

Welcome to Green Bank!



The First National Astronomy Observatory

Original Site of National Radio Astronomy Observatory

Completed 1959



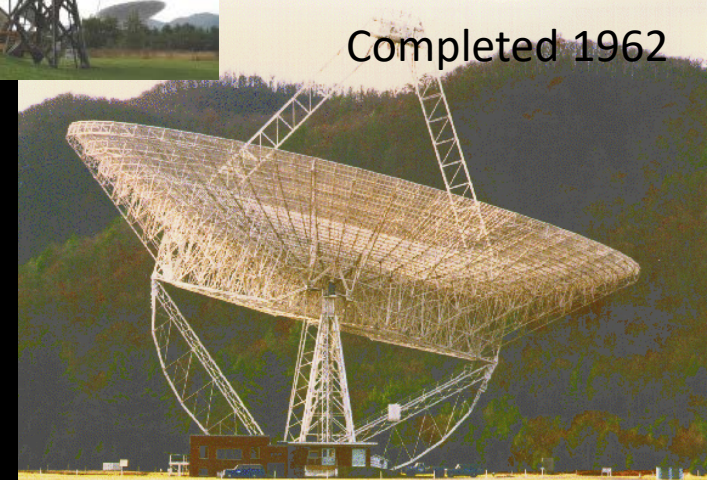
Completed 1995



Completed
1962



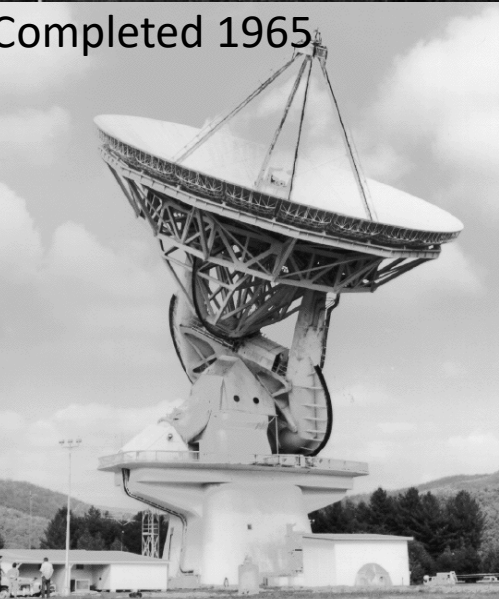
Completed 1962



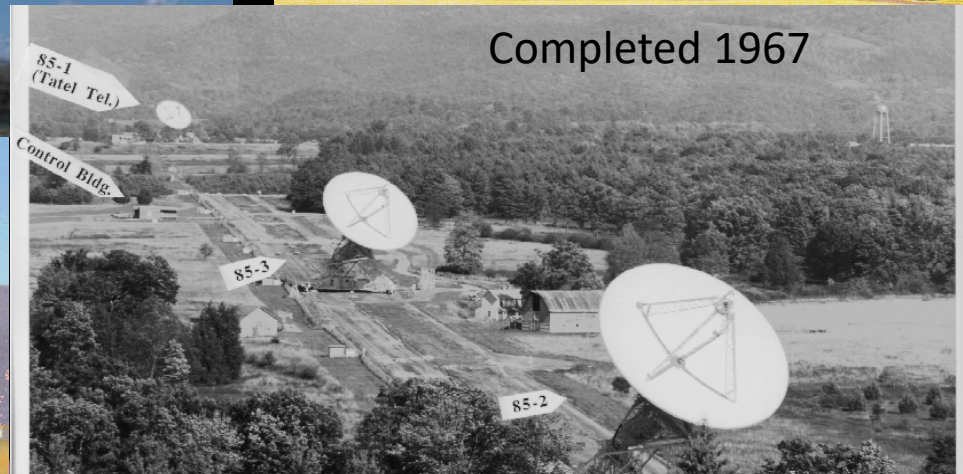
Completed
2000



Completed 1965



Completed 1967

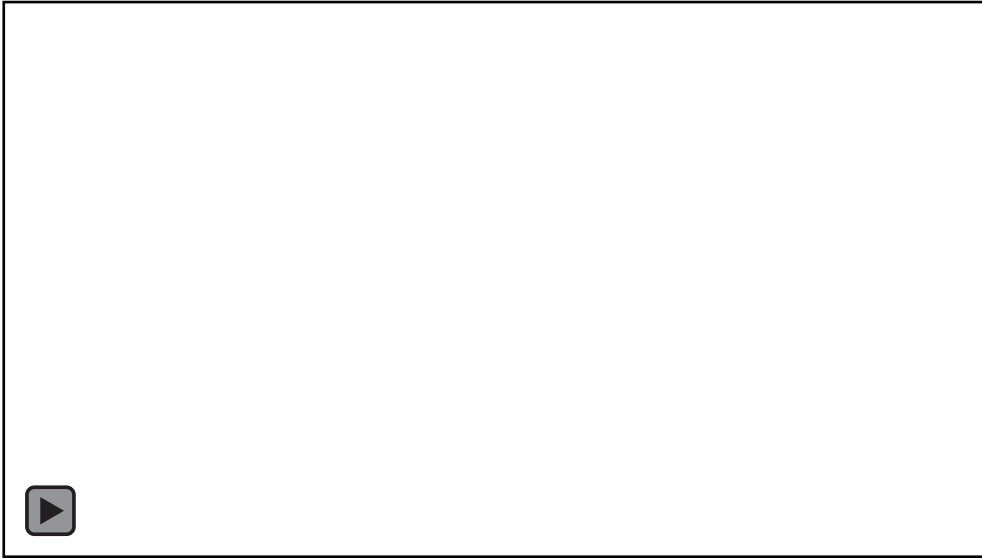


Completed
1994



The GBT

A World Class Facility for Science Research



- 85% sky coverage
- 0.2 – 116 GHz range
- Unblocked aperture
- Phenomenal sensitivity (μJy)
- 30% aperture eff. at 100 GHz
- 6800 hours available annually

User Community :

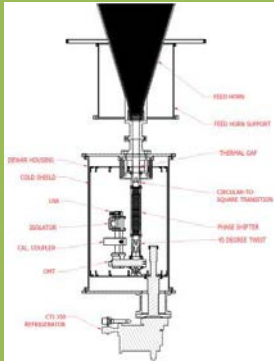
- >3000 individual scientists proposed to use the GBT in past 5 years*
- Span range of disciplines from planetary science to chemistry and physics
- Roughly 20% of proposers are new each semester

*Based on number of individual email addresses

Looking ahead

Many new instruments coming online!

Replacement
x-band feed:
more stable,
wider
bandwidth

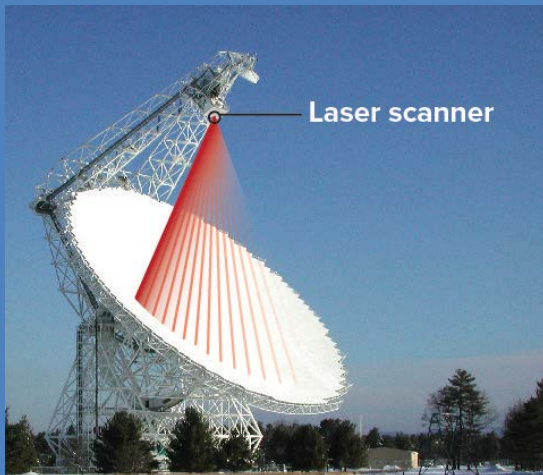


UltraWideband Receiver
0.8-4 GHz; optimized for
pulsar timing

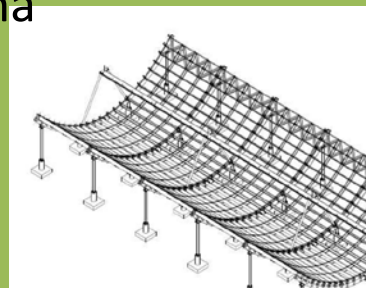


New data archive for storing
all open skies data

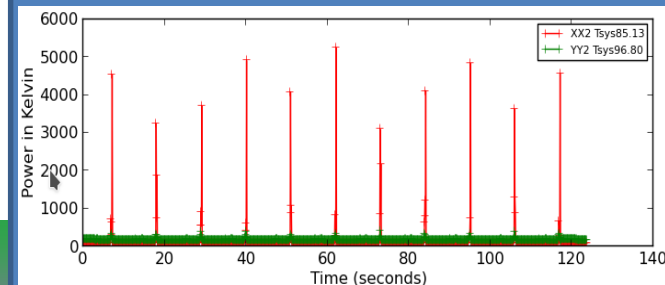
LASSI – Laser scanning
instrument: Improved high
frequency performance



CHIME outrigger
antenna



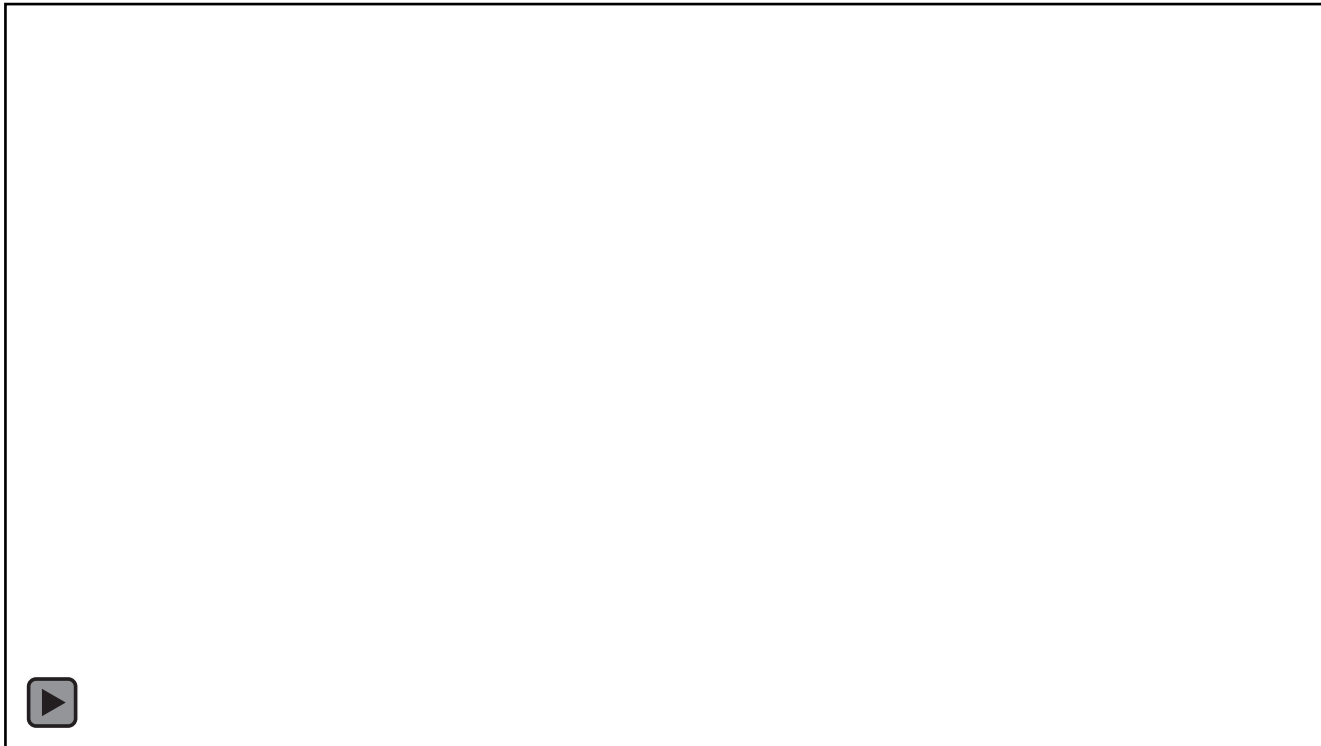
Digitizing the RF to remove
RFI, provide increase
sensitivity



Looking ahead

Longer view is equally promising!

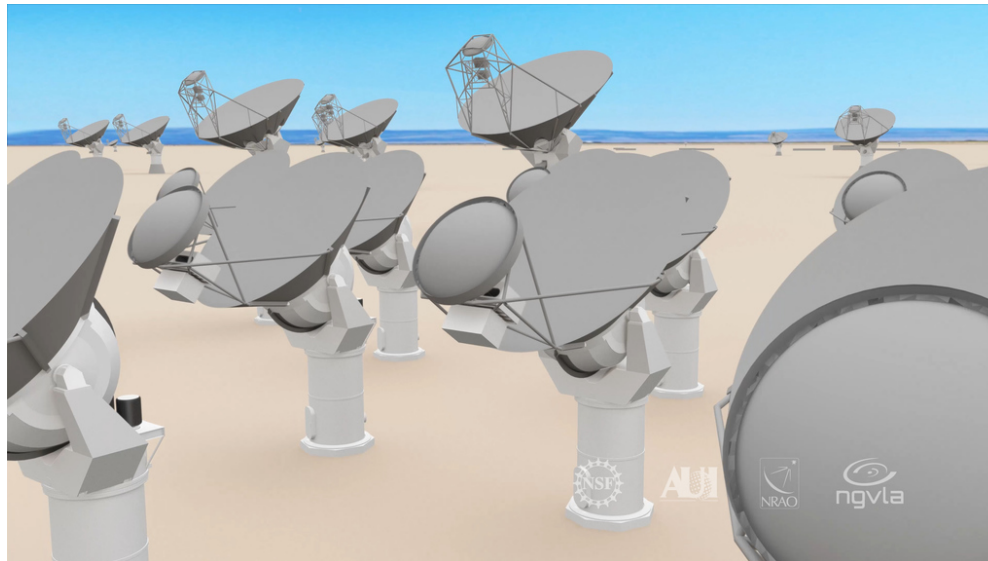
- Planetary-sized radar system proposed for GBT
 - VLBA, then ngVLA as the receive antenna



Looking ahead

Longer view is equally promising!

- Next Generation Very Large Array
 - Green Bank Observatory site of Easter ngVLA antenna cluster
 - GBT is also potentially important short spacing provider



Looking ahead

Longer view is equally promising!

- And of course, we will still develop new GBT instruments

Argus+: 144-pixel W-band camera

Property	Argus	Argus-144	Notes
Pixels	16	144	Single polarization
IF Bandwidth	1.5 GHz	7 GHz	Allows for future upgrade to spectrometer
Spectrometer	16 pixel VEGAS	128 pix x 0.6 GHz x 128k ch + 16 pix VEGAS	
Receiver Tsys	40 - 80 K	30 - 40 K	
Frequency Range	74 - 116 GHz	74 - 116 GHz	
Map time 6'x6' dv=0.1 km/s, $T_b=0.1$ K	53 hours	5 hours	Includes overhead

Phased Array Feeds:
Rapid mapping, high sensitivity,
Filled sky coverage



Improved sensitivity receivers, specialized instruments



Looking ahead

Longer view is equally promising!



The GBT, and Green Bank Observatory's future is very bright.

Looking ahead

Longer view is equally promising!



The GBT, and Green Bank Observatory's future is very bright.

BUT...

The future is really up to all of you!

It is the GBT's observer community that sets its path; as an active community member you can help decide (and design!) the next generation of instruments for Green Bank Observatory and all of radio astronomy.

