



Southern Great Plains Newsletter

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Electronics Repair Laboratory Saves Time and Money

The SGP site's Electronics Repair Laboratory (ERL) was established in 1998 to make some instrument repairs on-site. By decreasing the number of repairs made by instrument manufacturers, the ERL eliminates shipping costs (sometimes overseas) and saves considerable time. Since its inception, the ERL has saved the ARM Program an estimated \$115,000.

One example of savings concerns a small, worn nylon gear found to cause frequent failures in a particular solar tracker. Dan Nelson, Facilities Maintenance Manager and Instrument Calibration Manager at the SGP site, located a third-party provider for the gear and purchased a small supply. This repair is now made on-site at a fraction of the previous cost and in a fraction of the time required to send the tracker to its manufacturer in Europe.

Any instrument or component that cannot be repaired in the field by SGP technicians is evaluated for repair in the ERL. Circuit board component repairs are routinely made at the ERL with its complete set of test equipment. Component replacements (power supplies, motors, wind sensor bearings, circuit boards, fuses, batteries, cables, connectors, etc.) are also routine. Parts such as air pumps and motors are tested and repaired at the ERL, and cables and connectors are also constructed there.

Typical equipment repaired at the ERL include the following:

- Data loggers – board level repairs, calibrations, operating system replacements
- Storage module – board level repairs
- Modems
- Multi-filter rotating shadowband radiometer motors
- Wind, humidity, temperature sensors
- Sun trackers
- Uninterruptible power supplies
- Computer monitors, drives
- Multiplexers

Some equipment cannot be repaired at the ERL because of electronic complexity, warranty restrictions, or the vendor's proprietary rights. However, when a piece of equipment must be shipped for repair, evaluations made at the ERL often identify the cause of failure and greatly reduce repair times.

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Nearly all of the repairs done at the ERL to date have been of SGP instruments, but the ERL can save time and money for the other ACRF sites (in Alaska and the tropics) as well. A consultation with Mark Klassen (ERL technician) or David Breedlove (head of SGP Instrument Maintenance) can determine whether shipping an instrument or component to the ERL is worthwhile.

SGP Staff Spotlight

Mark Klassen Electronics Technician

Mark Klassen is the primary technician in charge of the ERL. Mark is responsible for the diagnostics of malfunctioning electronic equipment and for identifying and making repairs where possible (see ERL description above). This year, Mark attended designated electrical equipment inspector training at Los Alamos National Laboratory. There he received the training necessary to inspect experimental or other electrical equipment that is not labeled or listed by a nationally recognized testing laboratory (NRTL), then determine whether the equipment is constructed according to electrical code standards and is safe for site staff to operate. At Mark's direction, equipment not labeled or listed by an NRTL is now being tagged as safe to use or is removed from service.



Mark joined the ARM Program in 1997 as a traveling technician responsible for inspecting and maintaining the instrumentation at all SGP remote sites. In November of 2005, he was assigned to the ERL. Mark lives in Enid, where his wife, Trecia, is a secondary English teacher. When he's not busy managing his four boys (Blake, Daylen, Cody, and Josh) Mark likes to sneak in an occasional round of golf. When it's time to relax, the family enjoys vacationing in Colorado.