REPORT/MINUTES OF THE DMAS RADIOTELESCOPE TEAM MEETING  
The DMAS Radiotelescope Team met at Ashton at 6:30 p.m. on Saturday, September 14, 2019.  
Present were Ken young, Pat Meade, Vern Naffier, Dave Lynch, Larry Musselman, and Mike Miller.

Ken gave instruction how to use GitHub as a platform for team communication.  
Dave Lynch exhibited the axis assembly which he had dismantled from the 8-foot dish antenna and pointed out that the drive mechanism on the motor was set wrong causing a break in a shaft housing. Dave explained that he cemented the housing to the motor framework and that the misfunctioning axis assembly worked smoothly again. However, the cemented connection is not to be trusted. It was agreed that the entire mechanism needs to be replaced. Pat Meade offered to donate two turbomotors with the drive mechanism which he owns.

There followed discussion about motorizing both axes. Ken Young urged that both axes be motorized in order to obtain adequate access to the sky. Vern asked whether the mount is an equatorial or an altazimuth. Ken replied that it is an equatorial with an apparent misalignment of the polar axis. Dave Lynch explained that the mount pedestal fits in a ground pipe and can be rotated and fixed in any direction by set screws to properly align the polar axis.

The question was raised whether an altaz mount was to be preferred to an equatorial. Ken responded that either one would be okay but pointed out that the polar axis of an equatorial mount is oriented with respect to the Meridian, which might not allow pointing to desired regions of the sky at the particular times visitors would be at the observatory. Thus an altaz mount might be more suitable for observation on visitor days/nights.

At that point Ken Young questioned the usefulness of the current mount, since it does not have axis encoders which would enable users to point the dish to select objects or areas of the sky. Without encoders, aiming the dish would be very tedious and difficult. Discussion then turned to the availability and cost of a new mount with axis encoders. Vern Naffier said he would check with acquaintances in SARA (Society of Amateur Radio Astronomers) and friends who operate an amateur radio telescope in Colorado about availability and cost. It was decided then not to reset the current axis motor assembly on the dish antenna; it is being stored temporarily in the console cabinet in the classroom.

Ken pointed out that a relatively inexpensive method of encoding could be employed by usage of a Raspberry Pi and a Magnetometer – small digital devices that are used with smart phones. The Magnetometer marks azimuth settings while the Raspberry Pi gives altitude readings. Ken said that he could easily install these devices to the mount axes.

Ken also offered to set up a monitor screen which would show at any time the point in the sky at which the dish is aimed. Vern mentioned that he had seen, and was impressed by, such a system in a sister amateur observatory in Colorado. Ken explained that this would be easy to set up for the DMAS dish telescope.

Ken then suggested that we should connect together the components of the basic feedline from the dish to the computer with the electronics that we now have on hand to test whether the system is working. The test consists in turning on the hooked-up system and then hold a hand in front of the dish’s feedhorn to see if that results in a change in received signal strength. Vern and Ken will carry out this test on Saturday, Sept. 28, the first Saturday that both of them can be at Ashton during a daytime hour.

Vern handed out printed updated copies of the radiotelescope manual he has written, and the meeting drew to a close at 7:30 p.m. The team will meet again soon.