

DSES Technical and Operations Meeting 1-14-2019

Location: IHop restaurant, Constitution Street, Colorado Springs

Attendance: Gary Agranat, Ed Corn, Dave Molter, Glenn Davis, Rich Russel, Phil Gage, Bob Haggart, , Floyd Glick, Bill Miller and new members Lewis Putnam and Brian Kloppenborg

Attending Remotely via TeamViewer: Myron Babcock, Tony Bigbee

Next Trips to site: The regularly scheduled 3rd Saturday of the month, Saturday January 19th, Observation planned on the 18th Friday night before. Rich is planning to go on the 18th ~~returning on the 19th~~. Changed this to the 17th-18th for weather related.

Toni Bigbee is planning an observing session on the afternoon/evening of the 19th.

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 of 1-14-2019:

1. BOD Elections. On our normal rotation three of the seven current DSES board member positions are up for election or retention this year. The process is for the general membership to elect 3 board members in the odd years and 4 in the even years. Once the 7 member board is elected and in place the board elects the DSES officers and the remaining board members serve at large.

The current Board consists of the following individuals.

Board Members Elected 2018

Myron Babcock

Dr. Richard Russel

Gary Agranat

Steve Plock

2018 Officers Positions

Treasurer

BOD At Large

BOD At Large and Web Master

President

Board Member Elected 2017

Bill Miller

Floyd Glick

Dave Molter

Vice President & Interim Secretary

BOD At Large

BOD At Large

Therefor the 3 board members elected in 2017 are now up for replacement or retention.

Nominations for board of directors is now open for 3 weeks or until Feb 15th .

Please send your nominations for new board members or retention of old to plishner.info@gmail.com.

The nominations will be collected and included in the election process to come.

2. Changes to Election Process

- a. Bill will send a recommendation to the current BOD for changes to the bylaws to make an online election process with the goal of completing the election process by the end of February.
- b. If this is acceptable, a notice for the BOD election will be sent out by February 8th.

3. Treasures report by Myron Babcock.

| <u>OUTFLOW</u> | | <u>INCOME</u> | |
|---|------------|--|------------|
| <u>Electric Installation Expenses</u> | \$2,415.21 | <u>CASH DONATIONS</u> | \$900.00 |
| above the initial utility installation. | | | |
| <u>Construction Material</u> | \$315.78 | <u>Total Membership Dues for 2018</u> | \$2,150.00 |
| <u>Electric Utilities</u> | \$770.86 | | |
| <u>Telephone Utilities</u> | \$164.86 | <u>Equipment Sales</u> | \$1,340.00 |
| <u>AT&T Hot Spot (Internet)</u> | \$276.00 | <u>Total Income</u> | 4,390.00 |
| \$23/month X 12 months | \$276.00 | | |
| | | <u>Beginning of 2018 year account balances</u> | |
| | | Checking | \$717.67 |
| <u>Annual Recurring Expenses</u> | \$557.88 | Savings | \$6,729.38 |
| | | <u>End of year 2018 account balances</u> | |
| | | Checking | \$1,825.97 |
| <u>Total Expenses</u> | \$4,500.59 | Savings | \$5,734.61 |

4. Donation from Dave Clingerman, W6OAL (Old Antenna Lab) will sell equipment at MegaFest as a fund raiser. Need an equipment list to circulate to members for purchase. Ed Corn and Steve Plock said that the 285 Tech connect group would like to use some of the equipment in rotation.
5. Membership drive is underway. Myron is spear-heading this function?
6. Getting remote members to participate in Radio Astronomy projects.
 - a. We need to have a way to bring the remote people into the data exchange so that they can participate in the site observations.
 - b. Rich has the data access computer and can set it up for data mining for all members.
7. Science Fair sponsorship at the regional fair. Bill will check into sponsoring a Radio, Space or Astronomy award and participation in the Pikes Peak Regional Science Fair.
8. Steve will install the Ettus B210 (SDR) receiver we have been holding with his high performance computer and get help with set up and commissioning from

Joe Martin, K5SO.com in New Mexico. Joe has an installed system using the Ettus X310 SDR so is familiar with the product. This may be used for exceedingly weak signal RA applications like Pulsar detection. Steve says that a data set for a pulsar detection is about 25GBytes.

9. There is a NCAEC Ham Swap Fest on Jan 19th. I25 Exit 259 near Fort Collins, Myron and Ray may go.
10. Bob Haggart brought a 10-80 meter vertical down to the Haswell site and left it next to the comm trailer.
11. Bob Haggart got two additional members interested last week and gave them data to come in.
12. Steve has a complete 1296.1 Mhz moon bounce feed and amplifier system ready to install but would like to wait until we have tracking capability to use it. Several members are very interested in doing moon bounce radio.
13. Bob has a camera for dish pointing calibration. His camera has a door on top to keep atmospheric and other foreign dirt out. This will also mitigate the bird problem.
14. Bill spoke to Ray Uberecken and he will provide a continuous 1296MHz beacon from his residence for our use. He will also build us a portable programable RF source for calibration.
15. Rich would like to do a presentation of the pointing and tracking systems for the SARA conference.
 - a. Glenn's control system has a simulation tool for the System 1 control system to be able to do this without the dish. Need abstracts for these presentations.
16. SARA Western regional conference is March 23rd and 24th. March 22 will tour NCARs. We will host a tour for interested SARA members at the site on the 25th.
17. Jeff Lickman's book on the Dish control will feature one chapter on our control systems.
18. Rich will be at the site on Thursday Jan. 17.
19. There will be a Lunar Eclipse on Sunday night, Jan. 20th.

01-14-2019 Meeting adjourned about 8:15.

Bill did not attend the 12-10-2018 Engineering meeting so did not take minutes. See Steve Plock for missing notes from this meeting.

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.

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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.

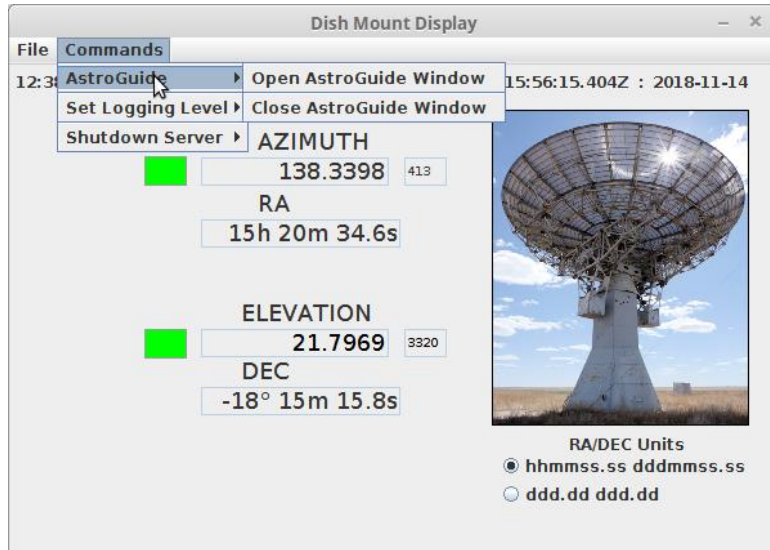
7. Hallway door project in Underground:

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.

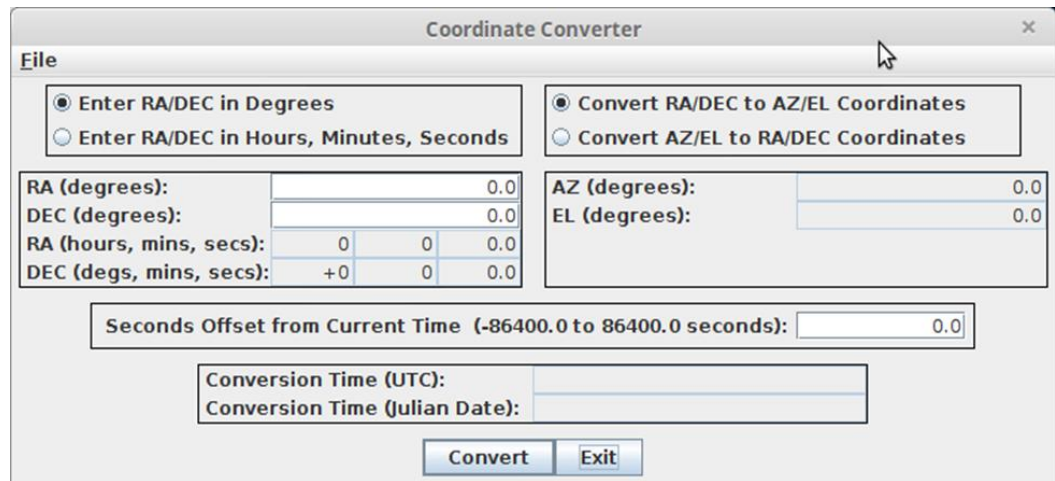
8. Myron Babcock's Treasures Report:

- 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.



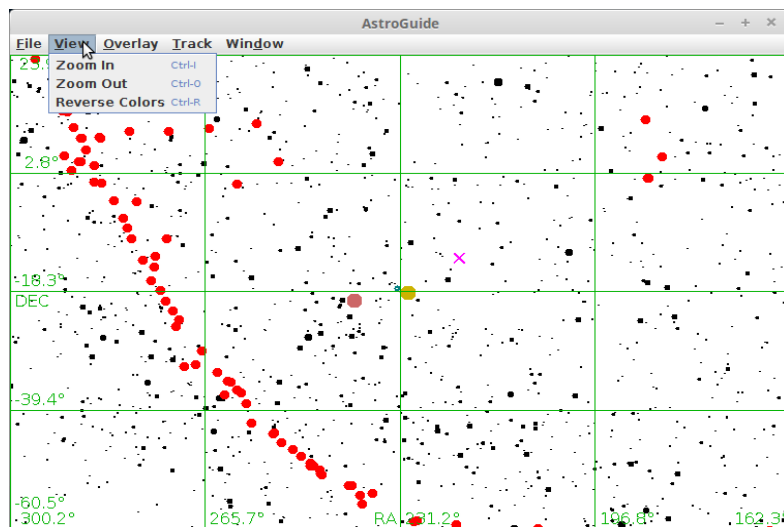
This program can be used with the System 1 controller to position the dish. The program has several different feature windows.



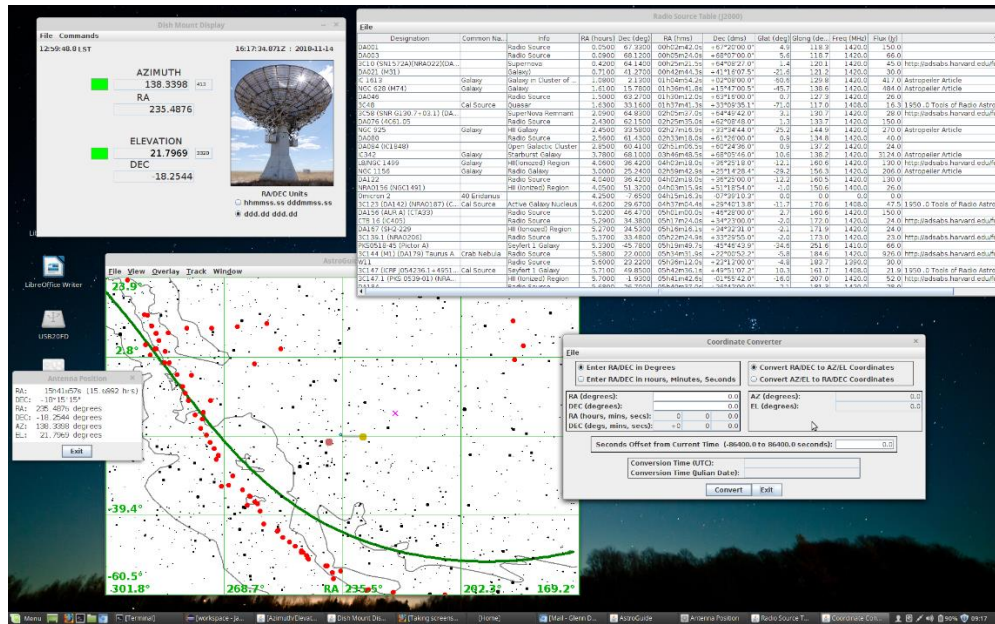
One feature window can do translations from RA/DEC to AZ/EL and vice versa.

| Radio Source Table (J2000) | | | | | | | | | | | | |
|----------------------------|-------------------------------|--------------|--------------------------|------------|-----------|-------------|--------------|------------|--------------|------------|-----------|---|
| File | Designation | Common Na... | Info | RA (hours) | Dec (deg) | RA (hms) | Dec (dms) | Glac (deg) | Glomg (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... |
| | PK0503 B-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