DSES 2025 Organization Activity End of Year Summary

By Bill Miller

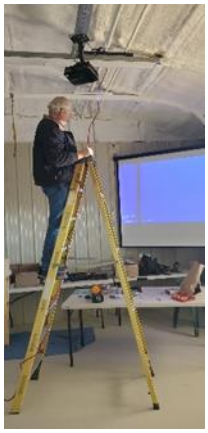
This end of year summary highlights the Deep Space Exploration Society (DSES) activities for 2025. Our work has included site projects, radio astronomy experiments, outreach, educational seminars, communications experiments, and infrastructure improvements. Thank you to all members who contributed their time, expertise, and resources to improving our facilities, organization, and capabilities.

Please excuse any omissions of individuals or activities from this report. We strive to give credit to everyone but may be unaware of all that worked on the projects, activities and contributions. For any omissions I apologize.

Regular Meetings

• Engineering Meetings – Every 2nd Monday of the month at 6:30 PM (Mountain Time) on Zoom to discuss projects and engineering details.
• Science Meetings – Every 4th Monday of the month at 6:30 PM (Mountain Time) on Zoom to share science results and observations.
• Membership – Join at https://dses.science/deep-space-exploration-society/membership to receive notices and participate.

2025 Activities (Year-to-Date)



January

• Jan 14–15: Rob MacMasters donated funds for 25 folding chairs for the new classroom. Bill Miller purchased them from Costco, and with Myron Babcock delivered them to the site. Bill also purchased an Epson projector and ceiling mount from Goodwill for about $60, installed it in the classroom rafters, and adjusted the focus to the movie screen. This was later used for presentations for many of the onsite groups.

• Jan 22: DSES hosted the Las Animas High School Science Olympiad team and teachers for a seminar and facility tour. This was featured in the February 12 issue of the Kiowa County Independent Newspaper.

• Jan 27: Ray Uberecken gave a science presentation on Cascade Noise Figure and Noise Factor—Concepts that challenge most hams and many radio engineers.

• Jan 28: Glenn Davis and Lewis Putman made a work trip to test the mount under new software.

• Feb 4: Alex Nersesian and the EVE (Earth–Venus–Earth) communication team prepared for an experiment to bounce a 1296 MHz signal off Venus and receive it back on Earth.

February

• Feb 11: Roger Oakey worked on network upgrades, and Cory Miller, our electrician, improved dish conduit, and grounding.

• Feb 16: Bill Thomas, Doug Leiber, and Derick Brown represented DSES with a booth at the NCARA Hamfest.

Photo: Hamfest booth and Science Fair Awards

• Feb 20: Bill Thomas, Roger Oakey, Barb McAllister, and Bill Miller judged the Pikes Peak Regional Science Fair. Bill presented DSES cash and certificate awards to winning students the following weekend.

• Feb 24: Dan Lane gave a comprehensive presentation on pulsar observations and discoveries at the science meeting.

• Late Feb: Electrician Cory Miller was contracted by Paul Sobon, to inspect, clean, and lubricate the elevation jack screws and gearboxes on the dish mount and to install the grounding system and electrical and bonding upgrade to the dish wiring.

Roger Oakey and Bill Miller installed The Ethernet home run wall rack. Later Richie Lary terminated the Cat 6 Ethernet cables into the RJ45 patch Panel.

March

• Mar 4: Alex Nersesian (K6VHF) arrived with the EVE transverter he designed and built. A strong sandstorm damaged the site, covering the area in dirt and blowing down a 3.8-meter interferometer dish. Repairs and a new foundation for the small dish will be needed.

• Mar 9: Installed the EVE package on the 60 ft. dish, with assistance from Alex Nerseasian, Roger Oakey, Paul Sobon, Bill Thomas, and new member, CU Boulder professor Dr. Dennis Akos, who also loaned us a Rubidium frequency standard for the EVE event.

• Mar 14–16: Bill Miller attended the SARA Western Conference in Socorro, NM, presenting a virtual tour of DSES facilities and capabilities. The SARA group toured the Very Large Array of 27 radio telescopes west of Socorro on the final day.

• Mar 17: Annual DSES organizational meeting confirmed board elections and assignment of the board officers. Paul Sobon as President, Bill Miller as Vice President, Myron Babcock as Treasurer, and Bill Thomas as Secretary and Web Master. Rick Hambly, Don Latham, and Dan Lane are board members at large.

• Mar 22: The Venus bounce experiment or EVE funded by a grant from the ARDC was attempted with our European collaborators. Despite technical setbacks from a shorted cooling fan and the DSES being unable to confirm a return signal from Venus, the Europe groups did successfully receive one of their own return signals. The next opportunity will be in October 2026 when an Earth-Venus-Earth QSO or communication will be attempted.

• Mar 29: Work party at Haswell—Bill Miller installed an ultrasonic cistern level sensor, breaking a rib in the process while leaning into the cistern and assisted by Paul, Rick Hambley, and others. A number of other maintenance and preparatory items were accomplished.

April

• The April issue of QST featured DSES's June 2024 rescue of a 30-foot radio telescope, donated by Patti Clark on the cover. Elaine Hambly (K0ARR) authored the article. Next step: raising funds to pour the foundations and reassemble the dish.

• Apr 14: Ray Uberecken installed the e-CALLISTO periodic Yagi antenna on the north tower . Ed Schade, Roger Oakey and Ray all worked on the controller and software to drive the antenna to the sun and made a number of trips to work on the system.

• Apr 19: Site maintenance and prep for the April 26 event.

• Apr 22: Glenn Davis and Lewis Putman tested new mount control software at the site—several anomalies found but integration went well.

• Apr 26: Event organized by Rob McMasters following Santa Fe Trails Days in Las Animas . Rob catered a Mexican buffet, and presentations were given to educators and influencers in the surrounding communities and towns.

May

• May 7: A presentation for the Ham Nation podcast featured DSES given by Paul Sobon (NØ0T) and Bill Miller (KCØFHN). Watch starting at 41:40 time stamp at https://www.youtube.com/watch?v=dGF1JqfRH6M.

• May 8: Site trip for Ethernet, cistern work, and bunker maintenance.

June

• Jun 8: Bill gave a full overview presentation of the DSES and our Haswell facility and capabilities in radio and science at the Cool Science Meeting - "Science on Tap" at Jack Quinn's Irish Pub & Restaurant in downtown Colorado Springs. This resulted in the donation of two 8 inch optical telescopes and a transit from one of the attendees.

• Jun 23: In our science meetings for June, July and August, **Engineer Whit Reeve** gave a three-part presentation on geomagnetism and his SAM magnetometer. DSES plans to install one at Haswell. Videos are on our YouTube channel. https://www.youtube.com/watch?v=yulM5hQFN9E

• Jun 24: Work trip—Roger Oakey moved the GPS Scintillation experiment antenna, while Bill coordinated fiber optic cable installation with ESTech. This saved significant cost by piggybacking extra fiber to our bunker and gate on their cable-burying operation.

July

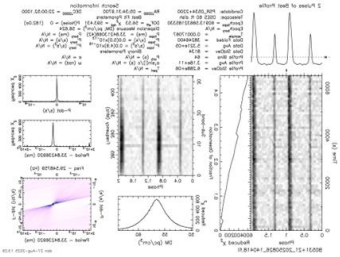
• Jul 7: Ray Uberecken and Bill made a site trip to install copper strap for grounding and bonding elements to the system console, improving reception and lightning protection. Dan Layne later reported a significant reduction in system noise after this work while working on pulsar detection.

July 27: Site weeding workday. With Rob MacMaster's funding, a tractor and brush hog were rented, Rick Hambley cleared the tall weeds across the site with the tractor. Later, the county mowed the parking lot with their big mower before our open house.

August.

• Aug 10: Site trip—repaired a broken window, Ethernet jacks, and worked on the e-CALLISTO antenna.

• Aug 20: Marge Card, widow of Bob Card, donated a toolbox, tools, and air compressor to DSES. Bill and Myron Babcock delivered the heavy toolbox to the site.



• Aug 26: Work trip with Dan Lane, Ray Uberecken, RC Teal, and Rick Hambly. Installed 408 MHz feed, and successfully detected the Crab Pulsar, then reverted to the1420 MHz feed. Work continued on Ethernet patch panels and e-CALLISTO controller.

September

• September 6th: Member BBQ -The First Annual Fall BBQ Potluck was held at Richard and Elaine Hambly's house in the Black Forest area of Colorado Springs. We had a nice turnout and hamburger / hot dogs provided by DSES. Attendees brought side dishes and desserts. The weather was good, and there were plenty of opportunities for socializing. Rick showed off his amateur radio antennas and station / lab which was impressive. Members proudly showed off their DSES shirts too. If you are interested in ordering a shirt contact Paul Sobon.

• Sept 11: Work trip—Paul cleaned the flooded bunker, Bill dug a drainage trench, and ESTech spliced and terminated fiber cables, completing the LAN to the bunker. Roger and Ray worked on e-CALLISTO. Weed clearing and building waterproofing were also completed.

- September 27: Our 8th annual Open House was held on site in great weather. The EME station was set up and we let visitors bounce their voices on radio off of the moon. This was a hit with everyone who attended. Once again, the mayor of Haswell, Michelle Nelson, and Family put on an excellent Pulled Pork BBQ enabling a fund raising for the local high school for their senior trip. May tours, radio and radio astronomy demonstrations and presentations were given to the 100+ attendees who came from several hundred miles in all directions.

October

- Oct. 11th and 12th Alex brought a 300Watt 1296MHz transverter and transceiver package and he, Paul Sobon and many other members operated under the DSES K0PRT call sign in the multi-operator, all mode, 1.2GHz ARRL EME contest.
- Oct 23rd Roger Oakey and Paul Sobon attended the HamCom, Rocky Mountain Division Convention in Grand Junction, Colorado setting up a display booth highlighting the EVE Transceiver package and presenting a complete overview of the DSES facilities and operations.

- Oct 27th Art Sepin, of Synergy Systems in San Diego provided a generous cash donation and drove out a complete ultra-accurate time and frequency standard from San Diego to Colorado. The system consists of an HP5065A Rubidium Standard, HP53131A Time interval Counter, Computer, GPS receiver, a CNS Systems, Inc. "CNS Clock" and a APC UPS. Rick Hambly had the maintenance and calibration done on all the equipment and we now have it installed and working. This will enable very accurate timing for many of our space science experiments starting with the EVE project and we owe a resounding Thank You to Art for the generous donation of cash, equipment and time.

November

- Nov. 8th and 9th: The organization led by Alex and Paul operated the second half of the ARRL EME Contest. Logs were submitted and we are still waiting for contest results.
- Nov. 20th: We started the **Fund The 30-foot Dish Project** to Raise money to fund the reconstruction of the 30 foot dish we rescued last summer from Ignacio, Colorado. We will be installed on a new concrete foundation engineered for long-term radio use.

Once reassembled, this instrument will expand our educational programs, EME, Satellite, and other experiments freeing up the 60 foot dish for more radio astronomy projects. It will also serve as a laboratory for students, educators, and citizen scientists.

December

- Dec. 10th: Bill Thomas has implemented a new membership management system for the Deep Space Exploration Society. It is called HamClubOnline (HCOL). This is a proven and secure membership system that provides benefits both to members and the officers involved with managing the organization. All DSES members will have an account in the system for access to membership features. Note that you do not need to be a radio amateur to have an account in the system.

Summary

2025 was highly productive for DSES. Highlights include progress on the EVE experiment, infrastructure improvements, successful pulsar detection, education and outreach events, and continued site development. Our members' dedication is driving significant advances in amateur radio astronomy and radio communications within the organization. We look forward to new projects in 2026 such as:

- Tracking NASA's Manned Artimes II Orion Spacecraft in its translunar trajectory to the moon.
- Performing more Radio Astronomy experiments
- Holding more educational events
- Reconstructing the 30Ft dish
- Building a new feed antenna mounting system and operating on additional frequency bands
- Making another attempt at Earth-Venus-Earth communications
- Receiving the downlink from Deep Space Probes

And many more exciting projects. Please join us.