

# GBT Commissioning and Development Status

Last Update: 28 March 2003

Key to Status Codes:

- Completed / Installed / Operational
- Under development
- Ready for installation / commissioning

	Scheduled Completion Date	Comment
<b>Phase I Equipment Outfitting</b>		
<b>Receivers</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Prime Focus 1 (0.290 - 0.920 GHz)		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #0000FF; border: 1px solid black; margin-right: 5px;"></span> Prime Focus 2 (0.910 - 1.230 GHz)	1-Jul-03	Receiver completed; will be commissioned in July 03
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> L-Band (1.15 - 1.73 GHz)		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> S-Band (1.73 - 2.60 GHz)		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> C-Band (3.95 - 5.85 GHz)		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> X-Band (8.00 - 10.1 GHz)		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Ku-Band (12.4 - 15.4 GHz)		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> K-Band (18.0 - 26.5 GHz)		
<b>Cryogenics</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Cryo tubing runs completed		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Cryo compressors installed		
<b>Fiber Optic Network</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Lines installed and operational		
<b>Active Surface</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Cabling, terminations, power supplies		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Control software		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> System operational		
<b>Monitor and Control Bus</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Bus installed		
<b>Astronomical Commissioning</b>		
<b>Phase I (Operation to 15 GHz)</b>		
<b>Pointing</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Conventional Pointing to <10" RMS		Achieved
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Offset pointing to ~3-4"		Achieved
<b>Focus Tracking</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Emperically calibrated curves		
<b>Receiver Checkout</b>		
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Prime Focus 1 (0.290 - 0.920 GHz)		In use
<span style="display: inline-block; width: 15px; height: 10px; background-color: #0000FF; border: 1px solid black; margin-right: 5px;"></span> Prime Focus 2 (0.910 - 1.230 GHz)	1-Jul-03	Receiver completed; will be commissioned in July 03
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> L-Band (1.15 - 1.73 GHz)		In use
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> S-Band (1.73 - 2.60 GHz)		In use
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> C-Band (3.95 - 5.85 GHz)		In use
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> X-Band (8.00 - 10.1 GHz)		In use
<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> Ku-Band (12.4 - 15.4 GHz)		In use
<b>Backend Checkouts</b>		

<b>Digital Continuum Receiver (DCR)</b>		In use
<b>Spectral Processor</b>		
Autocorrelation Modes		In use
Cross Correlation Modes		Undergoing astronomical tests in early Jan.
Pulsar Modes		In use
<b>Spectrometer</b>		
<b>Top Priority Autocorrelation Modes</b>		
12 MHz, 9 Level, 2 Samplers, 1.5 kHz		
12 MHz, 9 Level, 4 Samplers, 3.0 kHz		
12 MHz, 9 Level, 8 Samplers, 3.0 kHz		
12 MHz, 9 Level, 4 Samplers, 1.5 kHz		
50 MHz, 9 Level, 2 Samplers, 6.1 kHz		
50 MHz, 9 Level, 4 Samplers, 12 kHz		
50 MHz, 9 Level, 8 Samplers, 12 kHz		
200 MHz, 2 Samplers, 24 kHz		
200 MHz, 4 Samplers, 24 kHz	1-May-03	
200 MHz, 8 Samplers, 24 kHz	1-May-03	
200 MHz, 2 Samplers, 6.1 kHz		
200 MHz, 2 Samplers, 12 kHz		
800 MHz, 2 Samplers, 391 kHz	1-May-03	
800 MHz, 1 Samplers, 98 kHz		
800 MHz, 2 Samplers, 98 kHz	1-May-03	
800 MHz, 1 Samplers, 195 kHz	1-May-03	
800 MHz, 4 Samplers, 195 kHz	1-May-03	
<b>Cross Correlation / Polarimetry Modes</b>	31-Dec-03	Development/testing schedule under review
<b>Pulsar Timing Mode</b>	31-Dec-03	Development/testing schedule under review
<b>Spigot Card fast dump mode</b>		
Expert user mode	1-May-03	
General user mode	31-Dec-03	Development/testing schedule under review
<b>User-built Backends</b>		
Berkeley-Caltech Pulsar Machine (BCPM1)		In use
Berkeley-Caltech Pulsar Machine (BCPM2)		Awaiting testing
Cornell/JPL Portable Fast Sampler		In use
<b>Calibration</b>		
Flux density conversion scales		Initial scales available; refinement on-going.
<b>Monitor &amp; Control General Operation</b>		
System control		On-going development; approximately monthly releases
<b>Observing Modes</b>		
Total power position switching		In use
Frequency Switching		In use
On-the-fly total power / position switching		In use
On-the-fly frequency switching		In use
Pointing cross scans		In use
<b>Spectral Baseline Improvement Program</b>		Priority project; major progress anticipated by March
L-Band	1-May-03	Initial evaluations complete; tests and mods ongoing
S-Band	1-May-03	Initial evaluations complete; tests and mods ongoing
C-Band	1-May-03	Initial evaluations complete; tests and mods ongoing
X-Band	1-May-03	Initial evaluations complete; tests and mods ongoing

	Ku-Band	1-May-03	Initial evaluations complete; tests and mods ongoing
	K-Band	1-May-03	Initial evaluations complete; tests and mods ongoing
	<b>Setup and Configuration Tool</b>		
	First version of GO and Config Tool		Initial, limited prototype version in use
	Comprehensive Configuration Tool	31-Dec-03	Design underway.
	<b>User Documentation and Facilities</b>		
	Short Guide		Available, but needs updating
	Comprehensive Users Guide	31-Aug-03	First draft done; needs much work yet
	Account setups / facility reservations	31-Aug-03	Initial scheme in place; refinements on-going
	<b>Data Analysis Systems</b>		
	AIPS++/Dish		In use; development/refinements continuing.
	<b>Data Archiving System</b>		
	Manual system		
	Automated system	31-Dec-03	Development/testing schedule under review
	<b>Phase II (Operation to 50 GHz) Commissioning and Development</b>		
	<b>Pointing</b>		
	Offset pointing <= 3" RMS	15-Oct-03	Refinements continuing
	<b>Focus Tracking</b>		
	Empirically calibrated curves		
	Advanced operation using FEM & Quad Det.	15-Oct-03	Development/testing schedule under review
	<b>Receivers</b>		
	K-Band (18.0 - 26.5 GHz)		In use; refinements and tests continuing
	Ka-Band (26.0 - 40 GHz)	15-Oct-03	Receiver under development
	Q-Band (40.0 - 50.0 GHz)	15-Oct-03	Initial engineering tests underway; commission in fall.
	<b>Backends</b>		
	Caltech Continuum Backends (for Ka & W)		Under development; critical design review in Winter 2003.
	<b>Active Surface</b>		
	Operation using FEM lookups, 500 um RMS		
	Refined operation w/ improved FEM	15-Oct-03	Development/testing schedule under review
	<b>Holography / Surface Adjustments</b>		
	Holography maps	15-Oct-03	Development/testing schedule under review
	360 micron RMS surface	15-Oct-03	Development/testing schedule under review
	<b>Phase III (Operation to 115 GHz) Development</b>		
	<b>Precision Telescope Control System</b>		
	System Architecture and Development	2005	Under development; Conceptual Design Review in Apr 03
	<b>Receiver Development</b>		
	W-Band (68.0 - 92.0 GHz)	1-Apr-04	Under construction
	Module 2 (90 - 115 GHz)	2005	Planned
	Penn Array Bolometer Camera	2005	Under construction
	<b>Infrastructure</b>		
	Dynamic / Flexible Proposal Scheduling	2005	Planned