
	DA046		Radio Source	1.5000	63.2700	01h30m12.0s	+63°16'00.0"	0.7	127.3	1420.0	26.0	
	3C48	Cal Source	Quasar	1.6300	33.1600	01h37m41.3s	+33°09'35.1"	-71.0	117.0	1408.0	16.3	1950.0 Tools of Radio Astronomy
	3C58 (SNR G130.7+03.1) (DA...		Supernova Remnant	2.0900	64.8300	02h05m37.0s	+64°49'42.0"	3.1	130.7	1420.0	28.0	http://adsabs.harvard.edu/full/1968AJ...
	DA076 (4C61.05)		Radio Source	2.4300	62.1500	02h25m35.0s	+62°08'48.0"	1.3	133.7	1420.0	150.0	
	NGC 925	Galaxy	HII Galaxy	2.4500	33.5800	02h27m16.9s	+33°34'44.0"	-25.2	144.9	1420.0	270.0	Astropeller Article
	DA080		Radio Source	2.5600	61.4300	02h33m18.0s	+61°26'00.0"	0.9	134.8	1420.0	40.0	
	DA084 (IC1848)		Open Galactic Cluster	2.8500	60.4100	02h51m06.5s	+60°24'36.0"	0.9	137.2	1420.0	24.0	
	IC 342	Galaxy	Starburst Galaxy	3.7800	68.1000	03h46m48.5s	+68°05'46.0"	10.6	136.2	1420.0	3124.0	Astropeller Article
	LBNGC 1499	Galaxy	HII (ionized) Region	4.0600	36.4200	04h03m18.0s	+36°25'18.0"	-12.1	160.6	1420.0	130.0	http://adsabs.harvard.edu/full/1968AJ...
	NGC 1156	Galaxy	Radio Galaxy	3.0000	25.2400	02h59m42.9s	+25°14'28.4"	-29.2	156.3	1420.0	206.0	Astropeller Article
	DA122		Radio Source	4.0400	36.4200	04h02m18.0s	+36°25'00.0"	-12.2	160.5	1420.0	130.0	
	NRAO156 (NGC1491)		HII (ionized) Region	4.0500	51.3200	04h03m15.9s	+51°18'54.0"	-1.0	150.6	1400.0	26.0	
	Omicron 2	40 Eridanus		4.2500	-7.6500	04h15m16.3s	-07°39'10.3"	0.0	0.0	0.0	0.0	
	3C122 (DA142) (NRAO187) (C...	Cal Source	Active Galaxy Nucleus	4.6200	29.6700	04h37m04.4s	+29°40'13.8"	-11.7	170.6	1408.0	47.5	1950.0 Tools of Radio Astronomy
	DA156 (AUR A) (CTA33)		Radio Source	5.0200	46.4700	05h01m00.0s	+46°28'00.0"	2.7	160.6	1420.0	150.0	
	CTB 16 (IC405)		Radio Source	5.2900	34.3800	05h17m24.0s	+34°23'00.0"	-2.0	172.0	1420.0	24.0	http://adsabs.harvard.edu/full/1968AJ...
	DA167 (SH2-229)		HII (ionized) Region	5.2700	34.5300	05h16m16.1s	+34°32'31.0"	-2.1	171.9	1420.0	24.0	
	3C139.1 (NRAO206)		Radio Source	5.3700	33.4800	05h22m24.9s	+33°29'55.0"	-2.0	173.0	1420.0	23.0	http://adsabs.harvard.edu/full/1968AJ...
	PK0503B-45 (Pictor A)		Seyfert 1 Galaxy	5.3300	45.7800	05h19m49.7s	+45°46'43.9"	-34.6	251.6	1410.0	66.0	
	3C144 (M1) (DA179) Taurus A	Crab Nebula	Radio Source	5.5800	22.0000	05h34m31.9s	+22°00'52.2"	-5.8	184.6	1420.0	926.0	http://adsabs.harvard.edu/full/1968AJ...
	W11		Radio Source	5.6000	23.2200	05h36m12.0s	+23°13'00.0"	-4.8	183.7	1390.0	30.0	
	3C147 (ICRF J054236.1+4951...	Cal Source	Seyfert 1 Galaxy	5.7100	49.8500	05h42m36.1s	+49°51'07.2"	10.3	161.7	1408.0	21.9	1950.0 Tools of Radio Astronomy
	3C147.1 (PKS 0539-01) (NRA...		HII (ionized) Region	5.7000	-1.9300	05h41m42.6s	-01°55'42.0"	-16.0	207.0	1420.0	52.0	http://adsabs.harvard.edu/full/1968AJ...
	DA184		Radio Source	6.6000	36.7000	06h40m37.2s	+36°42'00.0"	-3.1	191.3	1420.0	36.0	

Another window contains a list of radio objects with their Right Ascension, and Declination in both decimal and H.M.S formats, Galactic Latitude and Longitude, Emission Frequency and Flux.



On the sky map the telescope view path can be plotted as well as most of the major objects. This make it easy to see where the dish is looking as well as make it much easier to steer the dish to and around any object of interest.



All of the feature windows can be displayed and updated together on one screen.

End of meeting minutes for Meeting 11-12-2018

Minutes from Last DSES Technical and Operations Meeting of 10-08-2018

Attendance: Gary Agranat, Ed Corn, Floyd Glick, Dave Molter, Bob Haggart, Rich Russel, Bill Miller and new interested parties Caio Motta, and Jon Richardson

Attending Remotely via TeamViewer: Jay Wilson, Jamie Riggs, Tony Bigbee, and Skip Macaulay

Last Trips: The work trip of Sept 15 was documented and posted. Bill, Bob Haggart, and Ed Johnson went on Sept 23rd, Ed and Steve went down on the 27th. Dave Molter worked on the retaining wall on Sept. 30th.

Next Trips to site: The regularly scheduled 3rd Saturday of the month, Saturday October 20th, Observation planned on the 19th Friday night before.

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Agenda and Notes for 10-08-2018 meeting

1. Gary Agranat discussed and passed around recent QSL Card envelopes.
Gary will provide the QSL cards and Myron will send them to the members list.
2. Steve Plock is out of town camping in New Mexico for this meeting.
3. System 1 update to include tracking: Dave Molter has not had time to work on system 1 since the last session. Still need to fix errors in elevation serial encoder and add tracking drive electronics. Glenn has made some progress on the SW design but was not available for comment.
4. System 2 update to include tracking: Bill has built a test cable for the spare optical encoder and found nothing wrong with the encoder previously thought to have a bad bit. Ed will use the encoder to help debug the SW on the bench. Bill and Ed Johnson worked on the system 2 on the last trip of Sept 23rd.
During this trip we were able to fix several control issues in the code, but the software still had timing issues. Ed took the complete system 2 back to his lab in Limon and continued to work on it. He discovered that the new code runs very well inside the development environment or emulator but when compiled and installed as an executable there are conflicts in timing of the threads and it slows down unacceptably. Ed has isolated the issue to the way that windows updates the screen graphics thread. The earliest that Ed Johnson can come back if he is able to solve the thread interference problem is Oct. 21st but that date may conflict with Paul and Bill's schedules.
5. Park Position: Ed can ask that we get consensus on the Azimuth park position of the dish. After some discussion of whether it should be parked in the 180 deg, due South position for minimal movement for observation or in the 317 deg position which places it over the service scaffolding and with the access port open to the dish mount. We came to the consensus to park at the maintenance position of 317 degrees for ease of service should anything happen to the drive movement system after the parking.
6. Winter Observations

- a. Rich wants to do an observation trip on Oct 19th about 3:00PM local and run through Oct 20th at about 10AM. This will precede the work trip on the 20th. Rich has published an excellent observing guide with all the applicable radio sources listed by RA/DEC, radio signature and optical photo.
 - b. Dave will do a retaining wall work trip on October 27th ,weather permitting.
 - c. Future trips for maintenance and observations is weather dependent from here on out. Will try for the 3rd Saturday for maintenance and the observations on the Friday before. We will coordinate through the main membership list in email.
 - d. November work trip on Nov. 17th , observation on the 16th weather permitting.
 - e. December work trip on Dec. 15th with observation on the 14th. weather permitting.
 - f. For local weather call Haswell general store and propane 719-436-2301.
 - g. Need to check on Dolores in Haswell about her status and publish her number if okay.
7. Retainer Wall Update
- a. Dave went down to the site on Sunday the 30th and added an additional tier of block.
 - b. Dave needs one more day to do another tier before winter.
 - c. Have plenty of materials to finish the planned wall tier for the year.
8. The local telephone company fixed the telephone dial tone and the 911 telephone was installed in the comm. trailer.
- a. Currently the phone will only work for 911 and the local exchange.
 - b. Steve has the number.
 - c. Ed will devise a way to connect the commercial line into the intercom system telephones.
9. Out House Heater
- a. Ed will purchase a milk house heater to heat the outhouse.

- b. We will have to be sure to turn off the outhouse power when leaving the site.
 - c. We should have a general checklist for opening and closing the site.
10. Other Issues for Winter operations
- a. The comm. trailer has a blocking plywood on the exhaust fan window for the winter weather.
11. Porch update from Bob Haggart.
- a. Bob planned for a 4 by 8 plywood deck with 3 steps and a ramp with rail around the outside for access to the comm. trailer front door.
 - b. The main front door in the comm. trailer is a 28 inch door and not wheelchair accessible.
 - c. We discussed the back doors but those are locked and puts entry behind the impassable equipment rack.
 - d. The conclusion is that there is no good way to provide wheelchair access in the comm. trailer as currently configured.
 - e. Consensus is to do a 4 X 4 ft platform with stairs and no ramp for now. Work out handicap access in some other way like remoting the system monitors or a different building in the future.
12. Site computer: Rich would like to get the remotely accessible laptop up and running again and monitor the batteries, Radio Jove and other experiments. Plan to reinstall the system on the 19th. Will need the Wi-Fi hot spot in the comm. trailer or available on the LAN in order to do this.
13. Radio Jove: Bill is working to repair the Radio Jove receiver that was damaged in the static storm back in July. He is getting some JFET transistors for it from Ray Uberecken.
14. Tour of Plishner site after SARA West Conference
- a. Rich is in contact with Dave Westman, SARA director at large and technical contact.
 - b. The SARA conference is planned for March 23rd and 24th in Boulder. DSES would host interested participants down at the site on the night of March 24th with tours on the 25th and SARA members would fly out on the 25th and 26th. A tight schedule with the 3 to 4 hour

commute from boulder to Haswell but may be doable. May suggest that interested parties fly out from Pueblo.

c. More to come.

15. Conex or addition for Communications Trailer

a. To get more room in the comm. trailer we could use a steel Conex cargo container. Cost is \$3500 for an 8 x 40 ft non-refurbished container.

b. Dave Molter recently investigated buildings for his use. Compare container above to a used modular classroom building or UBC 12X60 ft. building at \$18K.

c. Dave also compared a 12 X 40 construction office trailer for about \$5500. Would need a commercial license to tow or deliver either of these due to wide load status.

d. We should keep our eyes open for a best deal and funding to buy one of these solutions in the future. Here are some examples:

36' x 48 ' Prebuilt non-modular Classroom \$3000

<https://eastco.craigslist.org/for/d/modular-classroom/6708980689.html>

8' x 28' Mobile Office \$3,699.00

<https://www.modspace.com/en/listings/sale-products/8-x-28-mobile-office-800460.aspx>

However, the removal and transportation may cost as much as the building.

16. Gary and Ed will work on the tower raising near the underground on the 20th weather permitting. Ed has already installed a 5 ft base above the ground and can now go to 30 ft without guy wires and >40 ft with guy wires.

17. Dave Molter stated that the 19th through the 21st weekend is the Boy Scout jamboree on the air. We should all join in. Check the frequencies on line or with Dave Molter.

End of 10-8-2018 Meeting notes