GBT Systems Report on Project Coordination for January 2000
M. McKinnon

In late December, COMSAT revealed preliminary plans for completing the GBT this year. A rough schedule of its general activities and NRAO's major tasks on the telescope is

- Preliminary servo testing (COMSAT/NRAO) 01/10/00 - 03/01/00
- Actuator cable testing (COMSAT/NRAO) 01/18/00 - 04/01/00
- Panel corner setting (COMSAT/NRAO) 04/01/00 - 06/01/00
- Actuator room outfitting (NRAO) 04/01/00 - 06/01/00
- Begin final servo/acceptance test (COMSAT/NRAO) 06/01/00

Since COMSAT indicated that the GBT would not be complete before June 1, the NRAO GBT budget was extended through the second quarter of 2000.

Testing of actuator cables began on January 18. Despite the bad weather, about 28 cables were tested over five hours on the first day of testing. The cable testing rate of about one every 10 minutes is roughly what was expected. However, the duration of cable testing is being stretched out because of bad weather and ice in the cable connectors. Special thanks are due to Tom Bailey, Brian Ellison, Mike Fowler, Rich Lacasse, J. D. Nelson, Dwayne Schiebel (who is leading the NRAO cable testing effort), Amy Shelton, and Jerry Turner for enduring the bone-chilling cold to complete this important task for the project.

Galen Watts is installing a two-element, 100-meter baseline, 12 GHz interferometer near the laser lab to measure atmospheric phase stability. The measurements will provide an indication of the severity of anomalous refraction, which adversely affects telescope pointing at high frequencies, at the Green Bank site. The interferometer is being built by George Weiland and Simon Radford of NRAO-Tucson and should be delivered to Green Bank during the week of February 14. Radford and Weiland will commission the interferometer during the week of March 6. The device should be in routine operation by mid-March.

Jim Condon and Qi Feng Yin developed a list of 1071 pointing calibrators for the GBT. The calibrators have flux densities of over 1 Jy at 1.4 GHz and cover the sky fairly uniformly at declinations above -40 degrees. The list contains position, position error, and flux densities at 1.4 GHz and 4.85 GHz for each calibrator. Position errors can be as small as one arcsecond. The calibrator list will be published in an upcoming GBT memorandum.

Jim Cordes and Steve Kuebler of Cornell University are planning on implementing the "raw-lag dump mode" of the GBT spectrometer for pulsar searches. They visited Green Bank on January 17 to discuss the technical details of the spectrometer with Rich Lacasse and Ray Escoffier. They will build a custom data tap card, similar to one that has already been built, that bypasses the spectrometer's long term accumulator and sends the machine's correlations directly to a high-

capacity data storage medium. Discussions are underway to determine if the GBT disk array and tape drives could be used in this data recording mode.

Dana Balser repeated end-to-end tests of GBT software in the mockup on January 27. The tests were similar to those carried out in December with the exception that the spectral processor was used as the telescope backend instead of the DCR. Problems in the monitor and control (M&C) software prevented the use of the AIPS++ DISH software to analyze the recorded data. The tests will be repeated soon, after the M&C problems are fixed.

Dave Parker developed a calibration procedure for the surface retroreflectors. The mount that supports a retroreflector actually suspends the retroreflector below the telescope surface. The calibration procedure is needed to determine the normal distance between the telescope surface (the face of the mount) and the retroreflector's reflecting point. These normal distances must be subtracted from the rangefinders' measurements of the surface to give the true distance to the surface. A test jig that Parker designed for the calibration procedure will be manufactured in the machine shop in February. GBT telescope operators will calibrate the 2209 retroreflectors so that they can be installed on the telescope sometime after May 1.

Point-to-point measurements of 12 ground rangefinders were postponed so that the retroreflector calibration procedure could be developed. Bad weather and illnesses in the metrology group have also hampered efforts to carry out metrology experiments.

The production schedule for the Q-band receiver was briefly reviewed with Gerry Petencin at the CDL to ensure that the low noise amplifiers would be delivered on schedule. Two amplifiers are in Green Bank, two were shipped from the CDL to Green Bank on February 3, and the remaining four amplifiers should be shipped by the end of February. If the amplifiers are delivered as scheduled, the assembly of the receiver should be complete by May 1.

The machine shop is installing the fiberglass reinforcement on the GBT receiver feeds. The fiberglass "foam" has been installed on all the feeds (S-band, 800 MHz, and 1070 MHz) and has been shaped and sanded on the S-band feed. The fiberglass installation should be complete in late February after the application of epoxy/resin and paint.